Project ES/S010203/1

**Children's communicative development - bringing experimental pragmatics to the classroom**

Online experiment methods

*Adapted from Wilson, Lawrence and Katsos (2022)* <https://doi.org/10.1080/15475441.2022.2050236>

This online experiment was a follow-up to two studies conducted to investigate children’s ability to integrate the speaker’s visual perspective into a pragmatic inference (an ad hoc quantity implicature). In these experiments, listeners heard utterances such as ‘pick the card with pears’, and had to select the card (picture) intended by the speaker. Usually, by uttering ‘pick the card with pears’, the speaker would mean *pick the card with pears and nothing else*; however, in the critical condition, the speaker’s perspective differed from the listener’s, such that they could not see a card with pears and nothing else, but only one with pears and bananas, for instance. Crucially, though, ‘the card with pears’ was an informative description of this card, from the speaker’s point of view. The listener had to take into account the speaker’s perspective in order to *not* derive an ad hoc quantity implicature, and choose the intended card.

We found that adults largely did take into account the speaker’s perspective, and successfully chose the card with pears and bananas; however, children mostly failed to do this. In order to conclude that children (and some adults) are struggling with integrating visual perspective-taking and pragmatic inferencing, we had to consider another possible explanation for the findings: it could be that the speaker’s utterance in the critical condition may be perceived as *under-informative*, even though logically speaking it is perfectly informative and moreover adequate given the goal at hand in the game. That is, hearers may be expecting the speaker to say “pick the card with pears and bananas,” rather than “pick the card with pears.” If this was the case, then it would make hearers more likely to choose the card with *only* pears, reconsider what the puppet can see, and select the card that is in privileged ground. This would explain the lower rate of correct responses in the critical condition. To test this possibility, we ran a follow-up study with adults using an acceptability judgment task.

**Procedure**

In the task, adult participants (N=49) took part in a game online. They saw a display of three picture-cards, which matched the speaker’s perspective in Experiments 1 and 2, and were asked to rate how acceptable an utterance was as an instruction to pick up a particular card. Importantly, they were given the context of the utterance: that it was part of a game in which an “instructor” had to tell the “matcher” which cards to collect, where both the instructor and matcher can see the three cards (following the online version of Experiments 1 and 2). As in Experiments 1 and 2, the instructions were always of the type, “pick the card with … ” and occurred in four conditions: ambiguous, ad hoc implicature, the critical condition for this follow-up study (possibly under-informative), and fully informative.

For instance, for an item in the critical condition, they were first presented with a picture card with pears and bananas, a picture card with oranges, and a picture card with pears; after 2 seconds, the card with pears and bananas was highlighted with a red border; then, one second later, the utterance “pick the card with bananas” and the Likert scale appeared. They were asked to rate each instruction on a 4-point scale (bad – kind of bad – kind of good – good). An acceptability judgment task arguably measures production as it invites participants to model what they would have said as the speaker, given a state of the world. We decided to test adults only as prior findings show that children tend to be more accepting of under-informative utterances than adults and also under-informative in their production; in other words, testing adults is more likely to provide support for this objection to the paradigm.

As with Experiments 1 and 2, items were presented in blocks of four with the same image type across each block (e.g. fruit, farm animals, clothes). Within each block, the order of trials in each condition was randomised.

Example display from the follow-up task with example utterances for each condition.

[A picture containing diagram

Description automatically generated](https://www.tandfonline.com/doi/full/10.1080/15475441.2022.2050236?scroll=top&needAccess=true&role=tab)

**Instructions**

This task is about rating how good someone's instructions are. Imagine a game, where one person is the instructor, and the other is the 'matcher'. The instructor's job is to tell the matcher which picture cards to collect. The matcher's job is to click on the picture that the instructor says, in order to collect the cards.

Your job now is to say how good you think the instructor's instruction is for picking the card highlighted in red.

For example, here the instructor wants the matcher to pick the card highlighted in red. He says, "Pick the card with scissors". How good do you think this instruction is?

Good - kind of good -kind of bad - bad.

**Predictions**

We predicted that:

* the fully informative condition would be rated as overwhelmingly “good”
* the ambiguous condition would be rated as “bad”
* the ad hoc implicature condition to also be rated as “kind of good” to “good”
* the critical condition to be also rated as “kind of good” to “good”, if participants expected the speaker to be informative (and also succinct); alternatively, as “kind of bad” to “bad” if, on the other hand, the context gives rise to expectations of strictly speaking over-informative utterances.

**Participants**

English-speaking adults (N = 49) completed the task online using the Gorilla Experiment Builder (Anwyl-Irvine et al., [2020](https://www.tandfonline.com/doi/full/10.1080/15475441.2022.2050236?scroll=top&needAccess=true&role=tab)); they were recruited via Prolific ([www.prolific.co](http://www.prolific.co/)).

**References**

Anwyl-Irvine, A. L., Massonnié, J., Flitton, A., Kirkham, N., & Evershed, J. K. (2020). Gorilla in our midst: An online behavioral experiment builder. *Behavior Research Methods*, 52(1), 388–407. https://doi.org/10.3758/s13428-019-01237-x

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