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# Teachers' and education students' perceptions of and reactions to children with and without the diagnostic label "ADHD"

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## Abstract

Thirty-four elementary school teachers and 32 education students from Canada rated their reactions towards vignettes describing children who met attention-deficit/hyperactivity disorder (ADHD) symptom criteria that included or did not include the label "ADHD." "ADHD"-labeled vignettes elicited greater perceptions of the child's impairment as well as more negative emotions and less confidence in the participants, although it also increased participants' willingness to implement treatment interventions. Ratings were similar to vignettes of boys versus girls; however, important differences in ratings between teachers and education students emerged and are discussed. Finally, we investigated the degree to which teachers' professional backgrounds influenced bias based on the label "ADHD." Training specific to ADHD consistently predicted label bias, whereas teachers' experience working with children with ADHD did not. Crown Copyright © 2010 Published by Elsevier Ltd. on behalf of Society for the Study of School Psychology. All rights reserved.

*Keywords:* Attention-deficit/hyperactivity disorder; Label; Diagnosis; Teachers; Bias

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## 1. Elementary school teachers' and education students' perceptions of and reactions to children with and without the diagnostic label "ADHD"

Attention-deficit/hyperactivity disorder (ADHD) is defined by persistent and elevated levels of inattention, hyperactivity–impulsivity, or both that cause impairment in a child's life (American Psychiatric Association [APA], 2000). According to the *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV)*, to meet criteria for this diagnosis, a child must display 6 of 9 symptoms of inattentiveness (e.g., be easily distracted, lack attention to details, and have trouble maintaining focus), 6 of 9 symptoms of hyperactivity and impulsivity (e.g., be unable to sit still, have trouble awaiting turn, and interrupt or intrude on others), or both sets of symptoms. Furthermore, these symptoms must be consistently shown in at least two different settings (e.g., home and school) to a degree that impairs the child's functioning. Estimates of the prevalence rates of ADHD range between 3% and 9% (American Psychiatric Association, 2004; Froehlich et al., 2007; see also Polanczyk & Jensen, 2008, for a review). Thus, a typical classroom of 20 children is likely to contain 1 or 2 children with the disorder. In fact, all participants in a recent, relatively large sample of elementary school teachers reported having taught at least 1 child diagnosed with ADHD, with over half having taught 20 or more such children (Ohan, Cormier, Hepp, Visser, & Strain, 2008).

A child with ADHD presents teachers with several challenges. First, children with ADHD are disruptive to the classroom; for example, they are more often off task and more likely to disrupt peer learning and class lessons than are children without ADHD (Abikoff & Gittelman, 1985; APA, 2000). Second, children with ADHD have problems interacting with their peers. Their limited social skills and high levels of conflict, aggression, and hostility often result in rejection within just minutes of meeting a new child (Erhardt & Hinshaw, 1994). Third, conditions that often co-exist with ADHD present serious problems in the school context. For example, approximately 8% to 20% of children with ADHD also have a learning disorder, 33% also have an anxiety disorder, 25% also have depression, and 55% also have oppositional-defiant disorder or conduct disorder (e.g., American Psychiatric Association, 2004; Multimodal Treatment study of ADHD Cooperative Group, 1999). In sum, ADHD is a serious disorder that negatively impacts children's chances of school success. It is no wonder, then, that teachers feel more stressed and interact more negatively with children with ADHD (e.g., Barkley, 2006; Greene, Beszterczey, Katzenstein, Park, & Goring, 2002).

Given its prevalence and impact in the classroom and on teachers, it would be not be surprising if alerting a teacher that a child has been diagnosed with ADHD would influence their expectations, behaviors, and emotions towards that child. The difference in expectations or perceptions that an individual holds when they are given versus not given a label has been called *labeling bias* (Stinnett, Crawford, Gillespie, Cruce, & Langford, 2001). The effects of a label can be positive. For example, advocates of psychiatric diagnostic labels argue that they can help communicate children's strengths and weaknesses, suggest interventions, and act as a means of providing a foundation for research on the etiology and prevalence of a disorder (Achenbach, 1993; Angermeyer & Matschinger, 1996; Gallagher, 1976; Hardman, Drew, & Egan, 1999; Ysseldyke & Algossine, 1990). Evidence suggests that labels may also elicit altruistic responses and sympathy from others, facilitate more tolerant attitudes, and provide a source of understanding for a problem that might previously have been unexplained (e.g., Carver, Glass, Snyder, & Katz, 1977; Fernald & Gettys, 1980; Propst & Nagle, 1981).

However, diagnostic labels may also have negative effects, such as eliciting negative expectations from teachers, parents, and children themselves (Harris, Milich, Corbitt, Hoover, & Brady, 1992). For example, Fox and Stinnett (1996) found that school psychologists, special education teachers, and regular teachers judged levels of disruptiveness to be higher and overall adjustment and quality of interpersonal relationships to be lower among children labeled as conduct disordered, socially maladjusted, and seriously emotionally disturbed compared to peers displaying similar behaviors but without these labels. These findings are particularly concerning in light of evidence that teachers' negative expectations can increase the likelihood of negative behavior in their children (Rosenthal & Jacobson, 1968; Madon, Jussim, & Eccles, 1997; McKown & Weinstein, 2008;).

Also of concern is whether labels will lead to stereotype formation. Social psychology research has demonstrated that stereotypes are especially likely to arise when two very discrepant groups are readily viewable and there is a good deal of information available about group differences (e.g., Ford & Stangor, 1992; Schaller & Maass, 1989). On these criteria, ADHD might be considered a prime candidate for stereotype formation. Notably, children with ADHD behave noticeably different during both structured and unstructured class time in social and academic arenas, and information about ADHD is easily available via the popular press, media outlets, and the Internet.

Given the potential impact of an ADHD diagnosis, it is crucial to understand how a label of "ADHD" influences teachers' attitudes and beliefs. The importance of teachers' perceptions of children with psychiatric disorders such as ADHD cannot be underestimated. First, the influence of teachers' attitudes towards psychiatric diagnoses may extend beyond the school system and into the home. In a recent, large and representative sample in the United States, adults felt that teachers were a better source of advice for parents on childhood psychiatric issues (including ADHD) than were psychiatrists themselves (Pescosolido et al., 2008). Second, understanding teachers' attitudes to children with and without a diagnosis of ADHD is valuable for parents who need to decide about whether or not to disclose a child's ADHD diagnosis at school. Third, mental health practitioners who wish to provide teachers with feedback about a child's ADHD diagnosis and involve them in treatment need to know how disclosing this diagnosis will influence the setting within which the child is educated.

That said, to our knowledge, only three studies have examined the impact of the ADHD label in the classroom. Cornett-Ruiz and Hendricks (1993) presented 39 primary-school teachers with videos depicting a boy engaged in solo play who either displayed at least five ADHD behaviors or "normal" behavior. Prior to viewing the video, teachers were informed that the boy had either been diagnosed with ADHD or was a typical student. After viewing the video, teachers evaluated an essay purportedly written by the boy and completed questionnaires assessing their impressions of the boy's day-to-day behaviors (e.g., peer interaction quality) and predictions about the boy's future outcomes (e.g., likelihood of adult employment). Although teachers scored the boy lower on the essay and the questionnaire when he displayed ADHD behaviors, there was no impact of label on any of the measures. This result suggested that it is the ADHD symptoms, not the label of "ADHD," that influenced teachers' impressions of boys' daily behavior, their predictions about adulthood success, and their academic evaluations.

