Keith J. Holyoak, Editor
Department of Psychology
University of California, Los Angeles
405 Hilgard Avenue
Los Angeles, CA 90095-1563

March 19, 2019

Dear Dr. Holyoak and members of the Editorial Board,

Please find attached a copy of our manuscript, "When redundancy is rational: A Bayesian approach to 'overinformative' referring expressions." This manuscript is our original work, has not been previously published, and is not currently under consideration elsewhere. We would appreciate your considering it for publication in Psychological Review.

With this work we provide a unified account of referring expression choice that solves a long-recognized puzzle for rational theories of language use: why speakers' referring expressions often and systematically exhibit seeming overinformativeness. We provide a production model of referring expressions couched within the Rational Speech Act framework, which includes a key innovation: we assume graded rather than deterministic meanings. Computing an utterance's contextual informativeness with respect to these graded meanings in many cases yields 'overinformative' referring expressions as the rational choice. This happens when what seems like the prima facie sufficiently informative utterance is in fact noisy and may lead a literal listener astray – in such a case, adding redundant modifiers increases the probability of successful communication. This simple modification to the Rational Speech Act approach allows us to capture: the basic well-documented asymmetry for speakers to be more likely to redundantly use color adjectives than size adjectives; the interaction between sufficient dimension and scene variation in the probability of redundancy; and typicality effects in both color modifier choice and noun choice. We evaluate the model on three different production datasets that reflect these phenomena. We provide a thorough treatment of the qualitative model predictions, quantitative evaluations, and discuss in detail the implications of the approach and the interesting questions it raises.

Given their expertise in computational modeling of language, we humbly suggest Ulrike Hahn, Nick Chater, or Gary Dell as the responsible editor.

Thank you for your consideration. Please let us know if you require additional information.

Sincerely,

Judith Degen
Stanford University
jdegen@stanford.edu

Robert X.D. Hawkins
Stanford University
rxdh@stanford.edu

Caroline Graf
Freie Universität Berlin
caroline.graf@posteo.de

Elisa Kreiss
Stanford University
ekreiss@stanford.edu

Noah Goodman
Stanford University
ngoodman@stanford.edu