



Decreased Faux Pas Recognition and Parental Underestimation of Social Deficits in ADHD Children: A Pilot Study

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Abstract

Background

Social skills deficits are common in children with ADHD. Most research has focused on Theory of Mind deficits in ASD patients with less focus on the ADHD child. Although children with ADHD are considered poor reporters of self-social functioning, parents are expected to be more accurate reporters of social underachievement.

Objective

1. To assess social deficits in ADHD youth in a using Faux Pas Recognition tests.
2. To assess accuracy of parent predictions of their child's performance.

Methods

Faux Pas Recognition tests (FPR), adapted from Simon Baron-Cohen, were administered to ADHD children. FPR contain vignettes with and without social faux pas. Subjects were requested to identify the presence/ absence of faux pas, ascribe feelings to characters, and answer control questions. Results were compared to previously published norms. Concurrently, parents were asked to predict their ADHD child's accuracy on these FPR tests and rate their child's level of social development. These results were compared to the individual child's performance. Results were analyzed using t-tests and an ANOVA (analysis of variance).

Results

Sample consisted of 50 patients with ADHD (41 male) aged 7 to 17 years (mean 9.9 ± 2.5 years). ADHD children performed worse on the "absence of faux pas" condition than non-ADHD children (one-sample $t(63)=2.50, p=0.0150$.) A one-way ANOVA showed that the effect of age was significant, $F(3, 46)=6.16, p=0.0013$. Children aged 7 and 8 scored lowest on FPR. Parents grossly overestimated their children's accuracy at perceiving faux pas (paired $t(49)=-5.70, p<0.001$).

Conclusion

ADHD children performed significantly worse on Faux Pas Recognition testing than non-ADHD norms, indicating ADHD children may have substantial difficulties evaluating social

situations. A large discrepancy was noted between subject's Faux Pas Recognition scores and their parents' predictions prompting concerns as to whether parents of ADHD children appropriately anticipate their children's social needs.

Keywords

ADHD; Social skills; Faux pas recognition

Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is a neurobehavioral disorder, diagnosed in childhood, which is typified by inattention, hyperactivity, and impulsivity. As of 2011, over 5.2 million children aged 3 to 17 had been diagnosed with ADHD, with the rate of diagnosis having increased by an average of 5.5% annually between 2003 and 2007 [1]. Such statistics emphasize the relevance of promoting further understanding of ADHD.

Multiple studies emphasize the issue of social deficits in children diagnosed with ADHD in comparison to typically developing peers [2-5]. A definitive cause for this impairment has not been identified, although present findings implicate problems with impulsivity, immaturity, and language skills [6,7]. Another theory for this social deficit is that ADHD children may lack a basic level of social knowledge and will interpret social situations differently from peers. A way to evaluate social knowledge, rather than social performance, is to conduct a Theory of Mind test.

In a study by Baron-Cohen et al. [8] found that although children with high-functioning autism or Asperger's Syndrome were able to perform False Belief tasks successfully; they suffered impairments on higher-level, more involved Theory of Mind tasks, as demonstrated by their performance on a "Faux Pas" test. In this test, a subject is presented a vignette that may or may not contain a socially inappropriate action – a faux pas – that the subject must identify. Success on the Faux Pas test shows a higher level of understanding as subjects are expected to know how a character may feel about an action, even if the action may have seemed harmless to the actor [8].

In the present study, we sought to give a fuller picture of children with ADHD's Theory of Mind capabilities using modified vignettes from Baron-Cohen et al.'s study [8]. We predicted that children with ADHD would produce significantly lower scores on the Faux Pas tasks than their typically developing counterparts. Additionally, we were interested in examining parental anticipation of possible social shortcomings. To that end we anticipated that parents would overestimate their child's ability to recognize social faux pas.

Methods

Study design and setting

This study was approved by the Institutional Review Board of Cohen Children's Medical Center of NY and conducted in a Developmental and Behavioral Pediatrics clinic in a suburban local in the New York metropolitan area. Patients between 7 and 17 years of age with a diagnosis of ADHD were recruited for the study. A chart review was performed to confirm diagnosis of ADHD

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by a Developmental Behavioral Pediatrician using standardized questionnaire rating scales showing significant impairment in both in school and home environments, age and reported race of the child, assess medication status of the child, and review results of previous Kaufman Brief Intelligence Test –Version 2 (KBIT-2) testing. Children were excluded if previous KBIT-2 testing revealed an IQ on either verbal or nonverbal scores less than 85. Consent of the parent and assent of the child was obtained in each case. This study was approved by the IRB. There was no compensation for participation in the study.

Subjects

Fifty two patients coming to the a Developmental Behavioral Pediatrics office for their regular scheduled appointments and their parents, were recruited to participate. All patients who fit criteria during this time period were asked to participate with a 76% acceptance rate. Parents served as subjects for the second part of the study. Sample size was based on feasibility and availability of subjects within the study period. Two subjects were excluded secondary to IQ requirements leaving a final sample of 50 children and parents.

Materials and procedure

Faux pas recognition test-modified: Researchers developed both a modified Faux Pas Recognition (FPR) test as well as a parent faux pas anticipation questionnaire. The FPR was adapted from an earlier study by Baron-Cohen et al. and was comprised of three faux pas vignettes and three control vignettes without social faux pas [8].

