Visual Context and Language Comprehension: The Resilience of the Recent – Event Preference

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Eye tracking results suggest that people prefer to look at recently depicted over possible future events during spoken sentence comprehension. In a study by Knoeferle et al., 2011 (Exp 2) participants saw an actor performing an action (e.g. sugaring strawberries) and then listened to a sentence (NP1-VERB-ADV-NP2). The sentence referred either to the just depicted action (sugaring strawberries) or a possible future action (sugaring pancakes) (sentence: Lit transl. 'The experimenter sugared just now the strawberries/sugars in a moment the pancakes'). The NP1-VERB fragment was referentially ambiguous between the "recent", and another, equally plausible "future" event (performed post-sentence). Recent and future events were shown equally often. At the verb, participants inspected the recent over the future event target. Looks to the future target only rose as the future tense ADV cued the future event. Importantly, throughout the sentence an overall preference for the recent vs. future target prevailed, irrespective of tense.

Two visual-world eye-tracking experiments (each N=32) examined the robustness of this preference by introducing a frequency bias in favor of the future event. In Experiment 1, 80% of all sentences referred to a future event, and filler trials showed a future event only. In Experiment 2, 75% of all sentences referred to a future event and the fillers showed both a recent and future event. All experimental trials showed a past and future event, with half referring to a future event.

If our biases are effective, inspection of the future event target should happen earlier, and the overall recent target preference should reverse or drastically decrease. Results of both studies show that during the verb participants preferentially inspected the object that had recently been acted upon (the recent target). At the same time, both frequency manipulations were effective and resulted in earlier inspection of the future event target (during the late VERB). However the overall preference for the recent target was still present until sentence end.

We suggest a philosophical explanation for this bias relating to the epistemic interpretation of past and future tense statements. Past tense statements are based on stronger evidence about the truth of events (they can be verified) than future tense assertions (McFarlane 2003, see Staub & Clifton, 2011). For future events, one can predict at most their likelihood, based on previous experience; however even a highly likely future event appears to be insufficient to overcome the evidence of a past event.

References:
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