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# Reasoning about knowledge in lie production

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### Abstract

Theory of Mind enables us to represent and reason about other people's mental states like beliefs and knowledge. By considering what other people know, this allows us to strategically construct believable lies. Previous work has shown that people construct lies to be consistent with others' beliefs even when those beliefs differ from their own. However, in most real world cases, we don't know everything that the other person knows. We propose that to produce believable lies, the sender considers what private information the receiver may have. Here, we develop our theory into a computational model and test it in a novel paradigm that allows us to distinguish between knowledge shared between the lie sender and receiver and knowledge private to the receiver. Our main model successfully captures how people lie in this paradigm over alternative models. Overall, our work furthers our understanding of human social cognition in adversarial situations.