Stinnett et al. (2001) examined the perceptions of 144 students enrolled in undergraduate teacher education courses. Each participant received a written vignette describing a child who

was either labeled with ADHD or was not labeled and who was either being administered Ritalin or was in a special education classroom. Results suggested that among children receiving special education services, those labeled with ADHD were judged to have significantly more attention problems than those without the label. However, those labeled with ADHD were seen as having significantly fewer social problems than children without the label. These results suggest that ADHD label influenced perceptions of attention problems under some circumstances and may also have been seen as a moderating factor when evaluating socially maladjusted behavior.

Finally, [Koonce et al. \(2004\)](#) surveyed 259 college students, of whom 140 were enrolled in education programs. Participants initially viewed a video, read a vignette, or both viewed a video and read a vignette depicting a boy exhibiting disruptive classroom behavior, such as making fun of others. Half of participants were told afterward that the boy had been diagnosed with ADHD, whereas the other half were told nothing. Participants then rated the level of attention and social problems of the boy depicted in the video and vignette. Results suggested that the ADHD label led to higher ratings of attention problems, but there was no effect of the label on ratings of social problems.

Clearly, the results of these studies do not lend themselves to a clear understanding of the impact of the ADHD label in the classroom. Education students and undergraduates viewed labeled children labeled as having ADHD as having more attention problems yet having social problems that were either similar to or less problematic than children with the same problems who are not labeled as having ADHD ([Koonce et al., 2004](#); [Stinnett et al., 2001](#)). However, these findings were not replicated with teachers, whose ratings did not vary with label ([Cornett-Ruiz & Hendricks, 1993](#)). These discrepancies lead to questions as to whether differences in methodology (e.g., types of vignettes and gender of child depicted in the vignette), samples (e.g., undergraduates, education students, and teachers), their interaction, or other factors were responsible for these inconsistencies.

It should also be noted that two of the previous studies examined only opinions about boys with ADHD ([Cornett-Ruiz & Hendricks, 1993](#); [Koonce et al., 2004](#)) and child gender was unspecified in [Stinnett et al. \(2001\)](#). However, it is possible that the impact of the ADHD label varies as a function of child gender. Boys are more likely to have ADHD than girls, and boys with ADHD are more likely than girls with ADHD to receive assessment or diagnostic services and treatment services. For example, about 2–2.5 boys have ADHD for every 1 girl, but approximately 6 boys present to clinical services for ADHD for every 1 girl (e.g., [Bussing, Zima, & Belin, 1998](#); [Graetz, Sawyer, & Baghurst, 2005](#); [Polanczyk & Jensen, 2008](#); [Schneider & Eisenberg, 2006](#); see also [Graetz, Sawyer, Baghurst, & Hirte, 2006](#) for an Australian sample). Thus, teachers are much more likely to encounter boys with ADHD in the classroom—and particularly those diagnosed with ADHD—and thus may feel more knowledgeable and confident about the treatment needs and classroom ramifications of ADHD for boys than girls. Also relevant is evidence that boys who had an “ADHD” diagnosis from clinics and boys from community settings who met ADHD criteria but may not have had a diagnosis were similar in ADHD symptom severity and comorbidities. However, samples of girls with ADHD from clinics were more impaired on a number of measures than similar samples of girls from community settings ([Gaub & Carlson, 1997](#)). This finding opens up the possibility that the effect of the label may be more powerful for girls than for boys because girls diagnosed with

ADHD may be perceived as significantly more impaired and in need of treatment than girls without a diagnosis.

### *1.1. Purpose of the current investigation*

The current investigation extends and addresses limitations of previous studies in a number of ways. First, previous studies have focused on assessing participants' perceptions of the ADHD symptom severity or social problems. Given the array of concerns that parents have about how disclosing a diagnosis will alter teachers' perceptions of and reactions to their child, our first objective was to meaningfully extend these measures. Thus, we included questions about participants' expectations of treatment effectiveness, their emotional reactions, and their behavioral reactions towards children with and without an "ADHD" label. Second, in order to explore whether differences in methodology and samples (e.g., practicing teachers versus university students) account for discrepancies in previous reports, we included samples of both practicing teachers as well as education students. This broad sampling also allowed us to determine the extent to which results from students can be generalized to teachers (Stinnett et al., 2001) and gave insight into similarities and differences in the attitudes and beliefs held by the current versus the next generation of teachers. Third, in order to go beyond previous investigations that have included only boys or have left the child's gender unspecified, we specified child gender in all vignettes and included an equal number of vignettes about boys and girls. By including both genders, we are able to explore possible moderating effects of the child's gender on teachers' perceptions and reactions to children with ADHD.

A final aim of the present research was to examine the contributions of teachers' professional backgrounds in predicting the extent to which they are influenced by the "ADHD" label (i.e., showed label bias). Previous research on learning disabilities and adult mental health has identified two key aspects of professional backgrounds that may be related to label bias. First, specific training decreases bias to mental health disorder labels in professional groups such as medical residents (e.g., Rüsçh, Angermeyer, & Corrigan, 1995), and bias to the label "learning disorder" among teachers (e.g., Graham & Dwyer, 1987). Second, direct social experience interacting with an individual who has a stigmatized mental health illness (although not necessarily job experience) is effective in reducing stigma among medical professionals (e.g., Rüsçh et al., 2005). Given these findings, we aimed to explore the contribution that teachers' attendance at ADHD workshops and experience working with children with ADHD makes to predicting labeling bias. This focus on professional backgrounds allows us to understand better the relevance of these experiences in modulating bias.

To accomplish these goals, we asked elementary school teachers and education students to read vignettes that described children with symptoms that met criteria for ADHD (APA, 2004). Each participant read vignettes with either boys' or girls' names. For each participant, a random half of these vignettes contained a statement that the child had been "assessed and diagnosed with ADHD" (whereas no label information was present for the other half of vignettes). Similar to past studies in this area, we chose a vignette methodology over a naturalistic study because the latter does not permit control over extraneous variables associated with ADHD label and child gender (such as symptom severity and comorbidity) that may influence results rather than the label per se. Participants then completed a series of

questions designed to reflect four areas. First, consistent with past research, we asked participants to rate the child's social and behavioral problems. Second, because they are often asked to aid in implementing treatment programs, we asked teachers about their willingness to aid in medication treatment, learning assistance, and classroom-based behavioral strategies, which are the most common treatments for ADHD used in English-speaking nations (Graetz et al., 2006; Rowland, 2002). Finally, we asked teachers to rate their probable emotional reactions (e.g., feeling upset or stressed) and behavioral reactions (e.g., the likelihood that they would need to put in extra work) to the child. This information has practical meaning for parents and mental health professionals who need to consider how an ADHD diagnosis will influence a child's experience at school and how to implement treatment programs in classroom settings.

## 2. Method

### 2.1. Participants

Thirty-four elementary school teachers (30 women) in a small Canadian city and 32 elementary education students (27 women) enrolled in a medium-sized university's Bachelor of Education program participated in this study. Teachers had a mean age of 43.97 years ( $SD=8.27$  years, range=28–58 years) and a mean of 17.24 years ( $SD=8.76$ , range=2–33) of teaching experience. In their career, they reported teaching a mean of 16.42 ( $SD=20.52$ , range=0–100) children with ADHD and reported recommending a mean of 10.33 ( $SD, 18.15$ ; range, 0–100) children be evaluated for ADHD. Twenty-nine teachers reported their race as Caucasian, and five teachers did not identify their race. Education students had a mean age of 28.06 years ( $SD=7.55$ , range=21–48). Twenty-eight students reported their race as Caucasian, 2 reported that they were of Asian origin, and 2 reported that they were of First Nations (Aboriginal) origin.

