Gesture helps listeners disambiguate expressions of opinion

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Studies have shown that interlocutors track the spatial locations of gestures and use gestures to understand a discourse (e.g. Gullberg 2006; Sekine & Kita, 2015, 2017). Such studies have, for the most part, focused on concrete entities (eg. characters in a story) and argued that listeners create mental images of a discourse, encoding the spatial locations of entities in memory (Hostetter & Alibali, 2008). The same case has not been made for the role of gestures referring to abstract entities (e.g., opinions). Here, we present two studies that explore the role of gesture in how participants respond to ambiguity when a speaker is expressing a personal opinion or preference.

The first study establishes a baseline by asking how speakers respond when reading a speaker's words as text (i.e., a monomodal setup). In all, 59 scenarios were created in the following template: attitude about a topic (A statement), concessive, differing attitude (B statement), hedge, and finally ambiguous statement indicating a preference for A or B via a pronoun, as in (1):

(1) *Toni says pizza is best with pineapple* (A). *On the other hand* (concessive), *Marco really prefers more traditional pizza* (B). *I'm not sure* (hedge), *but I think he's right* (preference)

Participants responded with their judgment about the stimulus speaker's preference (e.g., does a participant think the speaker relaying the scenario agrees with Toni or Marco, in (1)). The results of Study 1 indicate that participants will choose the last thing they encountered as the speaker's preference about 70% of the time, reinforcing the previous literature on the recent mention effect in reference resolution (Arnold et al., 2018: 42; see also Arnold 2001, 2010).

In the second study, we investigated whether participants use gesture to disambiguate ambiguous statements of preference, i.e., if statements such as those above are accompanied by gesture. 150 participants were recruited using Mechanical Turk. We selected 36 scenarios from study 1 that had the highest proportion of participants choosing B for the stimulus speaker's preference and recorded videos of these. Scenarios were performed in two different ways: a gesture-disambiguating version (GD) and a gesture non-disambiguating version (GND). Palm-up open-hand (PUOH) gestures (Müller 2004) were performed with the A and B statements. For the GD condition, the speaker performed a final PUOH with the preference statement in the same location as the A statement gesture.

To answer the main research question as to whether participants in the gesture disambiguating trials had a lower rate of selecting the B statement for stimulus speaker preference (given that the gesture co-occurred with the A statement), we used mixed model logistic regression with participant and scenario as random effects and fixed effects of trial type (GD vs. GND) and 'whose preference' (i.e., stimulus speaker or participant's own preference) and their interaction. Findings from study 2 suggest that participants choose the A statement 70% of the time on average when it co-occurred with a gesture, in contrast to the audio and GND video scenarios.

The key finding of this work is that the co-articulation of a gesture influenced how participants interpreted the speaker's preferences. Findings also contribute to ongoing research in the role of gesture in discourse processing and reference resolution (Goodrich Smith & Hudson Kam 2012; Debreslioska et. al 2019; Hinnell and Parrill 2020).

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