Reviewer’s report

Title: Saccadic eye movements in different dimensions of schizophrenia and in clinical high-risk state for psychosis

Version: 1 Date: 21 Jul 2018

Reviewer: Francesco Bartoli

Reviewer's report:

This article compares saccadic eye movement tasks in (i) individuals with schizophrenia (and subgroups according to predominant symptoms), (ii) those with high risk of psychosis, and (iii) healthy volunteers.

Although the investigated topic is interesting and may deserve additional research, the manuscript has several issues requiring major revisions.

ABSTRACT

The abstract is not totally clear and a bit disorganized. The authors should significantly edit it, including specific hypotheses, information on high risk of psychosis group and healthy volunteers in methods subparagraph, number of subjects recruited in different groups. Moreover, the abstract conclusions are completely focused on individuals with high risk of psychosis, highlighting the potential role of eye movement alterations as possible markers of this condition. These conclusions seem arbitrary, selective and not totally supported by study aims and findings, and should be thus tempered.

BACKGROUND

The first paragraph of background section is based on general statements on schizophrenia and the importance of relevant biomarkers, thus requiring more authoritative references than those chosen by the authors, e.g., Belbasis et al., 2018; McGorry et al., 2014; Owen et al., 2016, etc.

The following sentence needs a reference: "Eye movement paradigms, especially saccadic paradigms, are useful tools in understanding neurophysiological mechanisms involved in schizophrenia".
The study rationale seems weak and the main hypothesis is not totally clear. The authors should add further explanations in the background section about the rationale of differentiating saccadic performance in schizophrenia dimensions (positive, negative and disorganization symptoms), as well as in high risk of psychosis individuals. In addition, the sentence explaining the main hypothesis ("Our hypothesis was that eye movement would be altered differently in different clinical groups") should be complemented, specifying expected differences between groups, in order to prevent possible issues related to 'fishing expedition'.

METHODS

More details on sampling procedures are needed. It is unclear if subjects with schizophrenia or high risk of psychosis were consecutively recruited or if a convenience sample was selected. A flow chart describing the selection process should be considered. Moreover, the overall participation rate should be reported. Similar data should be possibly provided also for healthy volunteers, reporting also information on setting and source of recruitment. In addition, sample characteristics (size, mean age, gender, etc.) should be placed in the results section, rather than in methods one. More generally, the authors should strictly refer to the STROBE guidelines to report observational studies (von Elm et al., 2008).

More details on statistical analysis should be provided. The authors should describe in an ordered and structured way the three-step approach they used, to compare saccadic performance i.e., (1) comparison between subjects with schizophrenia and healthy controls; (2) comparison between schizophrenia subgroups; (3) post-hoc pairwise comparisons if p-value from ANOVA was significant. In addition, the acronym LSD (Fisher’s least significant difference?) should be explained the first time it appears in the text.

RESULTS

Regarding the first sentence of results section, showing data (mean and standard deviation) on differences, though not significant, between schizophrenia and controls in terms of reflexive and predictive saccades velocity, may be useful.

Figures 1 to 3 should report the p-values of each subgroup as compared with healthy controls, in order to be more informative.

DISCUSSION

The authors reported as a study limitation that "Differences in terms of eye movement recording techniques, as well as differences in target stimuli displacement and timing have been
posed to account for the possible contradictions between these and other findings". However, this issue should be clarified and better explained.

* An important study limitation the authors should deal with, is the lack of a sample size calculation and the use of arbitrary sample sizes for selected groups, preventing any evaluation on the statistical power adequacy.

* The authors included subjects with schizophrenia treated with antipsychotics. However, they should discuss if antipsychotic treatment may influence saccadic performance, representing thus a potential confounder. Indeed, recent studies selected antipsychotic-naïve/free individuals, in order to prevent this issue (Subramian et al., 2018).

* There is a lack of discussion on clinical and pathophysiological implications of findings of this study, as well on possible open questions needing further research. The authors should complement the conclusions paragraph with this information.

References


Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

Declaration of competing interests
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?
If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

None

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal