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Proceedings of the Annual Meeting of the Cognitive Science Society

Title

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Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 45(45)

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Publication Date

2023

Peer reviewed

Simplifying Group Communication: A Shared Agency Modeling Approach

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Abstract

While human communication occurs across groups of varying sizes, current cognitive models typically focus on the recursive dynamics between two individuals and can become incredibly complex in larger group settings. In addition to complexity, generalizing to group communication is not trivial as it requires a joint inference over the meaning of a signal and who is responsible for acting upon it. Here, we demonstrate how a shared agency approach to communication called the Imagined We (IW) can naturally be leveraged to address challenges of group communication in simulation. In a cooperative communication task, we show that IW agents perform better and that their strategies for communicating under ambiguity are robust to the group size, unlike a baseline comparison model based on individual recursive reasoning. These results offer insight into how the cooperative logic of shared agency facilitates communication and constrains the uncertainty introduced by group settings.