Ad-hoc scalar implicature in adults and children

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Scalar implicature refers to the conversational shorthand of using weak terms to imply the negation of stronger ones that lie along the same “scale.” A professor who says “some students passed the test” implies that some students failed—if all had passed, a cooperative speaker would have made the stronger statement “all students passed.” In this project we investigate the origins of scalar implicature, and the nature of scales, by investigating a spectrum of tasks that are logically equivalent to conventional scalar implicature but in which the scale arises from contextual, rather than conventional linguistic factors—ad-hoc implicatures. One example of an ad-hoc scalar implicature is disambiguation between two faces, one with glasses and a top hat and one with only glasses. The description “face with glasses” in this context can be used to pick out the face with only glasses much the way that “some” picks out the scenario involving only some students.

Experiment 1 compares the performance of children and adults at our ad-hoc pragmatic task. In contrast to standard scalar implicatures which are difficult for children below the age of 5, even three-year-olds were able to use ad-hoc scales to disambiguate the referent of a logically ambiguous expression. In Experiment 2 we ask whether the scales which lead to implicature in Experiment 1 are given by the immediate context of objects, or involve additional linguistic or world-knowledge. To test, we set up a context which is logically equivalent to the context of Experiment 1, but in which the absence of a feature is replaced with an alternate feature. Adult participants did not draw an implicature under this condition. The dramatic difference in performance between these two experiments suggests that the logical structure of the immediate context is not enough to lead adults to make a pragmatic inference. Experiment 3 further tests this theory by manipulating participants’ world knowledge through changes in the distribution of features like top hat and glasses, finding that the base rate of features can be used to manipulate whether adult participants perceive a scale (and hence make an implicature). This result supports the hypothesis that the rarer a feature is, the more informative it is and hence the more likely a speaker would be to mention it to pick out a referent.

Taken together, these findings support a statistical linguistic account of pragmatic inference in our ad-hoc task. Adults and children succeeded at the scales condition by relying on the real-world knowledge that possessing a feature (e.g. a top hat) is less common than not possessing that feature. This statistical information about rarity exemplifies what Sperber and Wilson (1985) term “shared knowledge” and Clark (1996) calls “common ground.” Pragmatic computations operate over our expectations about the world, language, and other people. These expectations include educated guesses about speaker’s intentions, informed by shared knowledge about the state of the world.