Reviewer's report

Title: Differentiating ADHD from Oral Language Difficulties in Children: Role of Movements and Effects of Stimulant Medication.

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Reviewer: Yehuda Pollak

Reviewer's report:

This manuscript presents data regarding the utility of the Quotient® ADHD System to differentiate between children with OLD only and children with OLD+ADHD, as well as to differentiate between children on and off stimulant medication. The manuscript has some merits including clinical significance, replication of findings after a year, and adequate writing. However, it seems that the study suffers several limitations that should be addressed.

Major compulsory revisions:

1. No data regarding sensitivity and specificity is provided. As the authors emphasized the clinical rellevance of the study, showing how many children were correctly classified might be important.

2. The authors did not provide sufficient information regarding specific medications and doses of stimulants, as well as the specific protocol designed for those who take stimulants. For instance, did they complete the task twice at the same day? How long after taking the medication did they complete the task? Why did 4 OLD only receive stimulants? It seems that some of the participants in the medication part of the study were from the OLD only group. Were they included in the 16 participants? Did the other 4 subjects drop out of the study?

3. As the authors acknowledge, the study sample is quite small (N=13 and 20 according to the text, but only 12 and 19 according to table 3). The authors note that attention measures were not significantly different in both groups and the results are not reported. Due to the small sample size it might be that lack of significance reflect more lack of power than lack of effect. Therefore, it is suggested to present the data and calculate the effect sizes.

Minor essential issues:

4. In the last paragraph of the introduction the authors hypothesize that movement measures would differentiate those between the diagnostic groups. It is not clear why it was not hypothesized that the objective attention measures would do so as well.

5. I am not sure Ref 4 provides information regarding the prevalence of ADHD+OLD comorbidity (1st paragraph of the introduction).

6. At the end of page 12 the authors contend that “the Quotient® significantly improves the ability to accurately differentiate OLD from OLD/ADHD children when compared to traditional rating scales”. This contention was not supported
by data in this study as no comparisons between objective data and rating scales were mentioned.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests