Response the Reviewer

Comments to the Author  
Thanks to the authors for responding to my previous comments. While the authors did reply to my comments in the response to authors, many of these interesting discussions are still omitted from the manuscript. That is a shame. Also, a red-lined version of the manuscript would have been helpful to guide the reviewer to where changes have been implemented.  
  
In response to author response 2.1 and the novelty of probing speed perception, which is mentioned in the significance and elsewhere, please consider the following recent publications:  
  
Hogendoorn, H., Alais, D., MacDougall, H., & Verstraten, F. A. (2017). Velocity perception in a moving observer. Vision research, 138, 12-17.  
  
Garzorz, I. T., Freeman, T. C., Ernst, M. O., & MacNeilage, P. R. (2018). Insufficient compensation for self-motion during perception of object speed: The vestibular Aubert-Fleischl phenomenon. Journal of vision, 18(13), 9-9.

1. Thank you for pointing out these publications. We included these references in the introduction. However, both deal with rotational, physical observer motion; the novelty of the combination of lateral object motion and lateral, visually-induced self-motion proposed in this project remains thus, to our understanding, unchanged.

Also note, when dealing with two or more dimensions, velocity typically refers to both direction and speed. If only one-dimensional speed will be judged, suggest using the word speed throughout.

1. We thank the reviewer for this observation and replaced “velocity” with “speed” throughout the document.

In response to response 2.4, it is possible that the observer does not perceive self-motion and attempts to judge object motion relative to the self and world, but this judgment is biased by the background motion. This would be induced motion but would also look like perceived self-motion with partial compensation for self-motion.

1. We agree that induced motion would yield the same results as a partial instead of full compensation for self-motion. We therefore changed the background wall in our experiment to a uniformly white wall, which should prevent motion from being induced. Since induced motion is also more unlikely to occur the further away the target is from the frame, we also moved the stimulus further up, in order to distance it from the floor. Given that there is now nothing that might be construed as frame and the target is relatively far away from the floor, we believe that, with these adjustments, our setup is very unlikely to lead to induced motion.

Generally, the use of visually-simulated self-motion rather than real self-motion (and the limitation of this approach) is still not sufficiently addressed.

1. We added a section to discuss the various cues’ contribution to the final estimate of self-motion. We will furthermore dedicate a section in the discussion to making sure that the reader has a clear picture of what this project examines (i.e., visually simulated self-motion).

In response to response 2.6, this discussion of possible scenarios is useful and should probably be included in the manuscript as it addresses the question of the effectiveness (or not) of inducing vection. I see 5 possible scenarios: 1) subject perceives self-motion, and judges relative to scene (and world) 2) subject perceived self-motion and judges relative to self,  3) subject does not perceive self-motion and judges relative to scene 4) subject does not perceive self-motion and judges relative to self (and world). 5) subject makes judgements using a combination of reference frames, as previously suggested by Dokka et al.

1. We included these considerations into the manuscript.

In response to response 2.14, there are still several places in the manuscript that refer to observer motion when they should refer to visually-simulated observer motion. The bullet points on page 3 are a notable example.

1. We went through the document again and made clear in every instance that we simulate self-motion only visually.