

When circumstances change, update your pronouns

Joshua K. Hartshorne

Boston College, Chestnut Hill, Massachusetts, United States

Mariela V Jennings

Boston College, Chestnut Hill, Massachusetts, United States

Tobias Gerstenberg

Stanford University, Stanford, California, United States

Josh Tenenbaum

MIT, Cambridge, Massachusetts, United States

Abstract

Language is frequently ambiguous, with the same sentence having several possible interpretations. One prevalent example is third-person pronouns. Hartshorne, Gerstenberg, & Tenenbaum (2014) HGT2014 model pronoun interpretation as an inference over a generative model of the speaker. An advantage of the generative intuitive theory approach is that it incorporates a flexible, quantitative model of world knowledge rather than a list of facts and heuristics. The authors formalized this world knowledge as inference over a generative model of the world. We directly test this flexibility by changing the rules of the world (e.g., through scenarios that reverse the normal relationship between strength and probability of winning tug-of-war), which according to HGT2014 should directly affect pronoun interpretation. We find that model predictions and participant judgments align well in such scenarios, supporting HGT2014 and challenging other theories of pronoun resolution. We discuss this work in the context of recent work on intuitive theories.