CODECHECK

- WHO checked WHAT, and HOW?
  - Ruian: re-ran the workflow using the R markdown file provided in the repo. Confirmed that the code can generate the target figure and perform the same analysis as in the original paper. Confirmed that the R markdown file can be rendered into a Word document. Compared the replicated paper and the original paper for differences.

  - David: forked the repo and loaded the project into R successfully. Tried knitting ‘analysis/paper.md’ and encountered multiple libraries not found issue and a knit failure. Looks like the missing packages could be pre-installed in the paper.md script.
    - Error in library(geomorph) : there is no package called 'geomorph' Calls: <Anonymous> ... withCallingHandlers -> withVisible -> eval -> eval -> library
    - I had to manually install those packages in R by running “install.package(...)”
  - Encountered another knit problem:
    - Quitting from lines 270-274 (paper.Rmd) Error in procD.allometry(shape ~ size, ~site, print.progress = FALSE, : unused arguments (shape ~ size, ~site, print.progress = FALSE, data = lances_geomorph, method = "PredLine") Calls: <Anonymous> ... handle -> withCallingHandlers -> withVisible -> eval -> eval In addition: There were 50 or more warnings (use warnings() to see the first 50)
    - No straightforward fix at the first glance

  - Xiaolu: Read through the original paper and checked citations

  - Sihao: Also was able to produce the same figures, but stuck on the analysis part. Tried to debug the procD.allometry function as suggested by changing it to lm, but still did not get the same analysis results at first. Double checked the package version, and then re-installed the older version that is suggested in the original paper. Confirmed that the replication performed the same

analysis as the original paper. Read through the paper and checked for appropriate licenses.

- Jiyu: Compared the original paper and replicated report. Although Christopherson et al did not obtain the same result as Fig.8 in the original paper after several attempts, they successfully improved the directory structure and re-created the code for making figure 8 which was not included in the original source.

- Do the generated outputs match the ones in the paper in the target group's repo?

  Yes, the generated outputs match the ones in the paper in the “Christopherson-Garcia-Todd-Winegarden-replication-project” repository.

- Are the differences relevant or not?

  The differences between the replication and the original paper were mostly due to the inconsistency in the original paper’s code and comment. The Rmd file does not meet the requirement of the project to make changes to the original code. Therefore, the differences are not relevant since there was no intentional change that was made.

- Are used pieces of software and data properly CITED and with suitable LICENSES?

  The replication paper in general lacks citation, especially in the parts related to the method section and the source of the data used in the analysis. The authors didn’t provide any licenses either.

- Are open formats (text-based) included?

  Yes. The paper only used open-source data stored in CSVs.

- Is data and software FAIR?

  Almost. The data and software fit with the first three of the FAIR requirements. The original data can be found using the clear instructions given on GitHub or directly accessed through GitHub. The data are also interoperable with all the data in open formats. Since the author did not provide licenses, it would be a problem for the reusability assessment of the FAIR requirement.