The Edge of Ockham's Razor: Examining Boundary Conditions on Preferences for Simpler Explanations

Thalia Vrantsidis
Princeton University, Princeton, New Jersey, United States

Tania Lombrozo
Princeton University, Princeton, New Jersey, United States

Abstract

People often prefer simpler explanations (that posit the presence of fewer causes), judging these more probable than more complex alternatives. However, simplicity preferences are only mathematically justified under certain conditions. We examine one case where, mathematically, complexity preferences are justified, and test whether this corresponds to a boundary condition on simplicity preferences. Specifically, we focus on cases where causes occur frequently (rather than rarely), and where explanations specify the absence of additional causes (e.g., "Cause A and not B or C") rather than remaining agnostic about their presence or absence (e.g., "Cause A"). Study 1 showed that, in these cases, simplicity preferences were attenuated, but not reversed. Study 2 suggests that simplicity preferences partly stemmed from failures to explicitly represent absent causes. We suggest that biases towards oversimplification may arise due to over-application of a cognitively simple version of Ockham's razor, that is insensitive to the probability of absent causes.

In M. Goldwater, F. K. Anggoro, B. K. Hayes, & D. C. Ong (Eds.), *Proceedings of the 45th Annual Conference of the Cognitive Science Society.*