### 2.2. Materials

Each participant received a two-part questionnaire. The first portion contained demographic questions regarding age, ethnicity, gender, education, number of students taught with ADHD, and number of hours spent in workshops or professional development seminars specifically on ADHD. The second portion of the questionnaire consisted of four vignettes that were used in Ohan et al. (2008) and Ohan and Visser (2009). Each vignette described an elementary school aged child who met *DSM-IV* symptom criteria for ADHD-combined type. To ensure that vignettes were consistent with *DSM-IV* symptom criteria, each was independently reviewed by the authors, two honour's undergraduate psychology students, and one clinical psychology graduate student. Ratings were revised until all reviewers independently agreed on the number and type of symptoms expressed in each vignette. A range of ADHD symptoms were evidenced across vignettes, and each vignette contained 6 of the 9 symptoms from each ADHD symptom cluster in accordance with an ADHD diagnosis (American Psychiatric Association, 2004).

The four vignettes were relatively equivalent across number of words (134, 135, 140, and 141 words), sentences (two contained 7 sentences, one contained 8, and one contained 9), and

average words per sentence (15.56, 16.75, 17.63, and 18.29 words per sentence). According to the Flesch reading ease analysis, which gives a score between 1 and 100 with higher scores reflecting more easy-to-read material, the four vignettes were relatively easy to read (scores were 61.3, 65.9, 73.7, and 73.7). The Flesch-Kincaid grade level, which gives an approximate US-grade reading level, for the four vignettes also indicated a similar range of reading ease (grade equivalents of 7.0, 7.1, 8.4, and 8.5). The vignettes can be seen in the Appendix.

Vignettes differed from each another on two factors: the presence of a diagnostic “ADHD” label (within-subjects) and gender of the child (between-subjects). For each participant, two (randomly chosen) of the four vignettes contained a diagnostic label that appeared as the last line of the vignette that stated, “Last year, [child’s name] had an assessment and was diagnosed with ADHD.” This statement added 11 words and 1 sentence to each vignette it was assigned to, and its Flesch reading ease score was 64.9 and Flesch-Kincaid grade level was 6.9. In the other two vignettes, this statement (and hence diagnostic information) was absent. Vignettes with and without the ADHD label were counterbalanced. In order to limit the number of vignettes viewed by each participant to a reasonable number, the gender of the child depicted in the vignette was varied between-subjects. For half of the participants, the names of the children depicted in all vignettes were female, whereas for the other half of participants, the names were all male. Gender-specific names were used, and they varied by only a few letters (i.e., Alexandra/Alexander, Danielle/Daniel, Andrew/Andrea, and Eric/Erica). Thus, all participants received identical vignettes except for the name of the child and the child’s gender (as evident through the use of the gender-specific name and use of related noun and pronouns).

Based on previous research on teachers’ and parents’ perceptions of children with ADHD, our 11 questions (and associated ratings) reflected an assessment of four main content areas (Ohan et al., 2008; Pisecco, Huzinec, & Curtis, 2001). First, three questions assessed perceived seriousness of the behavior problems, disruption in the classroom, and disruption of friendships. These questions were similar to those in previous studies focusing on teachers’ perceptions of symptom severity and social problems (Cornett-Ruiz & Hendricks, 1993; Koonce et al., 2004; Stinnett et al., 2001) as well as perceptions of the seriousness of behavior problems in general. Second, three questions assessed participants’ willingness to put in extra time and effort to help professionals implement learning assistance, medication, or classroom-based behavioral strategies. We chose these treatments because these are the primary ADHD treatment strategies used in English-speaking nations (Graetz et al., 2006; Rowland, 2002) and have been the focus of research on teachers’ perceptions of ADHD treatments in numerous previous investigations (e.g., Curtis, Pisecco, & Hamilton, 2006; Ohan et al., 2008; Ohan & Visser, 2009; Pisecco et al., 2001). Third, three questions assessed how bothered or upset, confident, and stressed participants would feel by the behavior depicted in the vignette. Fourth, two questions assessed how likely participants would be to intervene with the child’s behavior problems and put in extra time and effort to help the child in the classroom. Although teachers’ emotional and behavioral reactions to children with ADHD have not yet been assessed in teacher samples, similar questions have been the topic of intensive investigation in parent samples (e.g., Johnston, Chen, & Ohan, 2006), and they have important implications for understanding the school experience of labeled children. Half of the rating scales used “1” as their extreme endpoint, whereas the other half used “9”. For example, for the question ‘How likely is Andrew to disrupt or interfere with your classroom?’ ratings ranged from 1 (*extremely*) to 9 (*not at all*),

whereas for the next question, ‘How much would Andrew’s behavior disrupt his friendships?’ the poles were reversed such that ratings ranged from 9 (*extremely*) and 1 (*not at all*). These eleven questions can be seen following the first vignette in the Appendix.

Previous studies, using the same or similar vignettes and questions, reported internal consistency coefficients for each question across vignettes ranging from very good to excellent with both parent and teacher samples (e.g.,  $\alpha$  range = .82 to .93 for each question across 10 similarly worded vignettes used in Ohan et al., 2008; Ohan & Visser, 2009). These studies also provided evidence of construct validity, as teachers’ ratings were related in expected ways to their knowledge of ADHD (Ohan et al., 2008) and to their reported likelihood of seeking help for the child in the vignette (Ohan & Visser, 2009).

In the present study, internal consistency coefficients were obtained in the same manner as in previous research by calculating the consistency of each question as it was rated across the four different vignettes (across labeled and unlabeled conditions). These coefficients ranged from good to excellent (seriousness of behavior,  $\alpha = .79$ ; disrupt class,  $\alpha = .92$ ; disrupt friendships,  $\alpha = .75$ ; medication,  $\alpha = .90$ ; classroom-based behavioral strategies,  $\alpha = .86$ ; learning assistance,  $\alpha = .82$ ; bothered or upset,  $\alpha = .87$ ; likely to feel stressed,  $\alpha = .88$ ; confidence,  $\alpha = .80$ ; intervene,  $\alpha = .93$ ; and extra effort,  $\alpha = .80$ ). We also obtained internal consistency coefficients for the families within which we placed the items. For the family of severity items (i.e., overall seriousness, disruption to classroom, disruption of friendships),  $\alpha = .79$ ; for the family of treatment items (i.e., learning assistance, medication, and classroom-based behavioral strategies),  $\alpha = .57$ ; for the family of emotional reactions (i.e., upset or bothered, stressed, and confidence),  $\alpha = .59$ ; for the family of anticipated behavioral reactions,  $\alpha = .28$ .

Finally, we conducted between-subjects ANOVAs to test each question for order effects, which were non-significant ( $p$ ’s > .17). These findings suggest that the order in which the four vignettes appeared did not influence ratings. We also tested for differences in ratings on each question across the four vignettes using within-subjects ANOVAs, which were also non-significant ( $p$ ’s > .13). These findings indicate that, as intended, the vignettes were perceived similarly.

