

**TITLE: Testing the influence of the listener's perspective in the epistemic step.**

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**INTRODUCTION:** In the traditional Gricean theory of quantity implicature derivation, the consideration of the speaker's epistemic state is a necessary step before a full implicature can be derived (Sauerland, 2004). A psycholinguistic model based on the Gricean theory would therefore predict that if a speaker is not considered sufficiently knowledgeable by a listener, no implicature will be derived. Empirical evidence matching this prediction has been found (Bergen & Grodner, 2012; Breheny, Ferguson & Katsos, 2013). However, a factor that was not actively manipulated in these studies is the listener's perspective, and the question of whether a better pragmatic match being visible only to the listener would lead to implicatures being derived erroneously. The present study attempts to explore this gap in the literature, by creating a situation where the listener has to avoid choosing a referent that is hidden from the speaker but that matches the most informative interpretation of the speaker's instructions. In this case, the listener must not only consider what the speaker does and does not see, like in the existing literature, but must also inhibit the better pragmatic match in their perspective.

**METHOD:** The experiment was a computer version of the director task, a paradigm commonly used to study perspective taking (e.g. Keysar, Barr, Balin & Brauner, 2000). In the experiment, the instruction was given in text form over the image and was presented as spoken by an unseen person. The displays featured a 2x2 grid in which there were cards with either one or two types of item. An example of the displays seen by the participants can be found in Figure 1. Participants were trained to know that the card in the grey box was hidden from the speaker. In the critical condition (Figure 1, Display A), the instruction required one kind of item (e.g. "pick the card with apples") and the display featured two cards featuring that item: one featured that item alone, and the other featured that item with another item. The card with only apples is a better pragmatic match for the utterance, as a more informative sentence to describe the mixed card would have been "Pick the card with apples and oranges". However, the card with only apples is hidden from the speaker. Therefore, the Gricean theory predicts that if the participant correctly does the epistemic step, the implicature will be blocked and they will choose the card in common ground. This condition was directly compared with Display B (Figure 1), in which the card hidden from the speaker was the same as the card with apples that was in common ground. Indeed, the only difference between these conditions is that the critical condition there is a pragmatic preference for the card in hidden ground, so if in Display B participants always choose the common ground card but in Display A they sometimes choose the hidden card, it shows that an implicature has been derived despite the speaker's insufficient knowledge.

**RESULTS AND DISCUSSION:** Results showed that in the condition where the hidden card is a better pragmatic match for the utterance (Figure 1, Display A), the accuracy rates were significantly lower than in cases where the card in hidden and privileged ground were identical (Figure 1, Display B) (76.9% vs. 91.95%). This brings preliminary evidence to the prediction that when the listener's perspective contains a potential referent that is a better pragmatic match, implicatures can be derived even if that referent is not visible to the speaker. This fits with a constraint-based view of implicature derivation, in which the speaker's perspective is one of many factors in the probability of an implicature being derived (Degen & Tanenhaus, 2019), rather than a fixed step which can block an implicature. A future avenue of research would be to integrate the listener's perspective as a factor into existing models of implicature such as the Rational Speech Act model (Goodman & Stuhlmüller, 2013), for example by drawing inspiration from a Bayesian model of perspective taking which calculates probabilities of a referent being chosen based on the simultaneous integration of both the listener's perspective and the common ground (Heller, Parisien & Stevenson, 2016).

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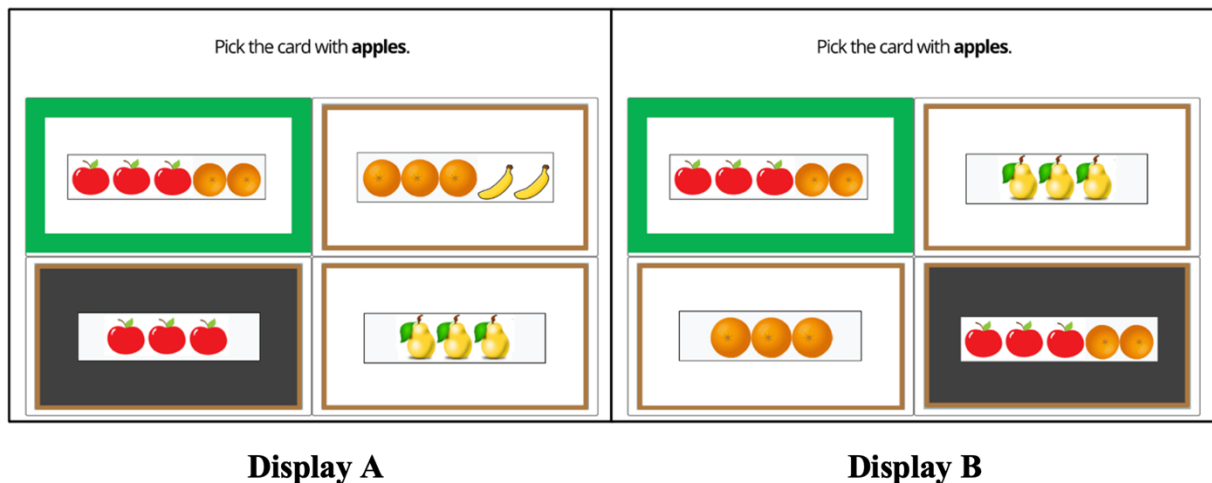
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## FIGURES:



**Figure 1:** Comparison of the critical displays for the utterance "Pick the card with apples". Cards highlighted in green are the target cards for accuracy measures.