The Interaction of Structural and Semantic Biases in Coherence and Coreference
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Utilizing a model of pronoun interpretation in which structural and semantic biases are systematically integrated, story completion results show how the active/passive alternation influences expectations regarding both reference assignment and coherence establishment.

Existing research on pronoun interpretation reveals evidence of semantically-driven biases: Implicit-causality (IC) verbs, for example, create strong biases regarding which referent will be mentioned next based on knowledge of events and their likely causes. For instance, verbs like *amaze* and *scold* are biased toward subsequent reference to the subject and object in (1) respectively (Au 1986, Stevenson et al. 1994, inter alia).

> (1) Amanda amazed/scolded Brittany because she _____

Kehler et al. (2008) showed that IC verbs carry an additional bias. In similar passages with full-stop prompts (*Amanda amazed Brittany*. _____), participants continue IC contexts by describing a cause of the preceding eventuality (henceforth, Explanation coherence relations) much more often (60%) than for non-IC verbs (24%).

In comparisons between full-stop and pronoun-prompt conditions, other studies have suggested that pronouns overlay a subject bias on top of semantically-driven biases (Stevenson et al, 1994; inter alia). Rohde and Kehler (2008) further report that the presence of a (fully ambiguous) pronoun in turn biases participants to write more continuations that employ coherence relations that are biased to the subject referent.

We designed stimuli as in (2) to test several predictions arising from the interaction of these biases.

> (2) a. Amanda amazed Brittany. She _____
> b. Brittany was amazed by Amanda. She _____
> c. Amanda amazed Brittany. _____
> d. Brittany was amazed by Amanda. _____

The semantic and structural pronoun biases converge in cases like (2a), both pointing to the causally-implicated referent, Amanda, as the preferred interpretation of 'she'. These biases are opposed in (2b), however, where the IC verb has been passivized. If the structural voice alternation -- which preserves the proposition denoted by the sentence -- is irrelevant to the likelihood of generating Explanation continuations, we

should see the same percentage of Explanation continuations in (2b) as (2a). Alternatively, if comprehenders integrate both semantic and structural biases in their interpretation of ambiguous pronouns, and in turn integrate their expectations about pronoun interpretation and ensuing coherence relations, then two predictions emerge: (i) fewer continuations in (2b) than (2a) in which the pronoun refers to Amanda, and (ii) fewer Explanation continuations in (2b) than (2a). The full-stop prompts in (2c-d) were also included to ensure that the previously reported subject bias is replicable in these contexts.

As predicted, regardless of voice, participants (N=42) were more likely to write a continuation that referred to the subject of the previous sentence in the pronoun-prompt condition than the no-pronoun condition, replicating previous studies (active: 76.8%/58.8%; passive: 58.0%/22.2%). Further, the two main predictions for the pronoun-prompt data were confirmed: (i) the bias toward the IC-favored referent was significantly weaker in the passive pronoun condition (42.0%) than the active one (76.8%), and (ii) there were significantly fewer Explanation continuations in the passive pronoun condition (52.4%) than in the active one (74.6%). As such, even in contexts with strong semantic biases, the mere occurrence of a fully-ambiguous pronoun not only shifts interpretation biases toward the subject referent, but also influences comprehenders' expectations about how the discourse will be coherently continued.