### 2.3. Procedure

This study was approved by the university’s ethics committee and the regional school board. Questionnaire packages, consisting of the questionnaire, a letter of informed consent, and an ADHD reference booklet for use after participation, were distributed to all teachers’ mailboxes (a total of 76 questionnaires) at all participating elementary schools in the school district. Teachers who elected to participate returned completed questionnaires to a confidential box at the school board office where they were collected by the researchers. A total of 36 questionnaires were returned. However, two questionnaires were discarded due to high levels of missing data. These omissions yielded a 47% participation rate. Gender and race of participating teachers (i.e., 88% women, 85% Caucasian, and 15% not identifying their race) matched those of teachers in the school district more generally (i.e., approximately 90% women and 88% Caucasian).

Education students were recruited via announcements in classrooms of compulsory courses that briefly informed students about the nature of the research and the required time

commitment. Two announcements were made in each class, spaced 2 weeks apart. Interested students were presented with a questionnaire package and given two options for its completion: (a) at a time and place of their convenience, with completed forms placed in a secure drop box at the Faculty of Education main office or collected in the following class or (b) immediately in a pre-booked room at the university. Students were given both options in order to maximize flexibility and increase participation rates. Thirty-two questionnaires were completed from a total number of 100 eligible enrolments. Thus, the participation rate was 32% from the entire eligible sample; however, given class attendance of approximately 75%, the nominal participation rate was approximately 43%. Gender and race profiles of participating education students (i.e., 84% women; 88% Caucasian, 6% Asian, and 6% Aboriginal) matched those of the elementary education program at the university (i.e., approximately 85% women; 85% Caucasian and the remainder predominantly Asian, Aboriginal, and Indian). As compensation for their time and effort, each participant received a booklet with information targeted towards understanding ADHD and dealing with ADHD behaviors in the classroom. In addition, the elementary school of each participating teacher received a copy of a book about ADHD (Flick, 1998).

As described in the Methods section, the questionnaire that each participant received consisted of written vignettes that described children with symptoms that met *DSM-IV* criteria for ADHD diagnosis (APA, 2004). A statement that the child had been assessed and “diagnosed with ADHD” was randomly assigned to half of each participants’ vignettes. This label information was absent for the other half of vignettes. All participants read and responded to both labeled and unlabelled vignettes. Half of participants read vignettes with girls’ names and feminine pronouns, and half read the same vignettes but with boys’ names and masculine pronouns. Thus, all participants read about boys or girls with ADHD symptoms (i.e., as the between-subjects factor), a random half of whom were labeled as having “ADHD” (i.e., as the within-subjects factor). We used written rather than videotaped vignettes because the former decreases burden on participants who can complete a written vignette measure at their leisure rather than make an appointment, thereby increasing participation rates and sample representativeness, and because research that has compared parents’ perceptions of and reactions towards children with ADHD has found that responses are highly similar across written and videotaped stimuli (Johnston & Freeman, 1997). After reading each vignette, participants completed a series of questions described in the measures section and can be seen in the Appendix.

#### 2.4. Data Analysis

We considered conducting a multivariate analysis of variance (MANOVA) model, an analytic procedure that allows for multiple dependent variables in one model, for each family of tests rather than a multiple analysis of variance (ANOVA) procedure. However, the omnibus tests in MANOVA do not provide adequate type-I error control (i.e., they fail to adequately control for falsely rejecting the null hypothesis in favor of the alternative hypothesis; Jaccard & Guilamo-Ramos, 2002). Specifically, the MANOVA strategy controls for type-I error when the complete null hypothesis is true; however, it does not provide adequate control when the partial null hypothesis is true (i.e., when the null hypothesis is accepted for only some of the dependent variables). To overcome this problem, Jaccard and Guilamo-Ramos (2002) recommended

alternative family-wise error control methods, such as the Holm–Bonferroni step-down procedure. This approach was adopted here and is explained below.

Holm (1979) modified the Bonferroni method to maintain family-wise error rates at the desired alpha (type-I error) level and to offer more power than the traditional Bonferroni approach (and thus makes fewer type-II errors). In this method, a desired alpha level is specified for a family of contrasts. (The standard .05 was used.) The individual contrasts within the family are conducted, and their significance levels (observed  $p$  values) are ordered from smallest to largest. The contrast with the smallest  $p$  value is evaluated for significance against the desired alpha level for the family of tests divided by the total number of tests in that family. Therefore, in this study, the most significant contrast for each family was evaluated for significance at  $.05/k$ , where  $k$  represented the number of tests in that family. If the contrast was significant (i.e., the null hypothesis is rejected), then the contrast with the next smallest observed  $p$  value was evaluated against the desired alpha level divided by the number of remaining contrasts in that family (i.e.,  $.05/[k-1]$ ). This process is repeated such that the contrast with the next smallest  $p$  value is evaluated for significance at the desired alpha level divided by the number of remaining contrasts (i.e.,  $.05/[k-2]$ ). Contrasts continue until one is nonsignificant, after which all-remaining tests are deemed nonsignificant.

### 3. Results

#### 3.1. Descriptive statistics

Participants' ratings of the 11 questions asked after the four vignettes produced the dependent variables. Ratings were first rescaled where necessary such that higher scores indicated more intense or extreme responding (because about half of the 11 questions were reverse-scored). Dependent variables were placed into families based on logical clusters for the purpose of error control during analyses and to aid in the interpretation of results, but no further composite scores were computed. Dependent variables were examined for excessive skew and kurtosis and for outliers. All values were within normal limits. Means and standard deviations are presented in Table 1.

#### 3.2. Tests of main research questions

The 11 dependent variables were each submitted to a 2 (Label: Present vs. Absent, within-subjects factor)  $\times$  2 (Evaluator: Student vs. Teacher, between-subjects factor)  $\times$  2 (Gender of Vignette: Boy vs. Girl, between-subjects factor) ANOVA. The standard effect size for ANOVA models, eta squared ( $\eta^2$ ), is the reported effect size estimate. The following guideline for interpreting  $\eta^2$  may be used: *small* = .01–.05; *medium* = .06–.13; and *large* =  $\geq$  .14 (Cohen, 1988). The power to detect a moderate effect size in our study was 81% (Cohen, 1988). Next, we consider each family of dependent variables separately.

*Evaluations of social/behavioral problems.* For the question “How serious are [child name]’s behavior problems?”, there was a main effect of Label,  $F(1,62)=11.51$ ,  $p=.001$ ,  $\eta^2=.15$ , such that participants viewed vignettes with an ADHD diagnosis as more serious than those without the label. There was also a main effect of Evaluator,  $F(1,62)=18.66$ ,  $p<.001$ ,  $\eta^2=.20$ , such that education students ( $M=6.97$ ,  $SD=.18$ ) saw the behaviors

Table 1  
Distribution of participants' ratings of the vignettes by ADHD label.

