When children accept under-informative utterances: Lack of competence or pragmatic tolerance?

Alma Veenstra and Napoleon Katsos
University of Cambridge

Binary judgment on under-informative utterances (e.g., judging the truth of a sentence such as "*some horses jumped over the fence*" in a situation where all horses did) is the most widely used methodology to test children's ability to generate implicatures. Accepting under-informative utterances is considered a failure to generate scalar implicatures. Children who do not realize that there is a more informative alternative that the speaker could have used will accept the under-informative utterance, as it is logically—but not pragmatically—true. Studies following this reasoning have concluded that children as old as 8 and 10 years have not yet acquired scalar implicature [1], and that with training, explicit instruction and helpful context, the performance of young children is still rather unstable [2][3][4].

Another, more recent, line of research argues that it is the binary judgment paradigm that possibly obscures children's true performance. The Pragmatic Tolerance Hypothesis posits that although under-informative utterances are pragmatically infelicitous, some children may not find this violation grave enough to warrant a downright rejection when asked whether the utterance is right or wrong. When given multiple options, instead of two as in the binary judgment paradigm, children as young as 5 years do seem sensitive to under-informativeness and no longer opt for the most positive option [7][8][9].

We present off-line and response time evidence for the Pragmatic Tolerance Hypothesis. Seventy-five Dutch-speaking 4- to 9-year-old children completed both a binary judgment task (Experiment 1) and a ternary judgment task (Experiment 2). In Experiment 1, the participants were asked to judge the statements of a fictional character about a visual display. Critically, some of the utterances were under-informative, for instance when the character said "*in the basket there is a shoe*" when there were both a shoe and a ball in the basket. Judgments and response times were collected. In Experiment 2, the participants were asked to reward the character with a small, medium, or large strawberry, corresponding to how accurate they judged her description. Here, only participants' judgments were collected.

Comparing the results from Experiments 1 and 2 revealed that there were three main types of participants: children who accepted under-informative utterances in the binary judgment task and opted for the large strawberry in the ternary judgment task; children who accepted under-informative utterances in the binary judgment task and opted for the small or medium strawberry in the ternary judgment task; and children who penalized under-informative utterances in both tasks. We argue that this demonstrates a developmental pattern, where children evolve from pragmatically oblivious speakers to pragmatically tolerant speakers to fully competent pragmatic speakers.

Half of the participants who accepted under-informative utterances in Experiment 1, penalized them in Experiment 2. The response times in Experiment 1 showed that these children experienced a significant slow-down in the under-informative utterances compared to simple true utterances, suggesting that they detected the pragmatic violation even though they did not reject it. In contrast, the participants who accepted under-informative utterances in both tasks, did not show this slow-down in the binary judgment task and were equally fast in accepting under-informative utterances as they were in accepting simple true utterances. Had we only used the judgments from the binary task, these pragmatically tolerant children would have been incorrectly categorized as not having yet acquired implicature.

Taken together, these results suggest that data from binary judgment tasks should be interpreted with caution as they seem to systematically underestimate children's competence

with pragmatics. In addition, other measures, such as response times, are necessary to distinguish between children who accept under-informative utterances due to a lack of pragmatic competence and children who accept such utterances due to pragmatic tolerance.

[1] Noveck, I. A. (2001). When children are more logical than adults: Experimental investigations of scalar implicature. *Cognition*, *78*(2), 165-188.

[2] Feeney, A., Scrafton, S., Duckworth, A., & Handley, S. J. (2004). The story of some: everyday pragmatic inference by children and adults. *Canadian Journal of Experimental Psychology*, *58*(2), 121-132.

[3] Guasti, M. T., Chierchia, G., Crain, S., Foppolo, F., Gualmini, A., & Meroni, L. (2005). Why children and adults sometimes (but not always) compute implicatures. *Language and Cognitive Processes*, *20*(5), 667-696.

[4] Papafragou, A., & Musolino, J. (2003). Scalar implicatures: Experiments at the semantics-pragmatics interface. *Cognition, 86*(3), 253-282.

[5] Davies, C., & Katsos, N. (2010). Over-informative children: Production/comprehension asymmetry or tolerance to pragmatic violations? *Lingua*, *120*(8), 1956-1972.

[6] Katsos, N., & Bishop, D. V. (2011). Pragmatic tolerance: Implications for the acquisition of informativeness and implicature. *Cognition*, *120*(1), 67-81.

[7] Katsos, N., & Smith, N. (2010). Pragmatic tolerance and speaker-comprehender asymmetries. In Franich, K., Iserman, K. M., and Keil, L. L. (eds.), *Proceedings of the 34th Boston University Conference in Language Development*. Cascadilla Press, MA, USA, pp 221-232.