PRAGMATIC INFLUENCES ON 3- AND 4-YEAR-OLDS’ INTERPRETATION OF ‘THINK’

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Children under 4 years seem to interpret sentences with ‘think’ (1)-(4) by evaluating the truth of the complement clause with respect to reality, rather than the subject’s beliefs [1-4]. Recent evidence suggests that this non-adult-like behavior may not be attributable to a lack of conceptual understanding of belief [5-6], as previously assumed (e.g. [1,3]). We present evidence from truth-value judgment tasks that children have acquired an adult-like semantic representation of ‘think’ earlier than previously supposed, but have a non-adult-like understanding of the pragmatics of use of ‘think’. In adult speech, attitude verbs are often used parenthetically, serving an evidential-like function, while their clausal complement carries the “main point” (5) [7-11]. We propose that children over-rely on parenthetical interpretations of ‘think’ because they often fail to grasp the contextual relevance of belief.

In Experiment 1, we presented 4-year-olds (n=32) with animated videos. In each story, one character hides, and a “seeker” guesses the hider’s location. Children judged sentences which described the belief of a seeker (6). We manipulated whether the participant knew the location of the hider (Knowledge vs. Ignorance). We also manipulated the number of seekers: in Two-Seeker stories, a conflict of beliefs between two seekers heightens the salience of belief. Finally, we manipulated whether the target sentence described a True or False Belief. In the Ignorance condition the belief type is unknown, so we collapse across this factor. The target response (yes or no) was counterbalanced across conditions and scripts.

With One-Seeker stories, children were above chance in the True Belief condition (86%), below chance in False Belief (32%), and at chance in Ignorance (57%). Children may take the question under discussion to be the location of the hider, and assume that the main point of the target sentence is the complement clause. This parenthetical interpretation of ‘think’ correctly predicts chance performance in Ignorance, where the truth of the complement clause is unknown.

With Two-Seeker stories, children’s performance was more adult-like across all conditions compared to One-Seeker stories (Figure 1). This improvement in response to a contextual manipulation suggests that children need strong cues to determine which interpretation of ‘think’ is appropriate.

In Experiment 2, we presented 3-year-olds (n=20) with slightly simplified Two-Seeker stories. To test the hypothesis that children’s non-adult-like interpretations are parenthetical, we manipulated Sentence Truth (True vs. False) as a factor, and collapsed the Knowledge/Ignorance and Belief type manipulations into a 3-way factor: True Belief vs. False Belief vs. Ignorance.

In True Belief sentences, children were more accurate when the sentence was True (84%) than False (78%). By contrast, in False Belief sentences, children performed below chance when the sentence was True (30%) and significantly better when it was False (59%) (Figure 2). This pattern is expected under a parenthetical interpretation, which is infelicitous when the sentence is false--when the main clause subject does not hold the stated belief.

Together, these results show that 3-4 year-olds do not entertain deviant representations of ‘think’. Rather, they struggle with the conditions of use of multiple adult-like interpretations.
(1) Does John think it’s under this box? (cf. [1])
(2) What did she think she bought? (cf. [2])
(3) What does Mom think that Andy is doing? (cf. [3])
(4) Puppy thinks that it is raining outside. (cf. [4])
(5) A: Where’s John?
   B: (Mary thinks) he’s at work.
(6) Mickey thinks that Donald is under the bed.

**Figure 1:** Experiment 1

**Figure 2:** Experiment 2

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**References**