Experimentally investigating the production of additive presupposition triggers

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This study investigates under which circumstances speakers produce additive presupposition triggers such as *too* to understand what contexts (if any) necessitate their presence and how sensitive they are to discourse factors. Due to their presuppositional nature, additives have been argued to be obligatory if the preceding context contains a suitable antecedent such that their presupposition is satisfied [Heim, 1991; Percus, 2006]. For (1a), the antecedent is part of the question which satisfies the presupposition that someone else other than Donald watched Dune. Omitting *too* in the host sentence (1b) would lead to a marked discourse, indicated by #, whereby (1b) comes across as a stand-alone utterance detached from or contrastive to the previous dialogue.

(1) Speaker1: Was Lisa the only one who watched Dune?
   a. Speaker2: Donald saw Dune, too.
   b. Speaker2: #Donald saw Dune.

However, the actual production of additives seems to be more complex, such that additives show sensitivity to the discourse context and fulfill discursive functions such as signaling similarity/parallelism [Spenader, 2002; Amsili et al., 2016], highlighting argumentative identity [Winterstein and Zeevat, 2012], and maintaining discourse coherence [Eckhardt and Fränkel, 2012].

This study examined the production of additives when the antecedent turn in the discourse context varies along three dimensions: Similarity, Turn Distance and Politeness. Whereas research findings suggest that Similarity influences the production of additives, Turn Distance has to our knowledge not been empirically investigated yet. Instead, empirical research has mostly focused on contexts in which the antecedent immediately precedes or is part of the host sentence. Furthermore, we explored whether signaling similarity between antecedent and host utterance via additive use entails converging (i.e. socially aligning Giles [1973]) with the antecedent speaker. We therefore investigated Politeness to see whether speakers omit additives more frequently when speaking with an impolite speaker (to avoid convergence) as opposed to a neutral speaker.

Figure 1: Example for the last conversational turn for perfect similarity, 0 intervening turns and a neutral antecedent speaker.

We conducted two online production experiments in which participants were asked to attend a fictional work dinner, and to interact with their four colleagues and a waiter based on visual cues. The conversations were either about ordering food/drinks or about work related topics. Each conversation started

with a visual cue (e.g. a menu) and a question to introduce participants to the content they would later be asked to communicate (e.g. ordering a glass of Chardonnay). To see the conversation unfold, participants clicked through a set of pictures, one for each of the colleagues' conversational turns. After the last turn, participants were prompted with the original visual cue and a request to contribute to the conversation, see Figure 1. In the first experiment participants were invited to produce free text responses; in experiment II, they could select from a set of options either containing or not containing the additive *too*, or formulate their own response. We coded participants' responses for both experiments as either containing or not containing any of the following additive presupposition triggers: *too*, *also* and *as well*.

We manipulated Similarity by asking participants to formulate an utterance whose content either perfectly matched (ordering Chardonnay) or did not match/partially matched (ordering Pinot Grigio as no match) the utterance content of a previous speaker (antecedent speaker). Turn Distance was manipulated such that the participants' turn either immediately followed the antecedent speaker's turn or followed after three intervening turns. To test convergence, some participants conversed with polite/neutral speakers while others encountered an antecedent speaker who was impolite. This resulted in a 2×2×2 design, with two within-subjects factors (Similarity and Turn Distance) and one between-subjects factor (Politeness).

Participants are predicted to most frequently use additives for highly similar and recent antecedents, since it comes closest to what has been empirically investigated as being an obligatory context. We furthermore predicted that participants more frequently use additives for perfect similarity than reduced similarity, more frequently with zero intervening turns than three intervening turns, and more frequently when speaking to a neutral as opposed to an impolite speaker.

