Prestige Bias: Evidence of Adaptation for Cultural Learning

Maciek Chudek, Sarah Heller, Susan Birch & Joseph Henrich
Department of Psychology, University of British Columbia

Why Prestige Bias matters to evolutionists

For at least two hundred thousand years, selection pressures have pushed the human to a unique niche – we are a cultural species. We depend on our conspecífics for complex, encoded information which dramatically alters our own phenotypes.

The task of reconstructing how this transformation occurred proceeds simultaneously on three fronts. We are gradually accumulating direct evidence of conditions during the Pleistocene1. Analytical models and simulations use this emerging evidence to produce considerable pictures of how interactions ancestral environments played out2. Such models have produced detailed accounts of the sorts of learning and cognition biases that give robust and consistent fitness benefits to members of an emerging cultural species.

These accounts are not just of historical interest – the processes they describe have left clear footprints in the universal biases and dispositions of the human mind today – the third source of evidence about our evolutionary history. "Prestige biases", a proclivity to imitate whoever others are imitating – pervasively emerges from dynamic models of a cultural species. Once you’ve settle on learning by imitation, a dire question arises: whom to imitate. Learners who focus their attention on better models will themselves fare better, and those disposed conform to their peers evaluations of model quality improve their chances of picking correctly.

If theoretical arguments for prestige bias are right, we should see the modern human cognition with the least information about their environments – children – imitate the most prestigious individuals in their environments - those who receive the most attention and are most imitated by others. Falsifying or supporting this claim constrains our models and gives us insight into our evolutionary history by detecting its subtle consequences.

A similar experiment has been conducted by Fusaro and Harris3 whose results provided support for either a prestige or conformity bias – a second theoretically potent evolutionary pressure. Our study was designed to discriminate between these.

Method

24 three and four year olds (Md = 51 months; Range = 37-58) saw videos establishing the relative prestige of two models in the domain of artifact use. These models then expressed different beliefs and preferences towards a stimulus in different domains. The participants were asked to discriminate between these stimuli and their choice recorded.

1. Prestige and Robust

Odds Ratio – Log Scale

Results

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Main Finding

Strong Domain-Biased and weaker Cross-Domain Prestige-Biased imitation in 3-4 year olds

Odds of imitating a model, given that they’re the high prestige model (with SE bars)

Food DV

Prestige Cue

Artifact DV

Water DV

Novel Label DV

Free Play

Participants had a few minutes of free play time after the experiment, during which they were offered a snack (food DV) and:

Explicit DVs

Shown photos of the models and asked:

- "Who would you rather play with?" (Playmate DV) and
- "Who do you think has the most friends?" (Popular DV)

A Convenient Reward (Shirt DV)

Participants were rewarded with a “KidLab” t-shirt, in yellow or pink. This measure of convenience was dropped because, of course, girls without exception chose pink.

Conclusions

- Young children prefer to imitate models who they’ve even briefly seen attended to by third parties
- This imitation bias is strongest in the domain in which the model’s prestige was established – but also seeps over into other domains. Follow up investigations are underway to quantify the degree of this domain specificit.
- There is reason to suspect a gender bias – but further investigation is required
- Children may retroactively apply prestige information to reevaluate the valence of preferences they’d previously learned from a model – further investigation is need to confirm this effect

An evolutionary model is only as good as the assumptions on which it is built. These results provide an empirical prerogative for modelers and theorists to include prestige biased imitation in their accounts of the history of our cultural species.

Theory

Application of the logic of natural selection to the problem of cultural learning suggests that individuals will rely on robust, consistent cues in selecting cultural models – especially who others are attending to.

Predictions

- Children pay attention to whom others are directing their attention towards and use this information establish the relative quality or prestige of models.
- When making their own behavioural choices children will preferentially imitate high prestige models.
- Children ascribe prestige to a model, not their actions and will preferentially imitate other behaviour of that model.
- Prestige will bias imitation most strongly in the same domain where it was established, but will also seep into other domains.
- Prestige bias will be stronger for learners of the same sex as the models.

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