Seen but not heard: School-based professionals' oversight of autism in children from ethnic minority groups

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ABSTRACT

Previous studies have shown that ethnic background hinders clinician detection of autistic features in children from non-western minority groups. The use of a structured instrument during evaluation of these children can reduce the risk of hindered detection. The aims of the current studies were to establish the extent of school-based professionals' involvement in detecting autism and to replicate earlier findings of autism detection amongst school mentors. Results showed that school-based professionals were reported to be the first to suspect autistic features in 20% of children later diagnosed with autism. Additionally, school-based professionals refer to autism more often when judging children from majority than children from minority groups. However, using a structured instrument did not eliminate this bias. Providing these professionals with culture-sensitive education may help maximise their involvement in detecting autism amongst children from *all* ethnic backgrounds.

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1. Introduction

An autism spectrum disorder (ASD) is a complex lifelong neuro-developmental condition with detrimental effects on one's social functioning. An ASD is characterised by deficits in social interaction and communication as well as unusually narrow interests and activities (American Psychological Association (APA), 2013). The early identification – and diagnosis of ASDs is vital for implementing early interventions which are essential for the well-being of individuals with an ASD (American Academy of Pediatrics (AAP), 2001; Bryson, Rogers, & Fombonne, 2003; Rogers & Vismara, 2008). However, various factors may hamper the detection of ASD symptoms. For example, female gender (Begeer et al., 2013) and low-income (Mandell & Palmer, 2005) are associated with delayed identification. Ethnic background may also complicate the detection of autism. It has, specifically, been shown to delay the detection of autistic features in paediatricians (Begeer, El Bouk, Boussaid, Meerum-Terwogt, & Koot, 2009). However, like most deviant behaviour, autism is often first detected by adults in the child's environment who *subsequently* consult a paediatrician for evaluation (Verhulst & Koot, 1995). Besides parents, school-based professionals are likely to play a role in the detection of psychological problems in children. However, research to date has not investigated school-based professionals' ability to evaluate symptoms of autism in young children. The aim of the current study was firstly, to establish the extent to which school-based professionals contribute towards the

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detection of ASDs in school-aged children and secondly, to examine the influence of children's ethnic background on school-based professionals' perceptions of autistic features.

Children from ethnic minority groups are under-represented within institutions treating autism (Begeer et al., 2009). In particular, minority children in the Netherlands (Moroccan and Turkish) are found to be under-diagnosed with autism in comparison to their native counterparts. This problem may be linked to health-care professional's perceptions of autistic features amongst ethnic minority-group children (Cuccaro & Wright, 1996), as well as their education, which may have been tailored to represent the majority culture (Betancourt, Green, Carrillo, & Park, 2005). However, a simple checklist, asking health-care professionals to consider the likelihood of a number of mental-health disorders, including autism, eliminated biased paediatricians' perceptions (Begeer et al., 2009). Presumably, this checklist encouraged paediatricians to consider the possibility of autism as an explanation for the symptoms as opposed to overemphasising explanations such as cultural differences or problems related to immigrant status. Access to mental-health care for children from ethnic minority groups may thus be hindered by biased clinical judgments. This conclusion is in accordance with other research reporting minority-related discrepancies in public health-care (van Ryn & Burke, 2000; van Ryn & Fu, 2003), and specifically with regards to ASDs (Mandell et al., 2009; Shattuck et al., 2009; Thomas, Ellis, McLaurin, Daniels, & Morrissey, 2007). The detection of ASD symptoms may be increased by using culture-sensitive assessment (El-Ghoroury & Krackow, 2012) or the use of structured instruments (e.g. Honigfeld, Chandhok, & Spiegelman, 2011; Robins, Fein, Barton, & Green, 2001).

The idea that structured instruments facilitate objectivity during the diagnostic procedure is not new; the efficacy of such measures is favourable across the board of diagnostic categories (e.g. Hirschfeld et al., 2000; Reijneveld, Vogels, Hoekstra, & Crone, 2006). Research shows however, that there is great variability in screening and evaluation of children amongst professionals in health-care, with greater tendency to rely on spontaneous judgement as opposed to structured instruments (Sices, Feudtner, McLaughlin, Drotar, & Williams, 2003). Spontaneous judgement may be influenced by choice of diagnostic strategy and knowledge, both of which are related to experience as a health-care professional (Elstein & Schwarz, 2002). Variability in evaluation methods is also likely to be reflected in school environments where there is currently no standard practice for screening of mental-health development (Weist, Rubin, Moore, Adelsheim, & Wrobel, 2007). These findings suggest that (particularly inexperienced) health-care professionals' current evaluation techniques are subject to biases which may influence children's outcomes.

