STUDIA UBB PSYCHOL.-PAED., LVI, 1, 2011

# TEACHERS' KNOWLEDGE ABOUT DIFFERENT FEATURES OF ATTENTION-DEFICIT/HYPERACTIVITY DISORDER

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**ABSTRACT.** The present study examined the teachers' knowledge about three important aspects of Attention-Deficit/Hyperactivity Disorder: symptoms and diagnosis, treatment, and general information. One hundred and eighty-nine kindergarten and elementary school teachers filled out the KADDS questionnaire of Sciutto et al. (2000). The scores of the three factors differed significantly from each other with symptoms and diagnosis achieving the highest score. Teaching experience, prior exposure, and self confidence in efficiently working with children with ADHD had a positive effect on the score, while the degree of study did not make a difference.

***Keywords:*** *ADHD, KADDS, evaluation of teachers' knowledge, diagnosis of ADHD*

**ZUSAMMENFASSUNG. Evaluation der Kenntnis von Lehrern über die verschiedenen Merkmale der Aufmerksamkeitsdefizit-Hyperaktivitätsstörung (ADHS).** Die Studie untersuchte die Kenntnis von Lehrern über drei wichtige Aspekte der Aufmerksamkeitsdefizit- Hyperaktivitätsstörung (ADHS): Symptome und Diagnose, Behandlung und allgemeine Angaben. Einhundertachtundachtzig Kindergarten- und Grundschullehrer bearbeiteten den KADDS Fragebogen von Sciutto et al. (2000). Es ergaben sich signifikante Unterschiede zwischen den drei Faktoren mit Höchstwerten in der Kategorie Symptome und Diagnose. Die Faktoren Lehrerfahrung, Vorerfahrung mit ADHS und Selbstbewusstsein im Arbeiten mit Kindern mit ADHS beeinflussten die erreichten Werte positiv, während das Bildungsniveau der Lehrer keinen Effekt hatte.

***Stichwörter:*** *ADHS, KADDS, Evaluation des Wissens von Lehrern, Diagnose von ADHS*

## Introduction

Attention-Deficit/Hyperactivity Disorder is the most common behavioral disorder of childhood (Barkley, 2006). It is described in DSM-II as developmentally benign: "The disorder is characterized by overactivity, restlessness, distractibility

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and short attention span, especially in young children: the behavior usually diminishes by adolescence." (APA, 1968) As a result of many years of study detailed diagnostic criteria have been created. To accurately diagnose a child with ADHD DSM-IV-TR requires that: "Some impairment from the symptoms is present in two or more settings (e.g., at school [or work] and at home)." (APA, 2000)

As the child spends a good amount of time with his or her teacher in the school the opinion of the teacher is important. The opinion of the teacher about the child can be expressed in an interview focused on the specific nature of the child's problems in the school environment or by filling out a questionnaire.

Usually the diagnosis of ADHD is made based on a packet of questionnaires filled out by the parent and the teacher of the child. The parent fills out the Child Behavior Checklist (Achenbach, 2001) or the Behavior Assessment System for Children (Reynolds & Kamphaus, 2004) or the Conners Rating Scales – Revised (Conners, 2001) while the teacher fills out the same questionnaires tailored for them. However it should be clear, that parents' and teachers' responses to behavior rating scales are opinions and are subject to the oversights, prejudices, and limitations on reliability and validity inherent in such opinions, but apart from the interview there is no other means of obtaining important standardized information with so little investment of time. Even when children exhibit significant ADHD symptoms both at home and in school the clinician must combine this information with his or her specialized knowledge in differential diagnosis in order to render the ADHD diagnosis. (Barkley, 2006)

The knowledge about ADHD of kindergarten and elementary school teachers is important because the number of children with ADHD diagnosis is increasing (Barkley, 2006) and they will have to contribute to the diagnosis and treatment in school settings of these children. Wehmeier, Schacht, and Barkley (2010) found that 3 – 7 % of school-aged children can be diagnosed with ADHD, and that boys are 2 – 9 times more likely to be affected than girls.

This paper is concerned with exploring the knowledge of kindergarten and elementary school teachers about ADHD. The tool we have chosen to achieve this goal is the Knowledge of Attention Deficit Disorders Scale (KADDS) devised by Sciutto et al. (2000, 2008). The questionnaire is based on three domains of interest regarding ADHD: symptoms and diagnosis, general information, and treatment. We are interested in the information that the teachers possess and lack about ADHD. We have also measured how the teaching experience, degree of studies, and prior exposure to children with ADHD affects the number of correctly answered questions.

Misidentification and mistreatment of ADHD is a serious issue and thus it is important to measure the knowledge of the teachers in order to be able to correct their misperceptions and provide the missing information.

