

Unifying the perspective-taking debate within a cue-integration framework: Addressees are sensitive to both perspective and referential fit

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In studies examining how addressees use common ground due to visual co-presence in real-time reference resolution, a confederate director instructs a naïve matcher to move objects in a real or virtual grid of cubbyholes. Some cubbyholes are occluded so the director cannot see the object, making it privileged to the matcher. When an object in privileged ground is a better referential fit for a referring expression than the intended referent in common ground (e.g., “tape” when adhesive tape is in privileged ground and cassette tape in common ground; “small candle” when the smallest of three candles is in privileged ground) matchers frequently look at and sometimes reach for the privileged object, suggesting they are behaving egocentrically (e.g. Keysar et al., 2000). In normal language use, however, visual co-presence and referential fit are each probabilistic cues. Therefore when both cues are available, an optimal Bayesian cue integration framework predicts that addressees’ use of ground will be modulated by other cues and the strongest and earliest effects of ground would emerge when the referential expression matches both objects equally well.

We conducted a visual world experiment with 8 items in a 4x4 visual display that mimicked cubbyholes. Naïve participants (n=16) played a referential communication game with a confederate director. Six items were in common ground and two were privileged to the addressee. On each trial, the confederate instructed the addressee to move 5 objects in the display. 16 critical trials included two instructions like (1) and (2). Displays contained two non-identical tokens of an object which contrasted in size (e.g. big and small cat) in common ground. The critical set had an additional token the same size as the target of the second critical instruction (e.g. another small cat). The typicality of the two small cats was manipulated such that they were both typical tokens, both atypical tokens (e.g. hairless cat) or one of each. The condition where the small atypical cat was in common ground and the small typical cat was in privileged ground mimics the “Keysar” experimental conditions. Norming determined typicality and established that names were acceptable for typical and atypical tokens.

During (1), fixations to the big cat quickly deviated from competitors (450 ms after adjective onset, replicating Sedivy et al., 1999) except in the “Keysar” condition (850 ms), which was also the only condition where participants frequently fixated the privileged item. Thus, participants are sensitive to both the referential fit of the items and the common ground status of the items. During (2), participants rarely fixated or clicked on the privileged small cat, except in the “Keysar” condition, where participants clicked on the privileged cat on 20% of the trials and looked at it almost twice as often as in other conditions.

Thus within the same experiment, we find immediate use of ground information, while also replicating results interpreted as evidence for initial egocentrism suggesting that a cue-integration approach may unify the debate. We are currently testing quantitative predictions of a cue-integration model by manipulating degree of occlusion and VOT using objects that differ in word initial voicing (e.g., bug, pug).

Examples

- (1) Put the big cat above the tower.
- (2) Put the small cat below the spoon.

References

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