To date, bias towards children with an ASD from ethnic minority groups has been shown only in paediatricians. How other professionals compare to paediatricians is yet to be determined. Receiving an ASD diagnosis can be a long and arduous process. Professionals filter patients along the way thereby managing access to help (Verhulst & Koot, 1995). Alongside paediatricians, general practitioners, psychiatrists and psychologists are involved in the filtering process. These professionals however, are second and even third 'filters'. By the time a child has reached one of these professionals, he has already passed through a *community* filter. Parents are often the first to raise the alarm at a community level but other adults are also in a position to do this. The most significant of these are school-based professionals. Teachers for example, regularly observe and interact with children from an early age and are reliable and accurate informants on their behaviour (Kerr, Lunkenheimer, & Olson, 2007; Verhulst, Dekker, & van der Ende, 1997). School-based *health* professionals are also present at most schools. Amongst them are school mentors who, in the Netherlands, are responsible for monitoring both academic progress and social-emotional well-being of children. The role is, in many respects, comparable to that of the school counsellor in the USA (see Keys, Bemak, & Lockhart, 1998). These professionals are in an optimal position to recognise problematic behaviour early in development and initiate the process of diagnostic assessment where necessary (Zwaanswijk, Van Der Ende, Verhaak, Bensing, & Verhulst, 2005). A recent report addressing school mentors' responsibilities indicated their main tasks as 'evaluating pupils' and 'visiting and liaising with teachers in lessons' (Vrieze & van Gennip, 2007). These descriptions suggest that school mentors work continuously and collaboratively with school teachers to manage problems expressed by children at school.

Research investigating the involvement and accuracy of school-based professionals in detecting ASDs is scarce and non-existent regarding potential ethnic bias in ASD detection. However, Mandell and Palmer (2005) reported education-related spending to be positively associated with ASD prevalence in the USA. The authors hypothesised that this may be related to the contribution of school-based professionals who are able to recognise ASD symptoms in children. The attitude and approach of school-based professionals are thus of great interest for examination. As a *first* and frequent point of contact for children, their objectivity and accuracy is imperative in early identification of ASDs and specifically amongst children from ethnic minority groups.

In the current study, we aimed to determine the number of children for whom ASD is first detected by school-based professionals *and* to compare the age at first detection of an ASD by school-based professionals vs. other ASD detection sources (Study 1). A large national sample of individuals with an ASD was utilised to do this. Once we established the *extent* of school-based professionals' contribution to identifying ASDs in study one, we then examined their *objectivity* when judging children with an ASD from various ethnic backgrounds (Study 2). In doing so we aimed to replicate earlier findings in a sample of paediatricians (Begeer et al., 2009), and also to directly compare our findings with school-based professionals to those of paediatricians. An analogue design was used to examine school-based professionals' perceptions of ASD symptoms in relation to ethnicity. School-based professionals' judgments were measured with an open question (spontaneously) and a checklist (structured instrument). Children from minority groups were expected to elicit fewer *spontaneous* references to ASD than children from the majority group. However, *structured* ratings of ASD were not expected to differ between child from ethnic minority groups and those from the majority group.

2. Method: Study 1

2.1. Participants

Data were obtained from 1537 children (aged 1–18) with an ASD as part of a survey that had been distributed to the members of the Dutch Autism Society (Nederlandse Vereniging voor Autisme; NVA, see also Begeer et al., 2013). 1295 (84%) participants were male and 242 (16%) female. Surveys were completed by parents ($n = 1484$), family member ($n = 31$) or individuals with an ASD themselves ($n = 22$). Thirteen cases were excluded from analyses due to missing information regarding age at- and source of ASD detection. The sample represents 8% of the society's total members and members of the NVA represent the general population of individuals with an ASD in the Netherlands (Venderbosch, Wijnker-Holmes, Stekelenburg, & Rem, 2008). The distribution of age, subtypes of ASD, cognitive ability and gender in this sample was in accordance with figures reported from international epidemiological studies (Centers for Disease Control (CDC), 2012). While data of socio-economic status is not available from this sample, all 12 provinces of the Netherlands were equally represented. Ten respondents were randomly allocated book prizes to the value of 50 Euros in return for their participation.

