

Non-plural ‘some’ in contexts: Mouse-tracking evidence for rapid real-time social reasoning

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Listeners’ interpretations of the scalar quantifier ‘some’ vary from the semantic (some and possibly all) to a pragmatically-reinforced (some but not all) meaning, depending on context. Loy et al. (2019) showed that listeners are more likely to make an early commitment to the semantically-allowed meaning of ‘some’ as ‘all’ if it follows disfluent ‘uh’ in a context where larger values are socially undesirable (I ate, uh, some oreos).

Here, we varied the context to one where smaller values are socially undesirable interpretations of ‘some’. In two mouse-tracking experiments, we recorded mouse movements from 150 (experiment 1) and 173 (experiment 2) participants in a web-based task, in which we manipulated disfluency (present vs. absent) within-subjects in a set of 12 target trials. In each target trial, participants saw four images with different numbers of qualifications, each representing one of four potential interpretations of the meaning of ‘some’ (Fig. 1), and heard an interviewer ask an interviewee about their qualifications (Example 1). We measured both the final click results (i.e., which image each participant clicked at the end) as well as the trajectories of participants’ mouse movement during each trial.

Here, disfluency has the opposite effect, reducing the value participants associate with ‘some’: We found that participants are more likely to select images corresponding to one, or zero, qualifications, following disfluent utterances (Fig. 2). However, their mouse movements (Fig. 3) show they are quick to commit to one qualification (experiment 1) and slow to commit to zero (experiment 2).

Analyses of mouse trajectories further confirm these differences. For each experiment, we calculated the perpendicular distance over time in each trial from the mouse position to a diagonal line running from the two- to the four-check image, passing through screen centre. The perpendicular distance from this line depicts the extent to which a participant moves away from common, plural, understandings of ‘some’. We analysed this distance over 101 time-normalised timesteps to map listeners’ *non-plural tendencies* when hearing disfluent/fluent utterances, independently for each experiment. For participants who clicked the one-check image, their mouse-movements diverged around 355ms after disfluency onset. The pattern for the zero-check experiment was different: Despite the difference in eventual responses, a difference in mouse-movements only emerged some 2013ms after disfluency onset.

These findings suggest that social context and manner of speech can combine to affect the interpretation of ‘some’ as an utterance unfolds. Extending its meaning to ‘one’ is relatively

easy, but overwriting it with 'zero' (in effect, deciding that a speaker is lying) is more demanding.

Example 1 Interviewer: "How many 'A's have you got for your psychology courses?"
 Interviewee: "I've got **some** 'A's." (fluent) or
 "I've got, **uh, some** 'A's." (disfluent)

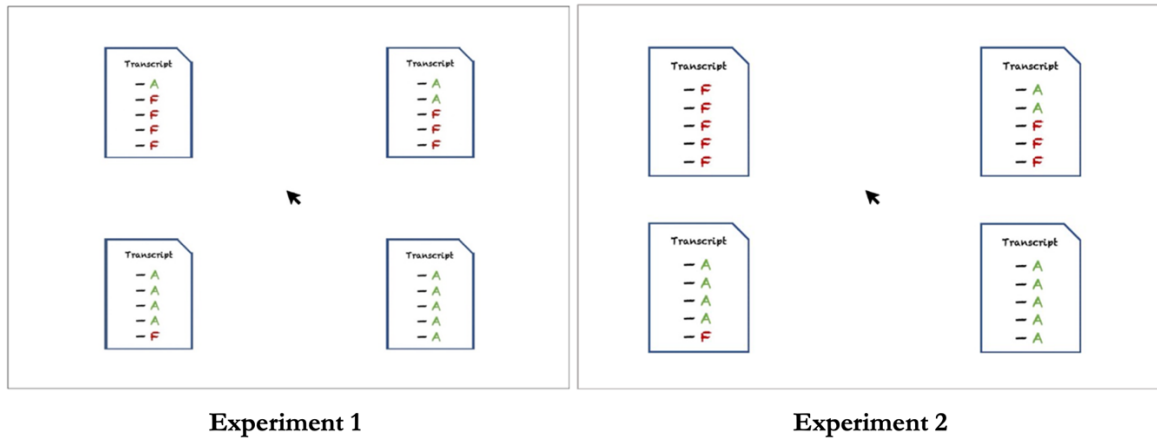


Fig. 1 Examples of screen displays in Experiment 1 (left) and Experiment 2 (right)

