Scenarios where increased population size can enhance cumulative cultural evolution are likely common

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Fay et al. (1) suggest that larger populations do not enhance cumulative cultural evolution (CCE), as working memory becomes taxed while consciously processing additional social models. This decrease in working memory leads to a reduction in high-fidelity copying. Results from a large study ($n = 543$) are largely consistent with these interpretations. They further suggest that only under certain circumstances might larger population sizes lead to enhanced CCE. However, the circumstances that might lead to such an effect seem to be common ones. The chosen methodological approach restricted known biases from being employed, but biases typically operate in environments outside of the laboratory. Consequently, the extent to which the results can be generalized is not clear.

In order to specifically test the effects of population size on CCE, the study design ensured that participants were exposed to a specific number of social models. This design was selected in order to reduce any filtering (e.g., learning biases) that might otherwise occur and obscure the effect of population size. Although effective at forcing participants to assess each social model, this design is likely a particular type of scenario that represents only a portion of how culture is transmitted in the real world, such as in contexts where options are available and conscious decision making is applied (e.g., what might occur in some office meetings in Western cultures). These types of contexts are important, but they are not representative of how cultural knowledge is often transmitted.

People have several cultural learning biases that guide whom they copy. To name a few, people are more likely to copy prestigious social models (2), those that receive the most eye gaze (3), and those conveying nonverbal pride (4). Such biased learning increases the likelihood of copying skilled and knowledgeable others while reducing the need to consciously consider all available social models. Working memory is less likely to be taxed when these biases are employed because the need to sort through alternatives is solved by relying on biased learning. Such biased learning is likely to be widespread in the real world and is thought to contribute to prestige hierarchies (2), yet scenarios where biased learning occurs are not represented in the chosen research design. Consequently, the results are unlikely to mimic how cultural knowledge is often transmitted in the real world.

Furthermore, the results are not entirely inconsistent with population sizes being related to enhancing CCE in the real world. As the population size increased, so did the quality of artifacts. If biased learning that selectively attends to the more skillful social models were allowed to operate, it is not inconceivable (indeed, it seems likely) that population size would lead to enhanced CCE as people selectively attend to a subset of the available social models.

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