Vignette question	"ADHD" label		No label		Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
<i>Evaluations of social/behavioral problems</i>					
Seriousness of Problems	6.65	0.27	6.14	0.31	1.75***
Disruption to class	7.00	0.30	6.66	0.34	1.06**
Disruption to friendships	7.13	0.26	6.74	0.28	1.16**
<i>Willingness to aid in treatment</i>					
Learning assistance	7.53	0.33	6.98	0.35	1.64***
Medication	4.35	0.51	3.85	0.51	.98**
Changes to classroom	7.96	0.30	7.68	0.34	.87*
<i>Emotional reactions to child</i>					
Upset/bothered	4.44	0.52	4.16	0.37	.62*
Stressful	4.77	0.34	4.48	0.38	.80*
Confidence	4.75	0.38	5.05	0.37	.80*
<i>Behavior towards child</i>					
Intervene	3.47	0.34	3.57	0.35	.29
Put in time and effort	7.42	0.28	7.28	0.27	.51

Note. ADHD=attention-deficit/hyperactivity disorder; higher numbers indicate more of the construct measured. Asterisks indicate a significant difference of "ADHD" label.

\* $p < .05$ , \*\* $p < .01$ , and \*\*\* $p < .001$ .

depicted in the vignettes as significantly more serious than teachers ( $M = 5.86$ ,  $SD = .18$ ). No other main effects or interactions were significant ( $p$ 's  $> .11$ ).

For the question "How likely is [child name] to disrupt or interfere with your classroom?" there was a main effect of Label,  $F(1,62) = 10.33$ ,  $p < .01$ ,  $\eta^2 = .10$ , such that participants rated the labeled child as more likely to be disruptive. No other main effects or interactions were significant ( $p$ 's  $> .07$ ).

For the question "How much would [child name]'s behavior disrupt his friendships?", there were main effects of Label,  $F(1, 62) = 8.55$ ,  $p < .01$ ,  $\eta^2 = .11$ , such that all participants saw the behavior of the labeled child as more disruptive to friendships, and Evaluator,  $F(1, 62) = 11.22$ ,  $p < .01$ ,  $\eta^2 = .12$ , such that education students ( $M = 7.33$ ,  $SD = .18$ ) saw the behavior of children in vignettes as significantly more likely to disrupt friendships than teachers ( $M = 6.54$ ,  $SD = .17$ ). No other main effects or interactions were significant ( $p$ 's  $> .05$ ).

*Willingness to aid in treatment.* For the question "How much would you be willing to take the time and effort needed to help implement learning assistance/educational support for [child name]?", there was a main effect of Label,  $F(1,62) = 14.35$ ,  $p < .001$ ,  $\eta^2 = .14$ , such that there was a greater reported willingness to help implement learning assistance and educational support for a labeled child. No other main effects or interactions were significant ( $p$ 's  $> .05$ ).

For the question "How much would you be willing to take the time and effort needed to help implement medication for ADHD for [child name]?", there were main effects of Label,  $F(1,61) = 8.84$ ,  $p < .01$ ,  $\eta^2 = .09$ , and Evaluator,  $F(1, 61) = 6.36$ ,  $p < .02$ ,  $\eta^2 = .07$ . All participants were more willing to help implement medication services for labeled children; however, education students ( $M = 3.48$ ,  $SD = .35$ ) were significantly less willing to aid in

implementing medication for children in vignettes than teachers ( $M=4.70$ ,  $SD=.33$ ). No other main effects or interactions were significant ( $p's > .07$ ).

For the question “How much would you be willing to take the time and effort needed to make changes to the classroom environment (e.g., e.g., rewards, daily reports, sticker charts) for [child name]?”, there was a main effect of Label,  $F(1,62)=6.56$ ,  $p < .02$ ,  $\eta^2 = .08$ , such that participants were more willing to help implement changes in the classroom environment for a labeled child. This main effect was qualified by a significant Label  $\times$  Evaluator  $\times$  Gender interaction,  $F(1,62)=16.03$ ,  $p < .001$ ,  $\eta^2 = .18$ . Examination of the data using LSD post-hoc tests suggests that teachers were more willing to help implement changes to the classroom environment for labeled boys ( $M=8.34$ ,  $SD=.29$ ) than non-labeled boys ( $M=7.89$ ,  $SD=.33$ ), but there was no difference between labeled ( $M=8.13$ ,  $SD=.31$ ) and non-labeled ( $M=8.25$ ,  $SD=.34$ ) girls. Yet, education students were more willing to help implement changes for labeled girls ( $M=7.86$ ,  $SD=.32$ ) than non-labeled girls ( $M=6.89$ ,  $SD=.36$ ), but there was no difference between labeled boys ( $M=7.53$ ,  $SD=.30$ ) and non-labeled ( $M=7.72$ ,  $SD=.34$ ) boys. No other main effects or interactions were significant ( $p's > .20$ ).

*Emotional reactions to child.* For the question “To what extent would you be upset or bothered by [child name]’s behavior?”, there were main effects of Label,  $F(1,62)=6.32$ ,  $p < .02$ ,  $\eta^2 = .06$ , and Evaluator,  $F(1,62)=6.96$ ,  $p = .01$ ,  $\eta^2 = .07$ . All participants reported being more bothered by labeled than non-labeled children, and education students ( $M=4.25$ ,  $SD=.24$ ) were less bothered by the behaviors of children in the vignettes than teachers ( $5.16$ ,  $SD=.25$ ). No other main effects or interactions were significant ( $p's > .07$ ).

For the question “How stressed would you feel by [child name]’s behavior?”, there was a main effect of Label,  $F(1,62)=3.80$ ,  $p < .05$ ,  $\eta^2 = .04$ , such that participants reported feeling more stress when faced with a labeled child than a non-labeled child in a vignette. No other main effects or interactions were significant ( $p's > .05$ ).

For the question “How confident are you that you could handle [child name]’s problems without assistance?”, there were main effects of Label,  $F(1,62)=5.45$ ,  $p < .03$ ,  $\eta^2 = .05$ , and Gender,  $F(1,62)=6.44$ ,  $p < .02$ ,  $\eta^2 = .06$ . Participants reported less confidence in dealing with a labeled child and less confidence in dealing with girls’ ( $M=4.46$ ,  $SD=.26$ ) than boys’ ( $M=5.36$ ,  $SD=.25$ ) problems. No other main effects or interactions were significant ( $p's > .05$ ).

*Behavior towards child.* For the question “How likely would you be to intervene with versus not take action for [child name]’s behaviors?”, there was a main effect of Evaluator,  $F(1,62)=7.33$ ,  $p < .01$ ,  $\eta^2 = .09$ , such that education students ( $M=3.12$ ,  $SD=.22$ ) reported they would be less likely to intervene with children’s behavior problems than teachers ( $M=3.94$ ,  $SD=.21$ ). There was no significant main effect of Label ( $p > .37$ ) nor any other significant main effects or interactions ( $p's > .06$ ).

For the question “How much time and effort would you put in for [child name]?”, there was no main effect of Label ( $p > .11$ ) nor any other significant main effects or interactions ( $p's > .08$ ).

### 3.3. Impact of participant status

To test the possibility that the differences between education students and teachers were due to age differences between the groups, we ran supplementary analyses. First, we

correlated participants' age (in years) with each of the 22 rating scales (i.e., 11 ratings for labeled vignettes and 11 ratings for non-labeled vignettes). No correlations were significant for education students ( $r$ s ranging from  $-.01$  to  $.30$ ), and only one was significant for teachers ( $r$ s ranging from  $.08$  to  $-.38$ ), indicating that participants' age was not related to ratings. We also re-ran the ANOVA analyses above using age as a covariate. The results were consistent with those reported above, indicating that age contribute significantly to obtained group differences.