Experiment I

We recruited participants (N=78) over prolific (age range 18–83, mean = 37 years), 1 participant stated their preferred pronoun as they/them, 40 participants as she/her. 11% of the participants' utterances contained additives among them *too*, *also*, and *as well*, with *too* being the most frequent choice. A Bayesian logistic regression model with mixed effects (and three-way interaction) disclosed effects of Similarity and Turn Distance: perfect similarity and zero intervening turns meant an increase in log-odds of additive production ($\hat{\beta}$ =1.58, CrI:[0.78, 2.42] and $\hat{\beta}$ =1.17, CrI:[0.51, 1.93] respectively).

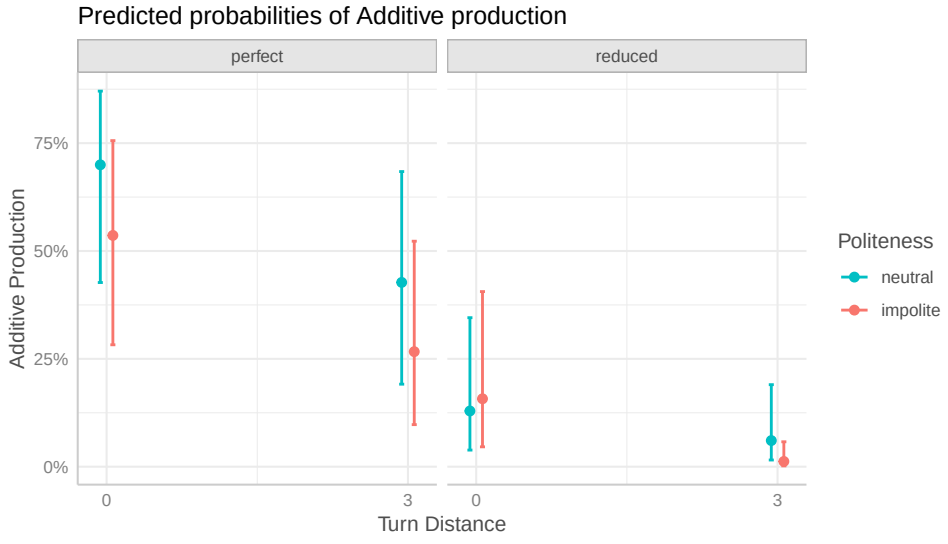

Figure 2: Experiment II: predicted probabilities to produce additive particles given model and data for perfect (left) and reduced similarity (right), 0 and 3 intervening turns, and contrasting a neutral antecedent speaker (blue) with an impolite antecedent speaker (red).

Experiment II

We recruited participants (N=140) over prolific (age range 18–75, mean = 36 years), 3 participants stated their preferred pronoun as they/them, 122 participants as she/her. 33% of the participants' utterances contained additives. A Bayesian logistic regression model with mixed effects (and three-way

interaction) disclosed effects of all three factors: perfect similarity, zero intervening turns, and speaking to a neutral antecedent speaker meant an increase in log-odds of additive production ($\hat{\beta}$ =1.30, CrI:[0.53, 2.00], $\hat{\beta}$ =0.74, CrI:[0.34, 1.15], and $\hat{\beta}$ =0.36, CrI:[0.05, 0.69] respectively), see Figure 2.

Our results confirm that speakers' show sensitivity to antecedent salience in their production of additives but that they do not use additives obligatorily, even in contexts with highly similar recent antecedents. Instead, accounting for their presuppositional nature and discursive function, our findings lend support to models in which speakers use additives as part of grounding – a process by which interlocutors collect and coordinate knowledge [Herbert H and Brennan, 1991]. By using additives, speakers refer back to content in the common ground, acknowledge parallelism between content of the common ground and their utterance, and signal that they kept track of the conversation. Keeping track of what has entered the common ground may be more difficult with increasing conversational turns and as such grounding may come with working memory cost. Furthermore, the use of additives as a cooperative attempt to actively participate in the grounding process may count as a convergence move with the antecedent speaker. The infrequent use of additives for salient antecedents may be because explicitly signaling involvement in grounding via additive use is not always necessary or may be the speakers' attempt to avoid converging with the antecedent speaker. However, the latter claim needs further investigation.

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