



The Temporal Doppler Effect may not be a robust and culturally universal phenomenon

A recommendation by [Ljerka Ostojic](#)  based on peer reviews by [Chris Chambers](#)  and 1 anonymous reviewer of the STAGE 2 REPORT:

Qinjing Zhang, Yoshitaka Masuda, Kodai Toda, Kohei Ueda, Yuki Yamada (2022) Is the past farther than the future? A registered replication and test of the time-expansion hypothesis based on the filling rate of duration. Missing preprint_server, ver. 3, peer-reviewed and recommended by Peer Community in Registered Reports.

<https://doi.org/10.31234/osf.io/pb47n>

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The Temporal Doppler Effect refers to the subjective perception that the past is further away than the future even when both temporal distances are objectively the same from the present moment (Caruso et al., 2013). In the current study, Zhang et al. ran a replication of this phenomenon and tested one possible explanation for it, namely that people overestimate the temporal distance of the past because the past is filled with more events than the future. This is because we can access information only about planned events for the future, but have access to both planned and unplanned events that happened in the past (filled-duration illusion; Thomas & Brown, 1974). Over two studies, the authors found that the sampled participants reported feeling that the past was psychologically closer than the future, which is the opposite of what has previously been reported and termed the Temporal Doppler Effect (Caruso et al., 2013). In addition, the authors reported inconsistent results regarding the correlations between the psychological distance and different variables associated with the filling rate of duration. The authors discuss the differences between their own results and those by Caruso et al. (2013) in terms of methodological and contextual differences and highlight cultural aspects that may be critical to consider in future replications and overall testing of this phenomenon. As such, they highlight that, at the moment, the Temporal Doppler Effect should not be considered a robust and culturally universal phenomenon. The Stage 2 manuscript was evaluated by two reviewers who had also reviewed the stage 1 report. Following a revision by the authors, which consisted of adding the Data Availability statement, as well as a more precise summary of the results in various sections of the report, the recommender judged that the

manuscript met the Stage 2 criteria and awarded a positive recommendation. **URL to the preregistered Stage 1 protocol:** <https://osf.io/d9ec3/> **Level of bias control achieved:** Level 6. *No part of the data or evidence that was used to answer the research question existed prior to Stage 1 in-principle acceptance.* **List of eligible PCI RR-friendly journals:**

- [Advances in Cognitive Psychology](#)
- [Cortex](#)
- [Experimental Psychology](#)
- [In&Vertebrates](#)
- [Journal of Cognition](#)
- [Peer Community Journal](#)
- [PeerJ](#)
- [Psychology of Consciousness: Theory, Research and Practice](#)
- [Royal Society Open Science](#)
- [Swiss Psychology Open](#)

References:

1. Caruso, E. M., Van Boven, L., Chin, M., & Ward, A. (2013). The temporal doppler effect: When the future feels closer than the past. *Psychological Science*, 24, 530-536. <https://doi.org/10.1177/0956797612458804>
2. Thomas, E. C., & Brown, I. (1974). Time perception and the filled-duration illusion. *Perception & Psychophysics*, 16, 449-458. <https://doi.org/10.3758/BF03198571>
3. Zhang, Q., Masuda, Y., Ueda, K., Toda, K., & Yamada, Y. (2022). Is the past farther than the future? A registered replication and test of the time-expansion hypothesis based on the filling rate of duration. Stage 2 Registered Report, acceptance of Version 2 by Peer Community in Registered Reports. <https://psyarxiv.com/pb47n/>

Reviews

Evaluation round #1

DOI or URL of the preprint: <https://dx.doi.org/10.31234/osf.io/pb47n>

Authors' reply, 04 October 2022

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Decision by [Ljerka Ostojic](#) , posted 03 October 2022

Decision on stage 2 report "Is the past further than the future? A registered replication and test of the time-expansion hypothesis based on the filling rate of duration"

Dear Dr. Zhang,

Many thanks for submitting the Stage 2 report 'Is the past farther than the future? A registered replication and test of the time-expansion hypothesis based on filling rate of duration'. The stage 2 report has now been seen by the two original reviewers (i.e., the two reviewers who had also reviewed the stage 1 report).

Before the stage 2 report can be recommended in PCI-RR, one of the reviewer notes that you need to include the URL to the repository where you have archived your study data and materials.

In addition to the above, I have a few suggestions for edits:

1. In the abstract, you state 'Moreover, the filling rate of duration was significantly higher in the past than in the future, as predicted, but was negligibly (study 1) or negatively (study 2) correlated with psychological distance.' I am unsure whether this is the best way to summarise the results of the correlations as shown in the results of study 1 (p. 19: 'Psychological distance was not significantly correlated with either the filling rate of duration (...) or the number of errands and events (...). However, psychological distance showed a significant correlationb with the length of errands and events (...). Therefore, our hypothesis was not fully supported.) and would suggest you describe the results of study 1 regarding the correlations in questions here in the abstract more clearly.

2. On page 21, in the very last row, where you write 'Thus, our hypothesis is not supported.' - everywhere else you wrote in the past tense, so please consider editing the 'is' here to 'was'.

3. On page 22, in the discussion (first paragraph), it says 'However, no significant correlation between psychological distance and the filling rate of duration was observed.' This is in reference to Study 1, which is obviously correct with regards to filling rate of duration as the variable, however your results were more complicated given the other variables, so it may be worthwhile to expand this part of the discussion a little and summarise the whole range of results for study 1.

4. On page 22, the last sentence says 'To the best of our knowledge, no such opposite results have been reported in any published TDE literature.'. Personally, I would suggest you delete this sentence, as it is not necessary, and - in the absence of presenting the results of a systematic review - also not really informative.

Best wishes,

Ljerka

Reviewed by anonymous reviewer 1, 04 September 2022

The introduction, rationale, and hypotheses appear to be the same as for the approved Stage 1 submission, and the authors also appear to have adhered to the registered procedures. However, I could not find a way to access the tracked changes version of manuscript to confirm this.

The data appear adequate to test the authors' hypotheses and the conclusions seem justified by the evidence. All three of the potential reasons the authors give for the discrepancy between their unexpected findings and those of Caruso et al. (2013) are well delineated.

Conclusion: The studies reported in this manuscript provide an important challenge to the existence of and potential mechanisms of the Temporal Doppler Effect described by Caruso et al. (2013). The quality of the methods is high, and the authors are appropriately circumspect in the discussion. I recommend the manuscript be published.

Reviewed by Chris Chambers , 22 September 2022

I greatly enjoyed reading this completed Stage 2 Registered Report. The authors have conducted the study faithfully according to the approved protocol; the results are reported clearly and transparently; and the Discussion is thoughtful and well considered. On a purely subjective level, I also find the results thought provoking – going strongly against the original predictions in several ways – and while this is not part of the Stage 2 evaluation, I think these findings could have a significant impact in contextualising and challenging previous conclusions. Overall, I judge that the manuscript fully meets the Stage 2 review criteria.

There is one very minor revision I would like to see prior to full acceptance. In accordance with the [PCI RR TOP policy](#), the authors have publicly archived their study data and digital materials on the OSF (<https://osf.io/x29k7/>) but the URL to the repository does not appear to be stated in the Stage 2 manuscript.