### 3.4. Background factors that predict label bias

Because label bias is the difference between perceptions of someone with versus someone without a label (e.g., Stinnett et al., 2001), we first calculated difference scores for each of the teachers' ratings between labeled and unlabeled vignettes (e.g., seriousness ratings of labeled vignettes minus seriousness ratings of non-labeled vignettes). We then conducted 11 simultaneous linear regression analyses (one for each rating) with teachers' ADHD-specific experience (i.e., the number of children with ADHD whom they have taught) and ADHD-specific training (i.e., the number of hours spent in ADHD workshops or professional development seminars) as predictors. To control for type-1 error, we again used the Holm–Bonferroni step-down procedure. Dependent variables were centered prior to analyses.

*Evaluations of social/behavioral problems.* No regression models were significant in predicting label bias among teachers,  $F$ s (2,28) = .54 to 1.16,  $p$ 's > .25.

*Willingness to aid in treatment.* The overall models for teachers' willingness to aid in treatment programs were all significant,  $F$  (2,28) = 3.85,  $p$  < .02,  $R^2$  = .30 for learning assistance;  $F$  (2,28) = 2.89,  $p$  < .05,  $R^2$  = .13 for medication; and  $F$  (2,28) = 18.63,  $p$  < .001,  $R^2$  = .67 for class-based behavioral strategies. For teachers' willingness to support learning assistance programs and medication, teachers' training on ADHD predicted label bias,  $t$  =  $-3.12$ ,  $p$  < .004,  $\beta$  =  $-.51$  for learning assistance and  $t$  =  $-2.45$ ,  $p$  < .02,  $\beta$  =  $-.36$  for medication. Teachers with greater training on ADHD were less likely to be influenced by a label in making judgments of how much they were willing to support learning assistance programs and medication. For teachers' willingness to support class-based behavioral programs, teachers' experience with children with ADHD predicted label bias,  $t$  =  $-2.24$ ,  $p$  < .03,  $\beta$  =  $-.26$ , as did ADHD-specific training,  $t$  =  $-7.19$ ,  $p$  < .001,  $\beta$  =  $-.82$ , such that teachers with greater experience teaching children with ADHD and more ADHD-specific training were less likely to be influenced by a label in making judgments of how much they were willing to support class-based behavioral programs.

*Emotional reactions to child.* The overall regression models for teachers' emotional reactions were all significant,  $F$  (2,28) = 2.85,  $p$  < .05,  $R^2$  = .24 for stress;  $F$  (2,28) = 3.10,  $p$  < .03,  $R^2$  = .29 for upset; and  $F$  (2,28) = 5.91,  $p$  < .003,  $R^2$  = .40 for confidence. For teachers' reactions of stress, upset, and confidence, teachers' ADHD-specific training predicted label bias,  $t$  = 2.16,  $p$  < .04,  $\beta$  = .38 for stress;  $t$  = 2.65,  $p$  < .03,  $\beta$  = .43 for upset; and  $t$  = 4.08,  $p$  < .001,  $\beta$  = .63 for confidence, such that teachers with greater ADHD training were more likely to be negatively influenced by a label in making judgments of how stressed, upset, and confident they would feel.

*Behavior towards child.* No regression models were significant in predicting label bias among teachers,  $F_s(2,28) = .73$  and  $1.10$ ,  $p$ 's  $> .37$ .

#### 4. Discussion

Given the prevalence of ADHD and significant classroom challenges that are presented by these children, it seems likely that teachers would develop expectations about children who have this disorder. Consistent with this hypothesis, we found that teachers and education students reported different perceptions of an identical child depending on whether or not they were labeled “ADHD.” Specifically, the ADHD label increased participants’ willingness to take extra time and effort to help other professionals implement treatments, although it did not increase participants’ willingness to take extra time and effort on their own. Furthermore, labeling a child as having ADHD increased participants’ negative expectations about the severity of the child’s problems, elicited more negative emotions, and decreased participants’ confidence in their ability to instruct the child.

There were also significant differences between education students and teachers. Education students viewed ADHD behaviors as more serious and yet were paradoxically less bothered by the behaviors, less likely to intervene, and less willing to aid in medication treatment. Furthermore, we examined the interaction between child gender and an “ADHD” label. We found that gender only had an impact on participants’ confidence, with participants more confident handling behavior problems exhibited by boys than girls. There were no interactions between gender and the “ADHD” label.

Finally, background factors that are generally found to influence mental health stigma (i.e., ADHD-specific training and experience teaching children with ADHD) predicted the degree to which teachers’ ratings were biased by an “ADHD” label. Experience teaching children with ADHD was influential in decreasing the extent of label-bias in teachers’ willingness to support class-based behavioral programs. Training showed a broader influence. Teachers with more ADHD-specific training were less influenced by the “ADHD” label in ratings of their willingness to support all treatment interventions, although they were more influenced by label when rating their emotional reactions. Below we discuss our findings in more detail, beginning with the primary aims of the project.

##### 4.1. Impact of label on participants' expectations, emotions, and behaviors

Labeling a child as having “ADHD” had a significant effect on 9 of the 11 questions. First, participants had more negative expectations of children in ADHD labeled vignettes, rating them as having more serious problems and their behavior as more disruptive to the classroom and their peer relationships. It is possible that label increases the perceived severity of problems due simply to the knowledge that the child has received psychiatric or psychological care (Schomerus, Matschinger, & Angermeyer, 2009). A related possibility is that teachers assume that children who have been recognized by psychiatrists or psychologists as having a “disorder” are more severely affected than those who are not (Schomerus et al., 2009). This result could have both positive and negative consequences for children with an ADHD diagnosis in the classroom. One possible benefit is that viewing labeled children as more seriously impaired in multiple

domains may motivate teachers to seek and support professional services (Ohan et al., 2008). This notion is consistent with our finding that a label also increased participants' willingness to aid treatment and similar to previous research by Ohan et al. (2008) who found that teachers who anticipated negative outcomes for children with ADHD symptoms were more likely to seek mental health services for these children. However, viewing children as more impaired based on knowledge of a diagnosis may also have negative ramifications. Research shows that first impressions (especially negative ones) are difficult to change (Downey & Christensen, 2006). To the extent that teacher's expectations can become self-fulfilling prophecies for children (e.g., Madon et al., 1997; McKown & Weinstein, 2008; Rist & Harrell, 1982; Rosenthal & Jacobson, 1968), the greater negativity engendered by the label "ADHD" may have serious and long-term consequences for children. For example, in their recent review of research on the impact of teacher factors on children with ADHD, Sherman, Rasmussen, and Baydala (2008) concluded that teachers with positive attitudes towards children with ADHD increase the children's success (and vice versa). This finding suggests that an important avenue for future research will be to investigate ways of mitigating or changing teachers' expectations of these children, especially in the presence of a diagnosis.

In addition to increased expectations of social and behavioral problems, participants reported being significantly more stressed and upset by labeled children as well as less confident in managing their behaviors. Notably, studies suggest that less confident teachers may impede the success of their children (e.g., Gibson & Dembro, 1984) and that low teacher confidence and high stress predicts teacher burnout (Shwarzer & Hallum, 2008). More generally, self-confidence influences decisions made, persistence in the face of obstacles, and level of effort (Bandura, 1995). Considered collectively, then, our findings suggest that more negative emotions and decreased confidence may limit teacher effort and persistence when working with children labeled as having ADHD.