2.2. Materials

The survey was developed by the NVA to examine how diagnostic procedures, treatment, daily functioning and education are experienced by those with autism in the Netherlands. The survey included 53 questions addressing issues such as the diagnostic process, treatment, residential situation, schooling and employment. To examine school-based professionals' involvement in the detection of ASDs in children a single item was used which asked respondents to report who first raised suspicions about the possibility of their child having an ASD (*Source of ASD detection*). Participants responded freely. In addition, items recording the age at which ASD was first detected and the age at which ASD diagnosis was received were used. All open responses to *source of ASD detection* item were coded as ASD having been first detected by school-based professionals (1), by parents (2), by paediatricians (3) or another source (0). Examples of 'other' sources of detection include family members, speech therapists and physiotherapists. The group 'school-based professionals' consisted of responses which had indicated school mentors *or* teachers as ASD source of detection because of their collaborative relationship.

3. Results

In 282 (18%) children, an ASD was first detected by school-based professionals. Of the remaining 82%, an ASD was first detected by parents in 691(45%) cases, paediatricians in 45 (3%) cases and by 'other sources' in frequent contact with the child in 519 (34%) of cases. School-based professionals' involvement in the detection of ASDs was evident in children at all school levels: An ASD was first detected by 96 (34%) of pre-, 146 (52%) of primary- and 4 (1%) of secondary school-based professionals. Thirty-six (13%) ASD cases were reported as detected by school-based professionals but were not reported as specific to any school level. Overall, the average age of first ASD detection was 5.28 years ($SD = 3.28$). Welch's F test for unequal group variance revealed that ASDs are detected significantly earlier by parents than by school-based professionals ($F(2, 1527) = 16.05$, $p < .05$). The mean age of detection by parents was 4.78 years ($SD = 3.28$), and 5.33 years ($SD = 2.70$) by school-based professionals.

4. Method: Study 2

4.1. Participants

4.1.1. School mentors
Fifty school mentors (92% women) from schools nationwide responded to an appeal for participants placed in the monthly newsletter of the Dutch National Union of School Mentors (Landelijke Beroepsgroep voor Intern Begeleiders; LBIB). Mean age of participants was 50 years ($SD = 7.94$, range = 26–60 years) with a reported average of 11 years ($SD = 8.14$, range = 1–36) of experience as a school mentor. In addition to their school mentor role, 32% of participants were currently working as primary school teachers or had worked as one prior to training as a school mentor. Ninety-six percent of participants were Dutch natives; the remaining 4% were German-Lebanese- ($n = 1$) and Indonesian- ($n = 1$) Dutch citizens. The reported mean age and sex distribution reflects that of the total members of the union whereby mean age is 42 years and 91% of all members are women. Ethical approval was granted for this study by the ethical committee of the VU University, Amsterdam.

4.1.2. Paediatricians
Eighty-two paediatricians (83% women) were recruited in an earlier study through the Dutch Physician Child Health-care Society. See Begeer et al. (2009) for detail on this sample.

4.2. Materials and procedure

School-based professionals evaluated children presenting symptoms of an ASD during an online survey consisting of six vignettes. By using an analogue design we were able to exercise tight control over our variables of interest thereby isolating the effects of ethnicity on subsequent judgement. Each vignette described typical cases of young boys with an ASD that school-based professionals may encounter during their routine work. All vignettes were written in collaboration with psychologists and psychiatrists who work with children with ASDs. Included in the descriptions of the boys were age, developmental level, family situation and daily problems. Most importantly, the vignettes differed by ethnic background to include two western (European) majority cases (both Dutch), two western (European) minority cases (English and French) and two non-western minority cases (Moroccan and Turkish, reflecting the major non-western minority groups in the Netherlands). The ethnic background of the child presented was varied independently of the vignette content. In addition to the varying ethnic background, vignettes varied by severity of the ASD described to include one, two or three autism features. These features were based on the three characteristic behaviours of ASDs (social impairments, communicative impairments or stereotypical interests and behaviours; (APA, 2013)). The combination of ethnic background (2 Dutch × 2 western minority × 2 non-western minority) and severity of ASD (2 one × 2 two × 2 × three features) resulted in a total of 36 possible vignettes. In a design which randomised both ethnicity and severity of the vignette, each participant received six vignettes to include two Dutch, two western minority and two non-western minority backgrounds. Vignettes used in this survey were identical to those used by Begeer and colleagues (2009) with a sample of paediatricians and are available from the first author.

