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Disentangling Social and Material Preferences from Emotional Expressions: A Bayesian Approach to Reverse Appraisal

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Abstract

Emotional expressions signal how others evaluate outcomes, but a single expression can reflect multiple underlying preferences. We examine whether and under what constraints observers infer material preferences (what outcomes someone values) and social preferences (how they weigh self vs. other) from affective feedback. In a multi-issue ultimatum game, participants (N=323) observed agents' graded emotional reactions to resource allocations and inferred their preferences. Results revealed a functional asymmetry between the two domains. Material preference accuracy was constrained by signal identifiability, whereas social preference estimates showed weak correspondence with Bayesian model predictions and clustered near the center. This suggests that observers do not infer both preferences symmetrically; instead, social preference estimation appears more strongly shaped by robust priors and/or measurement constraints. These findings highlight structural limits on social inference and suggest that human observers may rely on strong prior assumptions when interpreting underdetermined signals.