One potential benefit of the "ADHD" label was that it significantly increased teachers' and education students' willingness to aid in implementing treatments. This research was conducted in Canada, where, like New Zealand, there is no formal procedure for treatment-planning on the basis of an "ADHD" diagnosis; rather, children are provided with extra assistance on an "as-needed" basis (Curtis et al., 2006). Thus, teachers assist children as they view appropriate based on the child's needs, which it appears were increased by the "ADHD" label. It is therefore not the case that providing a teacher with an "ADHD" label made them more likely to help because of educational regulations such as those that exist in the United States.

It could be argued that increased willingness to aid in treatment implementation for a labeled child actually reflects a desire not to treat undiagnosed children. For example, an increased willingness to aid in medication treatment for a labeled child may simply reflect participants' unwillingness to give medication to an undiagnosed child. However, the average rating of 3.85 (out of 9) for perceived benefits of medication for unlabeled vignettes indicates that teachers were not overlooking the possible benefits of medication for vignettes without a formal diagnosis. Thus, we instead suggest that the consistent impact of label on increasing participants' willingness to aid in treatment implementation suggests that formal recognition of ADHD symptoms as a psychiatric disorder may be an important factor in gaining extra support from teachers and crystallizing a therapeutic plan in the school system

as recommended by a mental health professional. This suggestion is consistent with past research on treatment acceptability, which has found that teachers view school-based treatments as being equally important for children labeled with ADHD as those labeled with learning and behavioral disorders (Fairbanks & Stinnett, 1997). Teachers' engagement with interdisciplinary teams increases the chance that a child with ADHD will experience success (Sherman et al., 2008). Furthermore, schools are one of the most common sources of services for children (Vitiello & Sherrill, 2007), and they are especially ideal for youth with ADHD because it is a persistent disorder than has many negative ramifications in the school setting (Evans, Serpell, Schultz, & Pastor, 2007). Taken together, this evidence indicates that even a modest increase in willingness due to a diagnostic label may have important ramifications for children. Thus, our results seem to support—at least partially—advocates of psychiatric diagnostic labels who have cited that diagnoses pave the way to therapy and action (Achenbach, 1993; Hardman et al., 1999; Ysseldyke & Algossine, 1990).

Surprisingly, greater willingness to aid in providing professional treatment was not matched by a greater willingness to personally commit more time and effort or intervene more with the child's behavior problems. This discrepancy naturally leads us to question why labels increased teachers' willingness to assist others to help, but not independently help, children in the vignettes. One possible explanation lies in teacher training. Although most teachers report that they try various strategies to deal with ADHD symptoms in the classroom, they also report that they do not necessarily feel that these strategies are effective and that they lack thorough training and the skills needed to modify behavioral interventions (Arcia, Frank, Sánchez-LaCay, & Fernández, 2000; Fabiano & Pelham, 2002, 2003). These findings suggest that the discrepancy may stem from their recognition of the gap between their own skills and training versus those of other professionals. If it is the case, one way to remedy this situation might be to provide teachers with easy-to-access, practical strategies that they can independently implement while still having a school psychologist on-hand to help when modifications are needed (e.g., Atkins et al., 2008).

#### 4.2. *Participant status*

Participants' status as a teacher or education student had a significant impact on about half of the questionnaire items. Previous studies on the impact of "ADHD" label have been based mostly on student samples, with no study directly comparing these two groups (Cornett-Ruiz & Hendricks, 1993; Koonce et al., 2004; Stinnett et al., 2001). The differences obtained in the current study between these groups suggest that care should be exercised when generalizing results from education students to practicing teachers. Specifically, relative to teachers, education students rated children with ADHD symptoms as more disruptive and serious, although they also reported being less bothered by the behaviors, less likely to aid in medication interventions, and less likely to intervene in problem behaviors. The reason for these group differences cannot be known for certain based on the current investigation, although our analyses suggest that teachers' age has no effect. Possible alternative explanations include classroom experience, recency of education, and generational differences. For example, a lack of experience may result in education students being more hesitant or overwhelmed by challenging ADHD behaviors than teachers. Similarly, education students may be less bothered by ADHD symptoms because they are well

informed about the neurobiological causes of ADHD and thus attribute symptoms to causes outside of the child's control rather than to controllable causes (e.g., the child's will or lack of respect). Determining the cause of these group differences, and whether or not this perspective endures over the years or changes as the challenges of teaching children with ADHD in the classroom becomes realized, is an avenue for future research.

#### *4.3. Child gender*

The influence of child gender on participants' ratings of the vignettes was modest. Education students reported a greater willingness to help implement classroom behavioral strategies for girls labeled with "ADHD," whereas teachers were more willing to help implement these strategies for boys labeled with "ADHD." In addition, participants generally reported less confidence in dealing with girls' behavioral problems than those of boys. Neither of these gender-based preferences are consistent with empirical findings, which suggest that girls and boys with ADHD respond similarly to classroom-based strategies (Multimodal Treatment study of ADHD Cooperative Group, 1999) and that both genders present challenges to the classroom (with boys perhaps being more challenging due to greater levels of externalizing behaviors; Gaub & Carlson, 1997). Nevertheless, teachers are more likely to have experience with boys than girls with ADHD because ADHD and its diagnosis, per se, are more prevalent in boys (e.g., Graetz et al., 2005; Schneider & Eisenberg, 2006). This greater exposure may result in teachers feeling more confident in dealing with boys with this disorder or set of problems. On the other hand, education students, who lack the experience working in classrooms with children who have ADHD, may be more comfortable working with and helping girls because of their shared gender (i.e., most education students were women).

#### *4.4. Background factors that predict label bias*

We also investigated how teachers' professional backgrounds influence the degree to which they are influenced by an "ADHD" label. Past research on mental health stigma has identified two key factors that influence stigmas held towards individuals with a psychiatric disorder: (a) experience with an individual who has the stigmatized psychiatric disorder and (b) specific education about the disorder (e.g., Rüschi et al., 2005). In contrast, we found that teachers' experience with children who have ADHD had limited impact, predicting only the degree to which the label influenced teachers' willingness to support classroom-based behavioral programs. Notably, our study included teachers with a great deal of experience (i.e., an average of 16 years) interacting with a child with ADHD, whereas previous samples have included mostly medical students who have had very limited interactions with people with psychiatric disorders (e.g., Corrigan, Green, Lundin, Kubiak, & Penn, 2001; Rüschi et al., 2005). Thus, experience might be an important factor during the very early career or student stage and become less influential as experience increases or passes a certain point.

On the other hand, ADHD-specific training consistently predicted label bias. Greater teacher training resulted in less impact of labeling on ratings of willingness to support all treatment interventions (i.e., learning assistance, medication, and class-based behavioral changes). This finding suggests that workshops and professional development seminars on

ADHD may be effective in garnering the support of teachers to administer treatments for children who have symptoms of ADHD, regardless of whether or not there is a diagnosis. However, the opposite results were found for teachers' ratings of their emotional reactions (i.e., feeling upset, stress, and confidence). More training about ADHD was linked to a greater negative impact of label on ratings of emotional reactions. This result is concerning, because these results suggest that greater ADHD training may lead teachers to be more emotionally reactive towards children diagnosed with ADHD. This reactivity might be the result of the content presented during workshops, which likely focuses on the difficulties of these children in the classroom and in teacher–child relationships specifically. Consistent with this hypothesis, Vereb and DiPerna (2004) found that teachers' knowledge of ADHD (including questions on negative outcomes and seriousness of the disorder) were more consistently linked to ADHD-specific training than to teaching experience. Future research on the effectiveness of ADHD workshops might benefit by including an assessment of emotional reactions of teachers before and after training and pay specific attention to stress reactions and level of confidence in effectively instructing children with a diagnosis of ADHD.