### Participants

One hundred and eighty-nine kindergarten and elementary school teachers (all female) filled out the questionnaire of the study. Out of these, 43.9% taught in kindergarten, 49.2% taught in elementary school and 6.9% did not specify their workplace. Regarding special education, 18.9% taught in special education classes, 73.7% taught in classes without need for special education and 7.4% did respond to this question. The participants could choose between four degrees of study, 1.6% claimed to have no pedagogical qualification, 50.8% claimed to have finished pedagogical high school (13 classes), 13.8% claimed to have a college degree (3 years of study), and 30.2% claimed to have university degree (4 years of study), while 3.7% did not answer. The participants reported an average of 14.21 (SD = 11.65) years of teaching experience.

The question about requesting the examination of a child suspected of having ADHD was answered positively by 24.7% and negatively by 69.5% of the participants (5.8% did not answer). Only 32.6% of the participants claimed to have taught children with ADHD.

### Procedure

The questionnaire was administered to both Romanian and Hungarian kindergarten and elementary school teachers in their own language, mostly from Cluj Napoca and its surroundings. Filling out the questionnaire takes 20 – 25 minutes. Most of the time after receiving the questionnaire, the teachers took them home, filled them out, and brought them back the next day. They did not have to state their name if they did not wish to do so.

### The questionnaire

The Knowledge of Attention Deficit Disorders Scale (KADDS) was devised by Sciutto et al. (2000, 2008). It contains 36 items with three possible answers: true, false, or don't know. The items are all based on well-documented and empirically supported features of ADHD. They represent three major factors: symptoms and diagnosis of ADHD, the treatment of ADHD, and general information about the nature, causes and outcome of ADHD.

As KADDS was originally devised in English and the participants of this study are Romanian and Hungarian teachers, it needed to be translated into Romanian and Hungarian. Each translation was done by two persons with university degrees in Psychology and evaluated for grammatical correctness and understandability by five kindergarten and five elementary school teachers with college degrees in Pedagogy. After this step, the questionnaire was translated back into English by two people who did not know the original. Finally, the four English variants were

examined to see how much of the original semantic content of the questions were preserved. Wherever semantic differences were observed, the translated versions were clarified to better reflect the original semantics of the question.

Finally a pilot study was run with ten kindergarten and elementary school teachers who could make observations regarding the ease of understanding of each item. Their suggestions were incorporated into the final version of the questionnaire.

The questionnaire also included a few demographic questions about the age, gender, years of teaching experience, degree of studies, and prior exposure to children with ADHD. The participants also rated, along a 7 point scale their self-efficacy in working with children with ADHD. Answering to these questions was not compulsory.

**Results**

Teaching experience (in years) positively correlates with the number of correctly answered questions ($r=0.162$, $p=0.032$).

The confidence in the ability to teach children with ADHD efficiently does not correlate with teaching experience ($r=0.137$, $p=0.078$), but it correlates positively with the number of questions answered correctly ($r=0.256$, $p=0.001$) and it correlates negatively with the number of questions answered with "don't know" ($r=-0.320$, $p<0.001$).

Using the Scheffe post-hoc pairwise comparison in ANOVA, there was no significant difference found in the number of correctly answered questions with regards to the four groups based on the academic degrees of the participants ($F=0.781$, $p=0.506$).

The number of correctly answered questions of the participants who had previously taught children with ADHD was significantly higher than the score of the participants who had no prior exposure to children with ADHD, based on the independent samples t-test ($t=3.082$, $p=0.002$). The participants who had prior exposure to children with ADHD answered significantly fewer times with "don't know" than the participants who had no prior exposure to children with ADHD, as shown by independent samples t-test ($t=-4.112$, $p<0.001$).

With regards to the three factors measured by KADDS, the participants with prior exposure to children with ADHD had significantly higher scores than the participants who had no prior exposure to children with ADHD in the factor of general information ($t=3.695$, $p<0.001$) and the factor of treatment ($t=2.363$, $p=0.019$).

Testing the importance of teaching in a special education class with independent samples t-test found no significant difference in the number of questions correctly answered of the participants who teach in special education classes and those who do not ($t=1.459$, $p=0.146$).

The descriptive statistics of the number of questions answered correctly can be seen in Table 1 decomposed into the three factors.

**Table 1**

**Descriptive statistics of the KADDS**

| Factor | No. items | Mean | SD |
|---|---|---|---|
| General information | 15 | 5.39 | 2.50 |
| Symptoms/diagnosis | 9 | 6.08 | 1.48 |
| Treatment | 12 | 3.97 | 2.09 |
| Total | 36 | 15.44 | 4.82 |

To compare the tree factors of the questionnaire (general information, symptoms, and treatment) ANOVA was used with Scheffe post-hoc pairwise comparison that indicated that the scores achieved on each factor differed significantly from each other ($F=51.071$, $p<0.001$). The symptoms/diagnosis factor has the highest score that is significantly higher that the score of the general information factor that in turn is significantly higher than the score of the treatment factor.