Immediately after vignettes were read, a series of questions were presented to participants. Spontaneous judgments of ASD were measured with the single item "What is the matter with this child?" Participants responded freely. The spontaneous judgement always preceded the structured instrument. Structured judgments were recorded using a checklist which presented a table of nine explicit diagnostic categories (e.g. 'Attachment Disorder', 'ADHD', 'Autism Spectrum Disorder'; see Appendix for full list of diagnostic categories); Participants were asked to rate the likelihood of each category applying to the child described in the vignette. To finish, demographic information about participants and the number of years experienced as a school mentor was requested.

All spontaneous responses to the vignettes were dichotomised as having referenced an ASD (1) or other disorder/problem (0). Based on these responses, frequencies of references to ASDs were calculated by severity (i.e., vignette pairs presenting 1, 2 or 3 features) and by ethnic background (i.e., vignette pairs presenting Dutch, western (European) minority or non-western minority). Structured judgement likelihood ratings of ASDs were measured on a 5-point scale ranging from 'very unlikely' (1) to 'very likely' (5). Mean estimates for ASDs were calculated by severity (i.e., vignette pairs presenting 1, 2 or 3 features) and by ethnic background (i.e., vignette pairs presenting Dutch, western minority or non-western minority). Procedure used in this study is identical to that used in an earlier study with a sample of paediatricians, see Begeer et al. (2009) for detail.

5. Results

5.1. School-based professional ASD judgement

5.1.1. Effects of ASD severity on spontaneous and structured judgments

The distribution of vignettes across participants was approximately equal where Dutch majority, western minority and non-western minority group vignettes were presented 100, 101 and 99 times, respectively. Preliminary analyses were conducted to examine the effects of varying ASD severity on school-based professionals' general ability to detect ASDs. Cochran's Q test for related samples with binary data confirmed that spontaneous references to ASD systematically increased as the number of autism features presented increased, $\chi^2 (2) = 20.05$, $p < .001$. ASD was referred to in 34%, 44% and 76% of cases presenting 1, 2 or 3 autism features, respectively. Friedman's related samples ANOVA showed this effect was replicated in judgments of ASD that were made using the structured instrument, $\chi^2 (2) = 38.77$, $p < .001$. Mean likelihood ratings for ASD were 2.78 ($SD = .79$) (one autism feature), 2.95 ($SD = .87$) (two autism features) and 3.68 ($SD = .73$) (three autism features), see Table 1. Results show school-based professionals are able to recognise varying degrees of ASD independent of ethnic background.

5.1.2. Effects of ethnic background on spontaneous and structured judgments

Cochran's Q test further indicated that ethnic background influenced the frequency of spontaneous references to ASDs, $\chi^2 (2) = 10.11$, $p < .01$. In comparison to both minority group vignettes, Dutch majority group vignettes elicited more spontaneous references to ASDs, $\chi^2 (1) = 5.53$, $p < .05$, and $\chi^2 (1) = 8.16$, $p < .001$, respectively. ASD was referred to in 72% of Dutch vignettes, 48% of western minority vignettes and 44% of non-western minority vignettes. Contrary to expectations, ethnic background also had a sizeable effect on structured judgments of ASDs, $\chi^2 (2) = 14.41$, $p < .001$. Wilcoxon's test revealed Dutch vignettes were more likely to be rated indicative of ASDs than both western minority group vignettes, $Z = -2.21$, $p = .05$, and non-western minority group vignettes, $Z = -3.44$, $p < .001$. Mean likelihood ratings of ASDs were 3.45 ($SD = .88$) (Dutch majority background), 3.03 ($SD = .96$) (western minority background) and 2.95 ($SD = .82$) (non-western minority background), see Table 2.

Table 1

Study 2 frequencies (%) of spontaneous references and mean likelihood ratings (SD) for autistic spectrum disorders by severity.