#### 4.5. *Limitations and future research*

To our knowledge, the present work is the first to examine how disclosing that a child “has ADHD” impacts teachers' perceptions of and emotional reactions to the child, as well as background factors that predict the degree to which this disclosure influences these perceptions and emotions. As with any study, our work has limitations. First, sample sizes were relatively small and comprised only elementary school teachers and education students. Although the generally large effect sizes and representativeness of our samples lends confidence to our results, future research may wish to replicate and extend our work to other populations, both within the education system (e.g., middle- and high-school education students and teachers) and outside of the education system (e.g., parents). In addition, the small sample size particularly limited the power of regression statistics used to identify teachers' background factors that are related to label bias, making replication of these findings necessary before solid conclusions can be drawn. An additional statistical limitation is that our dependent variables consisted of just one assessment item rather than multiple items. The use of only a single item results in a less reliable measurement than would use of a composite formed from multiple items. Still, these items were based on previous research that has shown evidence of reliability and validity (e.g., Ohan & Visser, 2009; Pisecco et al., 2001). Future research might consider including a more thorough assessment of these constructs.

A second limitation is that our samples were heavily biased towards women, who comprised nearly 90% of our groups. This pattern is broadly consistent with teacher samples and the population of elementary school teachers and education students, which are mostly women (e.g., Ohan et al., 2008; Koonce et al., 2004). Moreover, re-analysis of our data including only women revealed identical results. However, due to the small numbers of men in our study, the degree to which our results can be extended to male elementary school teachers is not known. The potential relevance of this issue is highlighted by past research showing that male teachers may under-report boys' externalizing behavior and over-report girls' internalizing behavior (Kavanagh & Hops, 1994). These reporting

biases could influence teachers' perceptions of seriousness or willingness to aid in treatment for boys versus girls.

Another limitation is that the vignettes we used described only children with ADHD-combined type (i.e., those with both inattention and hyperactivity–impulsivity). Although most children with ADHD have this subtype, about one-third has only inattentive symptoms (APA, 2000); thus, future research should compare vignettes of children with both subtypes. Furthermore, future research may consider including vignettes of children with ADHD and comorbid conditions, as about half or more of children with ADHD have at least one other disorder. Fourth, the question domains assessed in this study replicated and extended previous research but could be further extended by greater attention to neutral or positive assessments (e.g., questions assessing how the child might perform in the classroom or how the child might fit in socially). Fifth, it might be argued that our use of vignette methodology limited the ecological validity of the findings. Although this argument is true, the methodology allowed us to maintain control over extraneous variables that might have otherwise threatened internal validity. Moreover, past research examining mothers of children with ADHD suggests a fair measure of overlap between responses to vignettes and actual responses to children's behavior (e.g., Johnston & Freeman, 1997). Other factors that were not measured may also have influenced results, such as social desirability (i.e., the tendency to report in ways that participants feel are socially condoned). Although past research has not looked at how social desirability impacts teachers' responding, including diagnostic label studies, research on parents suggest that social desirability does not play an integral role on parents' reports of their parenting behavior or their child's adjustment (Johnston, Scoular, & Ohan, 2004).

Future research will also benefit from considering the question of label in countries where such a label carries legal requirements, such as in the United States. These legal requirements mean that teachers in the United States must put in extra time and effort to support children with this diagnosis, which may also result in teachers forming different beliefs about these children. Curtis et al. (2006) found that, relative to teachers in New Zealand where no legal guidelines exist for a diagnosis of ADHD, teachers in the United States rated medication and behavioral interventions as more acceptable for ADHD. It is therefore possible that teachers in the U.S., upon finding out about an ADHD diagnosis, will have different perceptions and behaviors towards these children than in countries like Canada and New Zealand.

An additional avenue for future research includes consideration of the interplay between label of "ADHD" and other variables that teachers potentially consider when forming expectations and reactions to children with ADHD. For example, the duration of the behavior problems and the severity of the ADHD symptoms may over-ride teachers' impressions formed on the basis of the "ADHD" label. In general, greater behavior problems in children with ADHD lead teachers to make more negative ratings of ADHD symptoms (Freeman, Johnston, & Barth, 1997), especially for boys (Jackson & King, 2004). As a result, the presence of behavior problems could make the meaning of the "ADHD" label less important than in the absence of behavior problems (such as was the case in the present study). It is also possible that knowledge that prior attempts to treat a child with ADHD have failed or been successful will supersede or interact with "ADHD" label information for a similar reason. That is, knowledge of treatment failure may imply more serious behavior problems, whereas knowledge of treatment success may imply less serious behavior problems. Either way, this





vignettes were identical. Questions included the appropriate child's name but were otherwise identical to those following the first vignette example.

Alexander is 7 years old. His parents say that he is a very energetic child, and are concerned that his high activity seems to be affecting his schoolwork. His teacher also describes Alexander as going from one activity to the next, and says that he is restless in class and is constantly leaving his seat. His teacher says that even when he is seated, he chatters away, distracting the students around him. Alexander's teacher also says that he could do better at schoolwork if he listened more closely to the instructions and reviewed his work before handing it in. His parents refer to him as "scatterbrained" because he is constantly losing his possessions and is forgetful. When playing with others his age, Alexander is impatient and says they are too slow when taking their turn.

*Vignette 3.* Note that for participants who received all female vignettes, female gender nouns and pronouns were used, and Daniel was changed to Danielle; otherwise, the vignettes were identical. Questions included the appropriate child's name but were otherwise identical to those following the first vignette example.

Daniel is 10 years old. His parents and teacher describe him as constantly on-the-go. Daniel's teacher says that he is difficult to teach because instead of listening, he gets distracted by something or starts chatting to another student. In class, Daniel gives answers before listening to the full question, and turns in sloppy work as he rarely takes the time to check it over first. Daniel's parents similarly say that getting him to do chores is a trial as he gets frequently side-tracked and lost in something else. His schoolwork and homework suffer because he doesn't look it over for errors or complete the full assignment. Daniel's school bag and desk are cluttered, and his workbooks and other belongings often get lost. Other students avoid Daniel as he wanders around the room, prattling on during worktime, which gets them in trouble.

*Vignette 4.* Note that for participants who received all female vignettes, female gender nouns and pronouns were used, and Andrew was changed to Andrea; otherwise, the vignette was identical. Questions included the appropriate child's name but were otherwise identical to those following the first vignette example.

Andrew is 9 years old. Andrew's parents say that getting him to do chores is tough because he either avoids them or becomes sidetracked, unless they constantly supervise him. His teacher says that Andrew's schoolwork is poor because he either rushes to complete it or doesn't follow instructions. His teacher also says Andrew is constantly talking and doesn't listen to what is said. He often answers talks over others, and has a hard time staying quiet. Andrew consistently loses his workbooks and belongings, and is often late to start a task because he has misplaced what he needs. Andrew is hardly ever still; if he is not banging on the desk with his pencils, he is wandering around the room trying to talk to students. Peers avoid Andrew because he pesters them to hurry or tries to take their turn.

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