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Investigating the role of gaze and the semantics of demonstratives in referent identification

Speakers employ a variety of linguistic expressions to refer to objects in their surroundings, including demonstratives (e.g., *this/that*). Demonstratives are syntactically simple, but semantically complex. Their meaning involves coordination of joint attention between interlocutors and deixis (contextual situation of referents regarding the speaker at the center of a speech act) [1-4].

Demonstrative pairs serve to express a distance contrast where referents can be interpreted as being near the speaker (for the proximal demonstrative *this*) or far from the speaker (for the distal demonstrative *that*). Despite crosslinguistic differences, some claim that the basic contrast may be a language universal [5-8]. Demonstratives are also thought to be multimodal as they often co-occur with a variety of gestures [9-11]. Based on their acquisitional path, Diessel [12] argues that demonstratives are the first linguistic strategy children use to coordinate joint attention. While several experimental studies have been conducted to investigate these properties separately [13, 14], it remains unclear how these properties may interact.

This paper presents an experiment investigating three questions: (1) *do listeners consistently apply the distal-proximal contrast when choosing a demonstrative's referent?*; (2) *do listeners rely on the speaker's gaze in interpreting demonstratives?*; and (3) *how do these factors interact?* Twenty adult native English speakers participated in a referent selection task where an alien character provides instructions of the form "Give me a/this/that N" and participants can use the alien's verbal and physical cues to select a referent from among six objects arranged in an array (see Fig. 1). The design involved three factors: the determiner type used in the instructions (*a/this/that*), the direction of the alien's gaze (towards a single fruit/a pair of fruits), and the position of the single fruit (near/far).

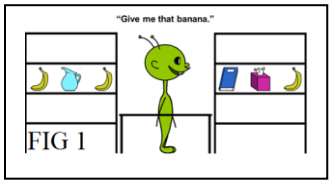

FIG 1

Participants strongly preferred choosing referents in the same direction of the alien's gaze, but this preference increased to near categorical levels for *this/that* compared to *a* (see Fig. 2). Participants also distinguished between *this* and *that* via the proximal-distal contrast, but only if they also applied gaze in referent selection and the cue was not enough to identify a unique referent (i.e. the alien looked at a pair of fruits) (see Fig. 3). If participants chose to ignore the alien's gaze, responses did not reflect the presence of a proximal-distal contrast as they always chose a near fruit regardless of the demonstrative. Furthermore, if the alien looked at a single fruit and the participant chose to incorporate his gaze into referent selection, they always chose the single fruit regardless of whether its position matched the semantics of the demonstrative. These results also suggest that different cues do not hold equal weight in referent selection; instead, speaker gaze is first used to identify a referent and the proximal-distal contrast is only considered if gaze was not enough to identify a unique referent. Lastly, the results suggest that visual world factors such as affordance have an impact on referent selection and is actively used by participants to select the referent in the absence of useful semantic cues as in the case of the indefinite article. In sum, the results of the current experiment indicate a hierarchical ordering of information used to identify the referent of a demonstrative where listeners may be aware of many informative cues but only apply as many cues as necessary to identify a unique referent.

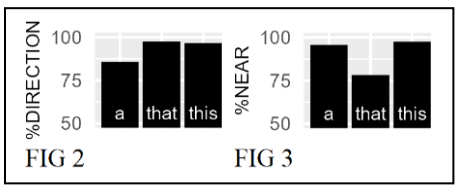

FIG 2 FIG 3

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