January 22, 2023

Editorial Office

Royal Society Publishing

Dear Editors,

We are submitting a new manuscript, “Prestige bias in cultural evolutionary dynamics”, by Saar Egozi and Yoav Ram for potential publication in *Proceedings of the Royal Society B*.

The cultural evolution literature often mentions success bias, in which individuals are more likely to copy successful role-models. Indirect success bias, or *prestige bias*, occurs when individuals indirectly evaluate success. In this study, we developed and studied a cultural-evolutionary model in which individuals combine two modes of prestige bias to choose a role model for the trait they are to copy (e.g., arrowhead design): indirect cross-domain success, which is a measure of performance in some other trait (e.g., amount of prey hunted); and influence, which is the number of copiers that have already copied from each role-model. This is a complex stochastic model that combined the between-generation dynamics of cultural evolution with the within-generation dynamics of role-model choice.

We develop analytical approximations for the role-model choice dynamics, which allow us to analyze the cultural-evolutionary dynamics. We find approximations for the fixation probability and time of a trait favored by indirect success bias. Our results reveal that success bias plays the role that selection plays in evolutionary genetic models, whereas influence bias plays the role of random drift by lowering the effective population size.

The manuscript presents a strong contribution to the growing literature on transmission biases in social learning and cultural evolution and demonstrates how different aspects of prestige bias combine to drive cultural evolutionary dynamics. See below for a list of suggested reviewers with experience in modelling cultural evolution under transmission bias.

Sincerely,

Yoav Ram, PhD

Senior Lecturer, PI

School of Zoology, Faculty of Life Sciences

& Sagol School of Neuroscience

Tel Aviv University

**Suggested reviewers**

Joe Wakano, Meiji University, [joe@meiji.ac.jp](mailto:joe@meiji.ac.jp)

Kenichi Aoki, Tokyo University, [kenaoki@meiji.ac.jp](mailto:kenaoki@meiji.ac.jp)

Erol Akçay, University of Pennsylvania, [eakcay@sas.upenn.edu](mailto:eakcay@sas.upenn.edu)

Nicole Creanza, Vanderbilt University, [nicole.creanza@vanderbilt.edu](mailto:nicole.creanza@vanderbilt.edu)

Laurel Fogarty, MPI Evolutionary Anthropology, [laurel\_fogarty@eva.mpg.de](mailto:laurel_fogarty@eva.mpg.de)