Children's Comprehension of Over-and Under-informative Utterances

Tiffany Morisseau,, Catherine Davies, Danielle Matthews

4th Biennial Conference of Experimental Pragmatics
June 2-4, 2011, Barcelona

Presentation Title: ***Children's Comprehension of Over- and Under-informative Utterances***
Authors: Tiffany Morisseau, Catherine Davies and Danielle Matthews

The present work investigates the capacity and motivation of young children to grasp other people's communicative intention and use it to draw pragmatic inferences.

Many studies have given evidence that the capacity to attribute intentions to others is acquired early on in life. For example, when playing a hiding and finding game with an adult, infants as young as 14 months infer the communicative intent behind cues such as pointing and gazing and are able to find hidden objects as a consequence (Behne et al, 2005). To what extent do young children use this ability for language comprehension? If a speaker says something in an infelicitous (unexpected) way, will a child look for a reason for this infelicity? We focus here on infelicity in terms of quantity of information given by the speaker.

We consider utterances whose relevance is not obvious (i.e. utterances that require a listener to seek out non-readily accessible information in order to understand a speaker's intended meaning). Building on research showing that children are sensitive to the contrastive function of adjectival modification (Huang & Snedeker, 2008; Davies & Katsos, 2010; Bannard, Klinger & Tomasello, in press), we ask whether children are disturbed by modified referring expressions that are markedly over- or under- informative for the task at hand, and whether they seek out further information from the environment or the speaker.

In the over-informative case, would hearing "*Pick the cat with a tail"* in a context where there is only one, normal-looking cat lead a child to question why the speaker used such modification (and to consider that there might be a cat without a tail nearby)? Given previous studies of rational imitation in the non-linguistic domain (e.g., Gergely et al., 2002), and of social cognitive and linguistic development (e.g., understanding modified noun phrases), we predict that they would from the age of three.

In the under-informative case, we test how children resolve instructions such as "*Pick up the apple"* when there is more than one apple in view. Previous research suggests that 4-year-olds are aware of message ambiguity (Nilsen et al, 2008), but rarely go so far as to verbally request clarification (Matthews et al., 2007). Do children seek to resolve ambiguities even at 3 years of age? Do they do so non-verbally, for example, by checking their interlocutor's line of regard?

In this ongoing study, 3- and 5-year-old comprehenders moved toys around a 3-dimensional grid in order to match a target configuration. In a 2 x 2 design, children responded to instructions with or without prepositional phrase modification ('*the horse (with the tail)'*) in cases where there were one or two objects corresponding to the head noun (one or two horses in the grid). The resulting four cells were: optimal (no modification, 1 object); under-informative; optimal (modification, 2 objects); over-informative. Reaction time to grasp the target object after the offset of the utterance was measured for 16 experimental items (4 over-informative, 4 under-informative and 8 matched controls) in a within-subjects design. Mixed

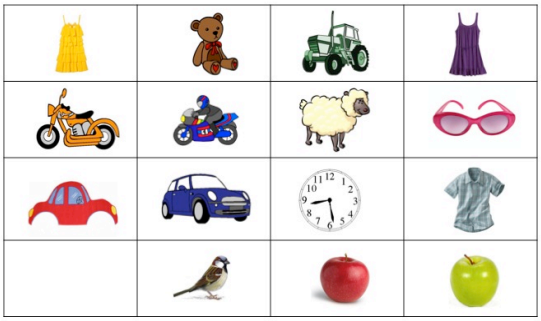
effect regression models were fitted to log-transformed data for each age group separately (as the grid was set nearer for the younger children).

For instructions with modification, five-year olds were significantly slower to respond to *over-informative* instructions compared to *optimal* ones (B =0.171, S.E. = 0.053, t = 3.217, p = .002). Among the 3-year-olds, we observed no such significant difference.

For instructions without modification, the 3-year olds were significantly more likely to gaze check their partner on under-informative (47 gaze checks) compared to optimal trials (12 gaze checks). X-squared = 20.76, df = 1, p-value = <.0001). The same held for the 5-year-olds (70 gaze checks on under-informative trials and none on control trials: X-squared = 70, df = 1, p-value < .0001). The 3-year-olds verbally asked for clarification on under-informative trials 23 times and the 5-year-olds did so 52 times. On trials where children's did not verbally request clarification, we calculated reaction times and observed that 5-year-olds were slower to respond to *under-informative* utterances than *optimal* ones (B =0.185, S.E. = 0.040, t = 4.651, p = .0002). Among the 3-year-olds, we observed no such significant difference.

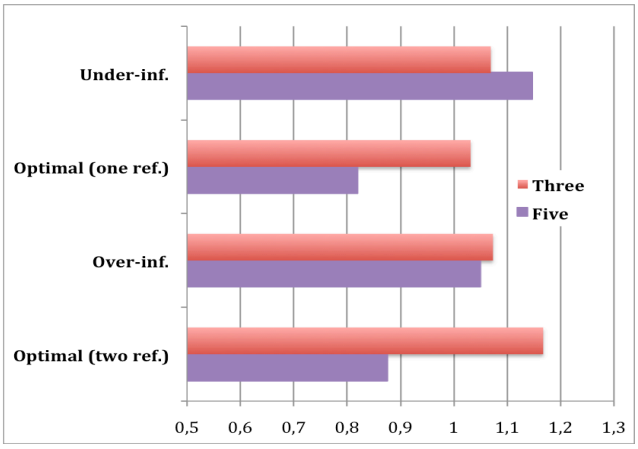
In summary, the results suggest that sensitivity to informativeness can be captured developmentally. 5-year-olds showed sensitivity to the infelicity of both under- and over-informative sentences. 3-year-olds only showed some sensitivity to the infelicity of under-informative utterances in terms of their gaze-checking responses. This builds on evidence from 4-year-olds that even young children are implicitly sensitive to ambiguity (Nilsen et al., 2008). However, when instructions were over-informative 3-year-olds showed no sign of finding this infelicitous. This may be because children this age simply do not generate inferences in response to over-informativity. However, future studies with lower task demands are required to be certain of this. For example, the arrays in this study were quite complex for 3-year-olds. Furthermore, children may have been more sensitive to the modified stimuli if the modification came before the head noun rather than after it (by which point the target had already been uniquely identified). These task demands make it all the more striking that the 5-year-olds *did* show evidence of seeking to understand why the speaker was more informative than they would have expected.

Example of experimental item



« Take the car with wheels »

Results



Log-transformed reaction times as a function of age and condition