Baron-Cohen's Faux Pas Recognition Test was made for primarily British children, so the FPR was adapted by substituting American terminology and phraseology, where appropriate in order to make the vignettes more easily understood by American children. An example is changing "Mum" to "Mom". Each vignette had an average of six sentences and was followed by four questions: one each on faux pas detection, identification, comprehension, and false belief. An example Faux Pas vignette would be:

James bought Richard a toy airplane for his birthday. A few months later, they were playing with it, and James accidentally dropped it. "Don't worry" said Richard, "I never liked it anyway. Someone gave it to me for my birthday."

1. *In the story did someone say something they shouldn't have?*
2. *What did they say if they said something they should not have?*
3. *What did James give to Richard for his birthday?*
4. *Did Richard know that James bought the toy?*

For the Faux Pas Recognition Test, the experimenter read the vignettes to the child subject and recorded the results on the form. A three minute pause between vignette read and child questions was given for parents to record their predictions on their child's answers. Attempts were made to counterbalance the vignettes in order to avoid order effects. The results were compared to those of non-ADHD children, which were determined from already-existing norms from Baron-Cohen (1999)'s research using composite scores [8].

Results

ADHD child subjects

Study sample consisted of fifty patients with ADHD (41 male) aged 7 to 17 years (mean $9.9 \pm 2.5y$). Subtype diagnosis was available for 41

patients, with 58% identified as Combined Type, 5% as Hyperactive/Impulsive and 36% as Predominantly Inattentive, 4% unidentified. Sample identified as 64% white, 20% Hispanic, 10% Black, 4% Asian and 2% mixed. Of the subjects, 46% were medicated for ADHD, 52% were unmedicated, 2% did not answer; for those children that were medicated, Concerta was specifically mentioned for half of the children 50%, Adderall and Vyvanse 24%, Ritalin 16% and other 10%.

Parent subjects

Sample consisted of fifty parents of ADHD children. 82% identified as mothers, 18% as fathers.

Faux pas test results

Results were analyzed using t-tests and an ANOVA (analysis of variance). ADHD children performed significantly worse on the faux pas recognition test than non-ADHD children (one-sample $t(63)=-2.50, p=0.015$). A one-way ANOVA showed that the effect of age was significant with children aged 7 and 8 scoring lowest on FPR ($F(3,46)=6.16, p=0.001$). There were no significant differences noted between medicated and non medicated children or between combined and inattentive subtypes. Gender and hyperactive subtype were excluded from analysis secondary to inadequate numbers. In addition, when analyzed the results show that there are no significant correlations between the weighted Faux Pas score and either the KBIT verbal, nonverbal, or full scale scores.

Parent questionnaire

Parents grossly overestimated their children's accuracy at perceiving faux pas (paired $t(49)=-5.70, p<0.001$).

Discussion

The purpose of our pilot study was to examine social impairment of children diagnosed with ADHD using the Faux Pas Recognition Test as well as to evaluate parental ability to appropriately anticipate their ADHD child's social deficits. Compared to their peers, the ADHD subjects did not recognize social faux pas in the testing situation and this could indicate social unawareness in the "real world." As school aged ADHD children often suffer from a lack of self-esteem stemming from possible academic underachievement, this lack of social awareness could have a compounding factor on poor peer relations and subsequent feelings of low self-worth.

A large discrepancy was noted between subject's FPR scores and their parents' predictions indicating that parents of ADHD children are not appropriately able to anticipate their children's social errors. In recent years the topic of social skills counseling and its benefits have been explored with results showing varying degrees of effectiveness. Based on our study it would appear that basic social skills training for ADHD children with parental understanding of social issues and deficits is essential to the anticipation of possible social errors. To the extent that parents are involved in their children's ADHD treatment, it is important that they fully understand their children's capabilities and impairments. Many parents in our study expressed surprise that their child did not perform as expected during these vignettes. In addition, some parents commented that these tests showed them that social skills needed to be discussed in a more formal environment and topics such as "politeness" needed to be practiced. Any disconnect between a child's abilities and parental expectations can lead to problems with treatment, familial relationships, and overall child self-esteem.

Limitations of our study include the small sample size and small amount of females in the study. Further analysis with a larger sample is needed with direct comparison with other measures of social impairment. Results were not discussed with the children and therefore no feedback regarding why the children answered incorrectly is available. This may be an important avenue for future research as specific social faux pas may not be immediately clear to the ADHD child.

Conclusion

ADHD children showed a marked degree of social impairment during Faux Pas Recognition testing compared to their normal peers. This finding in conjunction with their parents' inability to predict the social misunderstanding of their child raises concerns for the child's abilities' to make and keep friends. Deficits in social understanding should be addressed and discussed at length with the ADHD patient and/or their parent in order to mediate these issues.

Key messages

- ADHD prevalence has been increasing over the past decade.
- While ADHD primary symptoms are hyperactivity, impulsivity and inattention, significant social issues may further impair the lives of ADHD patients.
- This study found that ADHD children scored significantly lower on *Faux Pas Recognition tests* than their typically developing peers. Parents of our ADHD participants significantly overestimated their child's abilities to recognize these faux pas.
- Parental overestimation of a child's social abilities may lead to inadequate social preparation and present further challenges to interpersonal interactions.
- Deficits in social understanding should be addressed and discussed at length with the ADHD patient and/or their parent in order to mediate these issues.

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