

Communication breakdown induces audience design strategies

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Several studies have tried to get speakers to produce unambiguous syntactic structures for listeners, but only with mixed success (e.g., Ferreira & Dell, 2000; Kraljic & Brennan, 2005; Snedeker & Trueswell, 2003). Most of these designs lack the context that necessitates disambiguation, and the responses obtained from participants has often been interpreted as being an egocentric default (i.e., it is cognitively easier to take one's own perspective). In most contexts, visual ambiguity is inconsequential to the success of the interaction and miscommunication is unlikely. In the current work, we seek to induce participants to use an instruction-giving strategy that clarifies a visual ambiguity (e.g., "Put the banana that's in the box on the circle"; similar to Haywood, Pickering & Branigan, 2005). In the Haywood et al. study, relatively mixed or weak hints of audience design were found. We attempt here to make visual ambiguity more salient in the form of visual communication breakdown, in order to explore its effect on disambiguation.

Experiment 1 implemented a visual mistake (pre-recorded video with a mistake), during an ambiguous two-referent instruction task with a pseudo-confederate (pre-recorded video and audio responses). The mistake was intended to draw the participant's attention towards the visual ambiguity. The presence of a mistake had a significant effect on disambiguated statements (e.g., a statement that grouped the two-referents as one object) for participants who believed the pseudo-confederate was real. Subsequent analysis revealed that as the experiment progressed, two-referent statements decreased in duration relative to the one-referent statements. The visual mistake was clearly a successful cue, which may have promoted faster productions that required fewer resources for future productions in an automatic way.

Experiment 2 tested the role of cognitive load, via an imposed time pressure, during disambiguation strategy formation. The results revealed that increased time pressure or induced cognitive load, reduced syntactic disambiguation. This suggests that planning an utterance is affected by cognitive load and if resources are taxed then an interlocutor will resort to an ease of production strategy.

Subsequently, Experiment 3 evaluated the effect of varying time pressure on syntactic disambiguation to further explore memory's role on strategy formation. The results suggested that participants strategically formulate syntactic disambiguation if they have time, and these strategies will persist when they are eventually pressured for time. In contrast, when pressured early on interlocutors have difficulty formulating a strategy to disambiguate resulting in ambiguous utterances. However, as soon as the time pressure is removed, they quickly disambiguate. Until a disambiguation strategy is established, cognitive load seems to have a substantial impact on an interlocutor's ability to plan syntactic disambiguation, but not the talker's ability to take the other's perspective.

When participants are able to integrate the communication breakdown, they make use of it successfully. Here we show that disambiguation can happen as a wholesale strategy, but that it requires cognitive resources to succeed. We advocate that audience design is adaptive and does not anchor itself to concepts of an "egocentric default" as a fixed aspect of production processes during interaction.

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