	One ASD feature	Two ASD features	Three ASD features	Total	Test statistic
Spontaneous judgement					
School-based professionals	17 (34)	22 (44)	38 (76)	26 (51)	χ^2 (2) = 20.05***
Paediatricians	8 (10)	17 (21)	23 (28)	16 (20)	χ^2 (2) = 23.66***
Structured judgement					
School-based professionals	2.78 (.79)	2.95 (.87)	3.68 (.73)	3.13 (.80)	χ^2 (2) = 38.77***
Paediatricians	2.56 (.78)	3.28 (.67)	3.54 (.77)	3.12 (.74)	χ^2 (2) = 61.84***

ASD: Autism Spectrum Disorder. Structured judgement scale range 1–5 ('very unlikely' – 'very likely').

*** $p < .001$.

5.1.3. Spontaneous and structured judgments and work experience

A priori hypotheses regarding bias and school-based professionals' work experiences were not made, however, we examined these relationships because of previous links between experience and diagnostic outcomes. Point biserial correlations revealed that spontaneous references to ASDs were not related to participants' years of work experience, experience with ASDs, or experience with children from ethnic minority groups. Pearson's product moment coefficient similarly showed no significant relationships between experience variables and structured judgments (all correlations $p > .1$).

5.2. School-based professional vs. paediatrician ASD judgement

5.2.1. General ASD recognition

Irrespective of ASD severity and ethnic background, school-based professionals spontaneously judged more vignettes as indicative of ASD than paediatricians did, $F(1,129) = 22.21$, $p < .001$. ASDs were referred to in 51% of judgments made by school-based professionals in comparison to 16% of paediatricians' judgments. Structured judgments of ASDs made by school-based professionals and paediatricians did not differ significantly, see Fig. 1.

5.2.2. ASD recognition in ethnic minority groups

School-based professionals' and paediatricians' spontaneous judgments of ASDs also differed as a function of vignette ethnic background, $F(2,128) = 3.02$, $p < .05$. School-based professionals' increased spontaneous reference to ASDs was greater than that of paediatricians when judging Dutch majority compared to both western minority, $F(1,129) = 5.29$, $p < .05$, and non-western minority group vignettes, $F(1,129) = 3.77$, $p = .05$, see Fig. 2. There were no differences between school-based professionals' and paediatricians' structured judgments of ASDs within any ethnic group.

6. Discussion

The objective of study one was to establish the extent to which school-based professionals are involved in the detection of ASDs amongst school children. Data from a large national survey showed that school-based professionals are involved in the detection of ASD symptoms in almost 20 percent of all children with an ASD. Furthermore, those professionals are able to recognise these symptoms across children of all ages beginning with pre-schoolers and continuing through to high-school.

Study two aimed to test whether previous findings of a diagnostic bias towards children from non-western minority groups found among paediatricians (Begeer et al., 2009) holds amongst school-based professionals. We examined the

Table 2

Study 2 frequencies (%) of spontaneous references and mean likelihood ratings (SD) for autistic spectrum disorders by ethnic background.

	Dutch majority	Western minority	Non-western minority	Test statistic
Spontaneous judgement				
School-based professionals	36 (72)	24 (48)	22 (44)	χ^2 (2) = 10.11**
Paediatricians	19 (23)	17 (21)	11 (14)	χ^2 (2) = 8.70*
Structured judgement				
School-based professionals	3.45 (.88)	3.03 (.96)	2.95 (.82)	χ^2 (2) = 14.41***
Paediatricians	3.36 (.85)	3.19 (.82)	3.08 (.85)	χ^2 (2) = 2.36

Western minority includes English and French vignettes; non-western minority includes Moroccan and Turkish vignettes. Structured judgement scale range 1–5 ('very unlikely' – 'very likely').
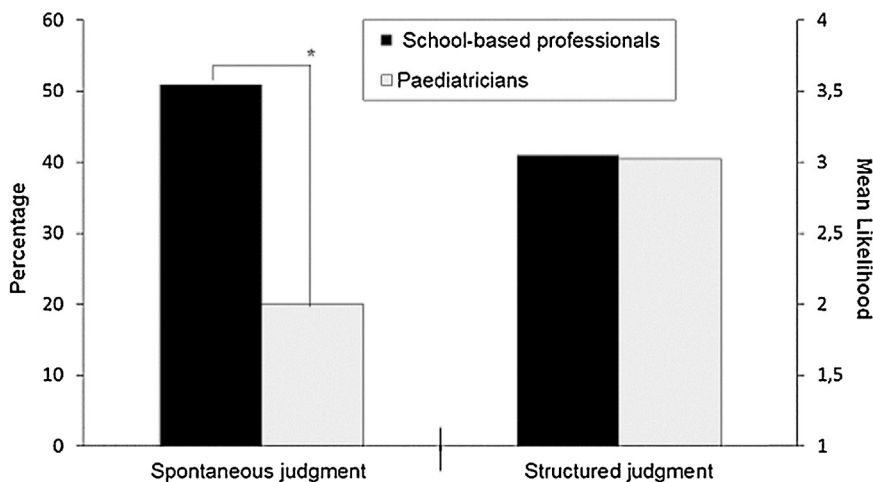
*$p < .05$, **$p < .01$, ***$p < .001$.