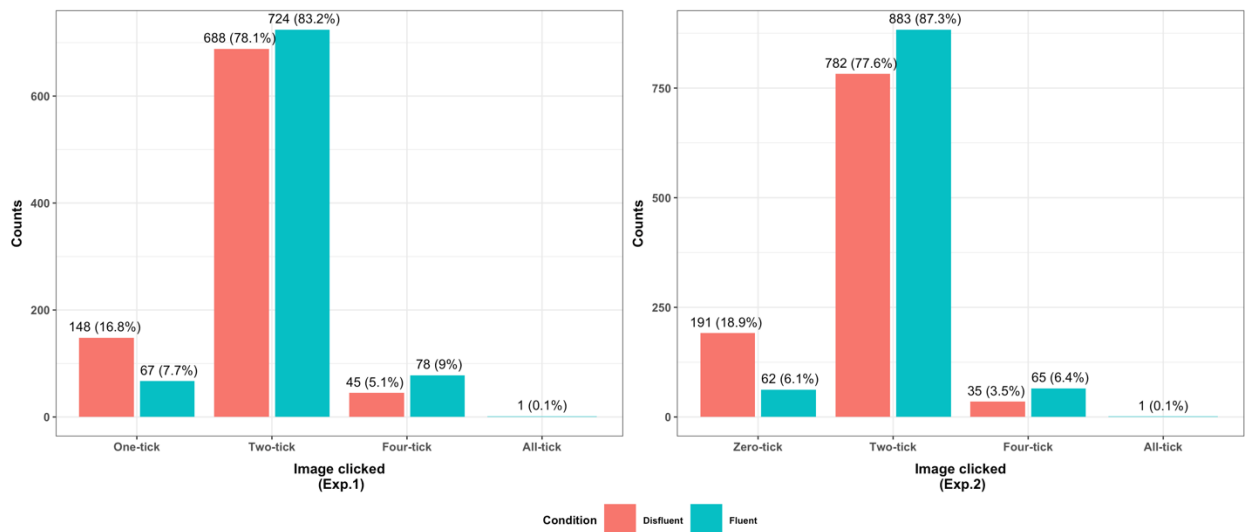


Fig. 2 Total number and distribution of mouse clicks recorded on each image (one/zero, two, four, or all) by manner of delivery (disfluent/fluent) in Exp. 1 (left) and Exp. 2 (right).

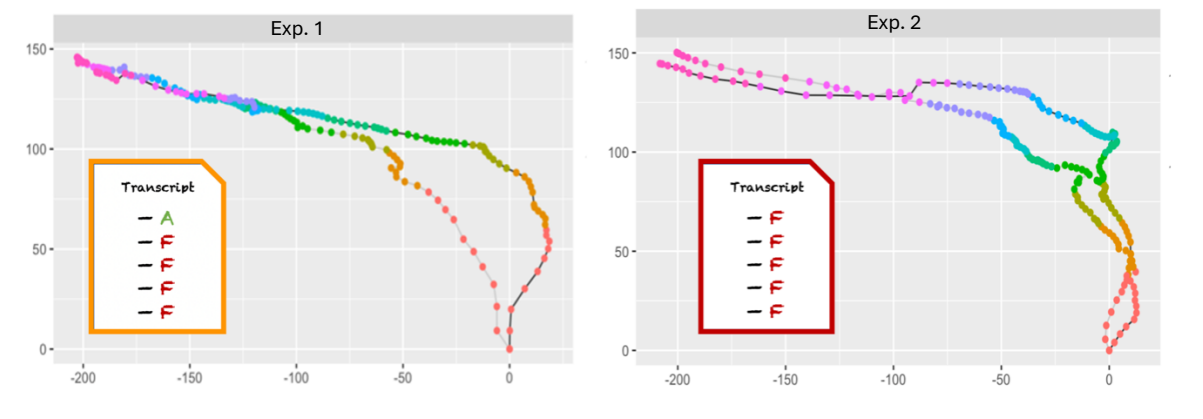


Fig. 3 Aggregated mouse trajectories towards image representing one (left) and zero (right) by condition (disfluent/fluent); the colours of points (from red to violet) indicate 10%, 20%, 30%...100% of trial time.

Reference Loy, J. E., Rohde, H., & Corley, M. (2019). Real-time social reasoning: The effect of disfluency on the meaning of some. *Journal of Cultural Cognitive Science*, 3(2), 159-173.