It is interesting to examine the items that were answered correctly, incorrectly or with "don't know" most of the time. The first five items answered correctly by most participants are shown on Table 2.

**Table 2**

**The five most common correctly solved items.**

| Item no. | Content of item | Factor | % |
|---|---|---|---|
| 9 | Children with ADHD often fidget or squirm in their seats. | S/D | 96.8 |
| 26 | Children with ADHD are disorganized. | S/D | 88.8 |
| 3 | Children with ADHD are frequently distracted by extraneous stimuli. | S/D | 87.3 |
| 21 | It is necessary for a child to exhibit relevant symptoms in two or more settings in order to be diagnosed with ADHD. | S/D | 83.0 |
| 16 | Current diagnosis of ADHD identifies two clusters of symptoms: inattention and hyperactivity/impulsivity. | S/D | 79.3 |

The five items that were mostly solved incorrectly are shown on Table 3 where the percentage of correct answers is shown in increasing order.

**Table 3**

**The five most common incorrectly solved items.**

| Item no. | Content of item | Factor | % |
|---|---|---|---|
| 34 | Behavioral treatment of ADHD focuses primarily on attention problems rather than non-compliance. | T | 6.3 |
| 1 | ADHD occurs in approximately 15% of school-age children. | G | 10.5 |
| 23 | Reducing dietary intake of sugar or food additives is effective in reducing symptoms of ADHD. | T | 10.5 |
| 4 | Do ADHD children tend to be more compliant with father than mother? | G | 12.6 |
| 27 | ADHD children have more problems in novel than in familiar situations. | G | 13.7 |

The five items that were answered with "don't know" most of the time are shown on Table 4.

**Table 4**

**The five most common items answered with "don't know".**

| Item no. | Content of item | Factor | % |
|---|---|---|---|
| 35 | Is Electroconvulsive Therapy an effective alternative treatment for severe cases of ADHD? | T | 75.6 |
| 6 | Is there a family history of ADHD (i.e. first-degree relatives)? | G | 63.4 |
| 15 | What are the side effects of stimulant drugs used for treatment of ADHD? | T | 62.9 |
| 12 | What are the long-term outcomes of ADHD following treatment? | T | 60.8 |
| 23 | Reducing dietary intake of sugar or food additives is effective in reducing symptoms of ADHD. | T | 58.2 |

## Discussion

The results of our study are similar in the most salient features to the results of Sciutto et al. (2000) that introduced the KADDS instrument to measure the knowledge and misperceptions of elementary school teachers about ADHD. Also the literature review of Murray (2009) depicts a similar picture over all the studies that have addressed the question of teachers' knowledge about ADHD.

It is not surprising that the teaching experience gathered over many years and the confidence in the ability to teach children with ADHD have a positive effect on the number of correctly answered questions.

It is interesting to note from a pedagogical point of view that the academic degrees obtained by the participants did not influence the number of correct answers. This can be explained by the fact that the participants are not evenly distributed in the four categories of academic degrees. More than half of the participants who provided information have a pedagogical high school degree and their teaching experience is significantly higher than the rest of the participants, as shown by independent samples t-test ($t=3.680$, $p<0.001$). It is probable that their teaching experience compensates for the lack of higher academic degree.

As expected, exposure to children with ADHD significantly increases the number of correct answers, but the symptoms of ADHD are known just as well by the participants with no prior exposure to children with ADHD. This result offers support for the validity of KADDS.

Children with ADHD attend regular schools so the participants who teach in special education classes have less exposure to them and so their knowledge about ADHD is not significantly different from the knowledge of participants who teach in normal education classes.

The result that the participants of the study know the least about the treatment of ADHD is explained by the fact that they have no direct knowledge about the treatment of their students. In the best case, the medication treatment is accompanied by behavior modification techniques during which the therapist asks for the opinion of the teacher in form of reports, but the medicinal treatment is sometimes not revealed to the teacher by the parent.

The participants scored highest on the symptoms and diagnosis of ADHD factor because either they have direct experience with this facet of ADHD or they can easily gather information from the media about these issues.

Regarding the items answered correctly most of the time, three of the top five can be found in the top five of Sciutto et al (2000), four of the five items answered least correctly can be found in the corresponding list of Sciutto et al, and three of the five items answered usually with "don't know" can also be found in the corresponding list of Sciutto et al.

As ADHD is one of the most frequent psychiatric disorders among school-aged children (APA, 2000) and its frequency is increasing it is important to enrich and deepen the knowledge of the professionals working with children affected by ADHD through trainings and workshops.

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