Author's response to reviews

Title: Pro- and antisaccades in children elicited by visual and acoustic targets - does modality matter?

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Author's response to reviews: see over
Dear Dr. Hercod,

Thank you again for granting us a delay in revising the manuscript. We would also like to thank you and the referees for the helpful comments. We have made every effort to address all points raised by the referees. Please find enclosed our detailed responses to the specific points. Thank you for considering our manuscript for publication in the BMC Pediatrics.

Sincerely yours,

Johanna Goepel

Referee 1

Abstract: Conclusion should include a statement of physiological significance.

We added a statement in the abstract: it is important in order to enable a differentiation between populations with disorders.

Introduction: Changing “the timing of peripheral cue…” to “Timing between the central versus the peripheral target”

We made this modification.

Introduction: Improving the explanation of the gap effect.

We improved the explanation and added Dorris et al. as additional reference.

Methods: Improving the task description, replacing “cue” by “target” and “far” and “near” by “more” and “less eccentric”, indicating if the design was blocked or mixed and how children was informed.

We indicated that the design was mixed and that the children were informed by instruction symbols before each trial (an ear for acoustically cued prosaccades, an eye for visually cued prosaccades).
Methods: Improving Fig. 1, to show example of both visual and acoustic trial.

We added an example of acoustic trial:

Methods: Describe in detail how many blocks and how many trials per block.

We inserted the sentence: “Participants were instructed to generate saccades in response to visual or acoustic targets presented in two randomised blocks with 144 trials each.”

Results: Page 9: “There was no significance correlation between age and SRTs in either condition”. More references were needed.

We added relevant articles by Yang et al. and Bucci et al. in the discussion.

Results: Decimals for latencies (in ms) are not necessary; Page 10: “within” should be erased.

We made these modifications.

Discussion: Adding subtitles; adding missing references; discuss the reasons for longer latencies for saccades to visual targets than other studies

We added:
1. The subtitles: a) Visual targets, b) Acoustic targets and c) Comparison between visual and acoustic targets.
2. Missing references as mentioned above; and
3. A reason for longer latencies for saccades to visual targets in our study compared to other studies: It could be that the mixed method - requiring permanent updating of task requirements - is responsible for the longer latencies.

Conclusions: No prediction for APD and ADHD.

We deleted these sentences.

Referee 2

The methods are unclear and lack important detail.

We improved the methods so that it becomes clear that the children were presented two blocks each with 144 randomised trials.

Literature cited by the authors in the introduction is not pertinent because their study differs from
others in that only the cues were given in different modalities. The children’s saccades and antisaccades were made to visual, not to auditory locations.

Because of the fact that this study is one of the first investigations of pro- and antisaccades following visual and acoustic targets in children, the literature mentioned was elected with the effort to give an overview of the studies which studied visual and acoustic prosaccades. Importantly to note, although children were reacting to a visual stimulus, they acoustically perceived the tone as coming from the visual location.

*It is not clear how the children were instructed to make antisaccades.*

We added the declaration that children were instructed by prominent symbols: an ear for acoustically cued prosaccades, an eye for visually cued prosaccades, and respective crossed symbols for antisaccades.

*Latencies analysis:* It is assumed that the latencies measured were those of the first saccade after stimulus onset, but this is not made explicit and it is possible that during the very long latencies in response to the acoustical cues secondary saccades were made. Nothing is said about how secondary saccades, anticipatory saccades, or saccades not in response to the stimulus were identified.

The primary aim of our study was to investigate how children react to visual and acoustic targets with regard to the kind of saccades. In a second step, the further analysis of anticipatory saccades and secondary saccades would be interesting, but would go beyond the scope of this paper.