Fig. 1. General ASD recognition in school-based professionals vs. paediatricians. *$p < .01$.

likelihood of ASD symptom detection in children from ethnic minority groups in comparison to their majority counterparts when judged spontaneously and with the aid of a checklist. The results of this study confirmed an effect of ethnic background on school-based professionals' perceptions of ASD symptoms whereby children from non-western minority groups are less likely to have ASD symptoms recognised than native children expressing identical symptoms. Contrary to previous findings, this effect was also present in school-based professionals' judgments of *western* minority group children. The bias shown towards both minority groups was not only present when school-based professionals made spontaneous judgments regarding ASD symptoms but also when structured judgments were made using a checklist of diagnostic categories. The effect of ethnic background on judgments cannot be attributed to a general inability to recognise ASDs in school children. School-based professionals displayed diagnostic proficiency when judging children across ethnic backgrounds with varying degrees of ASD, that is, symptom severity positively corresponded with ASD recognition. Diagnostic bias was similarly unrelated to school-based professionals' work experience.

School-based professionals' involvement in the detection of ASDs was evident throughout the school years. It was however, specifically reported to be greatest during primary school (5–11 years; 52% of cases). These findings correspond with previous research emphasising the imperative role of school-based professionals as an early identifier (Zwaanswijk et al., 2005) but also indicate their potential as continuous 'radar', preventing older children with ASD symptoms from going unnoticed when other detection sources fail. Parents for example, suspect ASDs earlier than school-based professionals but fail to detect more than half of cases (55%) later identified as an ASD by a health-care professional. Surprisingly, paediatricians' involvement in ASD detection was also less than might be expected, though this may reflect their role as a 'second filter'. Unlike paediatricians or general practitioners, school-based professionals do not rely on parents to first identify ASD symptoms. They are in the advantageous position to observe children daily as a parent does whilst being able to detect ASDs like a paediatrician. Unfortunately the survey utilised in this study did not register information regarding
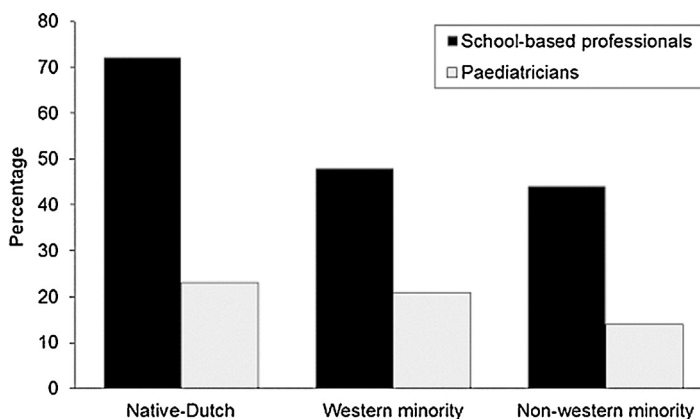

Fig. 2. School-based professionals vs. paediatrician spontaneous judgement of ASD amongst children from Dutch, western and non-western backgrounds.

participants' ethnicity/culture. The degree to which school-based professionals suspect ASDs in children from ethnic minority groups therefore remains unknown. This information is currently being acquired.

Accuracy and objectivity are critical to receiving the correct diagnosis as early as possible during evaluation. Our findings from study two reveal that school-based professionals demonstrate a bias towards children from ethnic minority groups that is hindering the identification of their symptoms. Native majority group children are almost twice as likely to be diagnosed with an ASD by a school-based professional as their non-native peers. The prevalence of ASDs is not believed to be lower in non-western cultures than western cultures (Elsabbagh et al., 2012). These findings therefore imply that the prevalence of undiagnosed and untreated ASDs in children from non-western minority groups alone is likely to be great.

It is not clear why school-based professionals' evaluation of ASD in children from ethnic minority groups did not improve with the use a checklist to structure judgement; this despite literature acclaiming the benefits of using structured measures during evaluation of developmental delays (e.g. Begeer et al., 2009; Honigfeld et al., 2011). However, we are careful to note that school-based professionals may lack diagnostic expertise. Research indicates a positive relationship between health-care professionals' *diagnostic* experience and both quality and speed of decision making during the diagnostic process (Elstein & Schwarz, 2002). *General* work-experience as a school-based professional may also affect judgments. With that said, in the current sample, school-based professionals' structured judgments were unrelated to the number of years in their profession, experience with ASDs or experience with ethnic minority groups. It is important nonetheless, to acknowledge that specialised training in clinical disorders amongst school-based professionals is minimal. The school-based professionals sampled here were school mentors who are broadly orientated. This orientation is however, unable to account for school-based professionals' general bias in the current study; nor can it account for the differences found between school-based professionals' and paediatricians' structured judgement.

School-based professionals' ability to recognise symptoms of ASD surpassed that of paediatricians. Their ability to recognise ASDs is evidently proficient but not culture-sensitive. The fact that a checklist failed to aid school-based professionals' recognition of ASDs in children from ethnic minority groups suggests a more *pervasive* bias than that of paediatricians. This detail is somewhat worrisome considering that school-based professionals in study two estimated 9% of their workload to be with children from non-western minority groups. It is highly likely that problems found in children from ethnic minority groups are erroneously attributed to immigrant status as opposed to an ASD (Begeer et al., 2009). In a school environment where language and communication are central, deficits in these areas are likely to be accentuated for school-based professionals, perhaps overshadowing ASD features to a greater extent than would occur in non-school environments. Unfortunately, the present study did not provide clarification on the issue of language vs. culture influencing school-based professionals' bias. However, school-based professionals also demonstrate a bias towards western minority groups, this indicates that language problems in addition to cultural background may be overshadowing ASD symptoms.

6.1. Study limitations

It is essential that future research disentangles the individual effects of language and culture. An attempt must also be made to establish additional factors influencing health-care – and school-based professionals' perception, such as socio-economic status (SES). Low SES has been correlated with clinicians' low expectations as well as child behavioural problems (van Ryn & Burke, 2000). In addition, ASDs were previously considered to be a 'high class' disorder and as recently as 1996 this perspective was still prevalent amongst paediatricians (Cuccaro & Wright, 1996). Recent figures revealing an over-representation of ASDs in high SES status families in the USA emphasise this notion (Bhasin & Schendel, 2007). If school-based professionals in this study perceived ethnic minority group status as equivalent to low SES this may have contributed to the demonstrated effect. Future efforts in this domain will ensure that SES is controlled for and ideally manipulated to best understand its effect on health-care professionals' judgement. Another potentially influential factor in judgement is professionals' own ethnic background. In the current study we were unable to examine this possibility due to the lack of ethnic diversity in our sample. This characteristic should certainly be taken into consideration in future studies. Additionally, focus should be broadened to examine judgement bias across health-care professionals and in relation to multiple clinical disorders. Finally, the diagnostic bias reported in this study has only been demonstrated within analogue design studies in the Netherlands and the degree to which this transfers to a clinical setting and other countries is unknown.

6.2. Conclusions

Our findings support previous assertions that there is much to be gained from investing in- and implementing health-care professionals in schools (e.g. Cuijpers, Straten, Smits, & Smit, 2006; Dowdy, Ritchey, & Kamphaus, 2010; Weist et al., 2007). With regards to diagnostic bias in the detection of ASDs, directing attention towards professionals' perceptions of patient ethnicity and their societal status may provide insight into current referral and diagnostic practices. This in turn may highlight missing, ineffective, or failed areas within diagnostic training that require targeting. In the first instance, providing school-based professionals with refreshed and specialised knowledge of ASDs relating to cultural diagnostics is not only crucial but urgent in order to maximise their involvement in the detection of ASDs amongst *all* children.

Acknowledgements

Appendix

Diagnostic categories included in the checklist

	Diagnostic category
1	Attachment disorder
2	Parenting problems
3	Neglect
4	Oppositional Defiant Disorder (ODD)
5	ADHD
6	Autism Spectrum Disorder (ASD)
7	Language disorder
8	Adjustment disorder
9	Learning difficulties
10	No Psychopathology
11	Other

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