Stanford
University

Robert X.D. Hawkins
PhD Student

Jordan Hall
450 Serra Mall, Building 420
Stanford, CA 94305
E: rxdh@stanford.edu

January 9, 2018

Prof. Keith J. Holyoak
Editor, *Psychological Review*

Dear Dr. Holyoak,

Please find enclosed our manuscript, "Questions and answers in dialogue," which we are submitting to *Psychological Review.*

This work warrants your consideration because it presents a novel theoretical approach to a quintessential locus of human social interaction: asking and answering questions. From a very young age, the act of asking a question becomes one our most valuable methods of gathering information and learning from others. Whether we are raising our hand in a classroom, trying to navigate an unfamiliar campus, or seeking technical help on an online forum, we rely on other agents to provide not just *true* answers but *relevant, helpful* ones. Often, answers go well beyond the literal meaning of the question to transmit knowledge: it's entirely ordinary to reply to a direct yes/no question like "Is my order ready?" with a statement like "It'll be out in ten minutes" instead of "No."

Although the context-sensitivity of questions and answers has been of empirical interest to psycholinguists for decades, current formal theories of asking and answering have stripped this inherently social phenomenon from its social context. Building on recent advances modeling goal-relevant communication as recursive probabilistic reasoning, we re-situate questions and answers in social *dialogue* without sacrificing computational rigor. This theoretical synthesis is innovative both formally and methodologically. Among these innovations, we extend the framework of Rational Speech Act (RSA) models to multi-utterance dialogue for the first time and present an interactive multi-player web experiment that simultaneously distinguishes between alternative questioner and answerer accounts using a quantitative Bayesian model comparison.

This work is appropriate for your journal not only because it 'connects the dots' between classic empirical findings that have been neglected by modern theories of communicative behavior, but also because our computational framework lays the groundwork for tackling numerous pressing challenges in areas like active learning, artificial intelligence, and human-computer interaction. Given the interdisciplinary nature of this work, we feel that our findings will be of great interest to the diverse readership of *Psychological Review*, especially the cognitive science, linguistics, artificial intelligence, education, and psychology communities.

This work is not published or under consideration elsewhere. We believe that Editorial Board Members Rebecca Saxe and XXX would provide expert editorial oversight in handling this submission. The following researchers have expertise relevant to evaluating this work as reviewers: Todd Gureckis (todd.gureckis@nyu.edu), Azzurra Ruggeri (ruggeri@mpib-berlin.mpg.de), and XXXX

Please let us know if you need any additional information. Thank you for your consideration, and we look forward to hearing from you!

Sincerely,
Robert Hawkins & Noah Goodman