SELF-REPAIR INCREASES ABSTRACTION OF REFERRING EXPRESSIONS

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When interlocutors repeatedly describe referents to each other, they rapidly converge on referring expressions which become increasingly systematized and abstract as the interaction progresses. This occurs for a wide range of referents, e.g. when referring to spatial locations (Garrod and Doherty, 1994; Roberts et al., 2016; Mills, 2014), music (Healey et al., 2007), concepts (Schwartz, 1995), confidence (Fusaroli et al., 2012), and temporal sequences (Mills, 2011). Cumulatively, these findings suggest that interaction in dialogue places important constraints on the semantics of referring expressions.

However, there is currently no consensus about how best to account for how convergence develops. The iterated learning model (Kirby, Griffiths and Smith, 2014) explains convergence as arising out of individual cognitive biases; the interactive alignment model of Pickering and Garrod (2004; 2021) favours alignment processes, while the collaborative model of Clark (1996) emphasizes the role of positive feedback. By contrast, Healey et al., (2007) argues that negative evidence of understanding plays the central role: When interlocutors initiate repair, this allows them to interactively identify, diagnose and resolve any differences in interpretation between them and their conversational partner. Addressing these differences accelerates convergence.

To investigate in closer detail how negative evidence contributes toward convergence, we report a variant of the "maze task" (Pickering and Garrod, 2004). Participants communicate with each other via an experimental chat tool (Healey and Mills, 2006), which automatically transforms participants' private turn-revisions into public self-repairs that are made visible to the other participant. For example, if a participant, A types:

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A: Now go to the square on the left, next to the
big block on top
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and then before sending, A revises the turn to:

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A: Now go to the square on the left, next to the
third column
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The chat server automatically detects the revised text and inserts a hesitation marker (e.g. "umm" or "uhhh" immediately preceding the revision). This would yield the following turn, sent to B:

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A: Now go to the square on the left next, to the
big block on top umm.. I meant next to the third
column
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Participants who received these transformed turns used more abstract and systematized referring expressions, and also used a larger vocabulary (i.e. more unique words). However, dyads who received the interventions solved fewer mazes and produced more turns than participants in the control group.

   We argue that this effect is due to the artificial self-repairs causing participants to put more effort into diagnosing and resolving the referential coordination problems in the task. At the start of the experiment this leads to fewer solved mazes, but ultimately yields better grounded spatial semantics and consequently leads to increased use of abstract referring expressions.

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