

No evidence for conflict adaptation in the processing of reduced relative clause ambiguities

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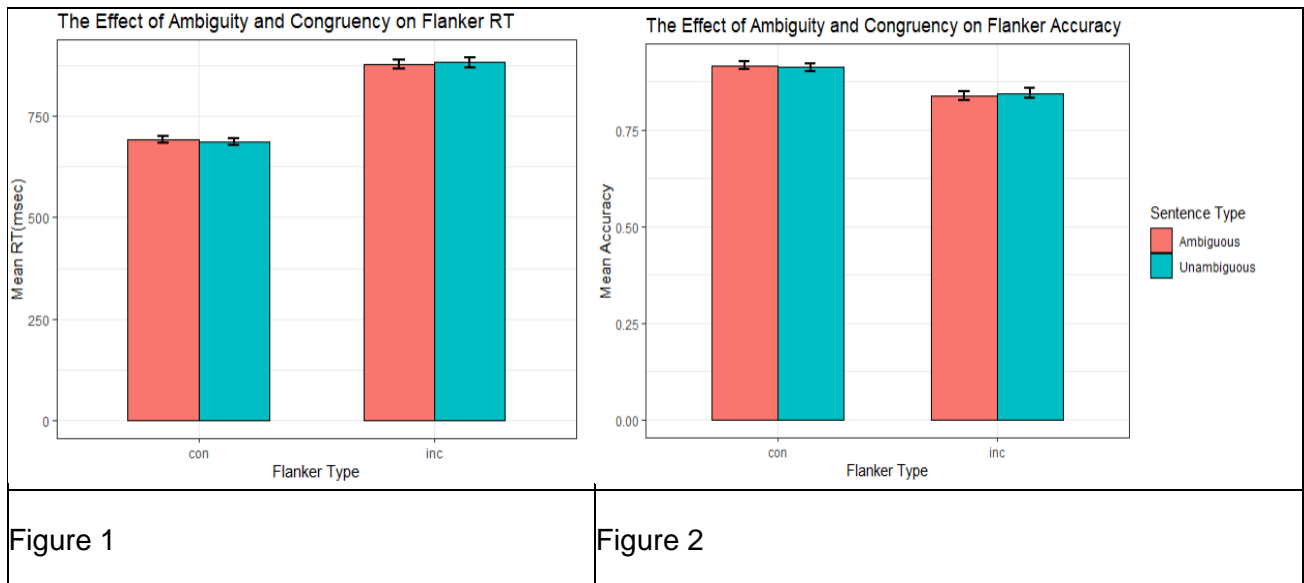
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According to the conflict monitoring theory (Botvinick et al., 2001; 2007), when conflict is detected, cognitive control is upregulated to facilitate information processing. An interesting question is whether domain-general cognitive control extends to the detection and resolution of linguistic conflict. Prior studies investigating this question have found that an immediately preceding incongruent conflict trial (such as Stroop or Flanker) facilitates ambiguity resolution (Hsu & Novick 2016; Hsu et al., 2020); likewise, immediately preceding linguistic conflict facilitates conflict resolution on a following non-linguistic conflict trial (Kan et al., 2013; Adler et al., 2020). The goal of the present study is to see whether these findings generalize to other syntactic ambiguities. We interleaved Flanker trials with sentences that contained a reduced relative ambiguity (1a) or an unambiguous relative clause (1b). Sentences were presented in a word-by-word self-paced fashion, following and preceding a congruent (<<<<<, >>>>>) or incongruent (<<<<<, >><>>) Flanker trial. If dealing with the linguistic ambiguity and representational conflict in sentences like (1a) involves domain general cognitive control and leads to conflict adaptation, we expect the congruency effect (reaction time and accuracy to incongruent minus congruent flankers) to be smaller when the Flanker trial follows an ambiguous sentence vs. an unambiguous sentence. Inversely, we predict that the garden-path effect (reading times at the critical verb (*began* in (1)) for ambiguous vs. unambiguous sentences) would be smaller if the sentence follows an incongruent vs. congruent flanker trial.

(1a) The little boy told the spooky ghost story around the campfire **began** to tremble with fear.

(1b) The little boy who was told the spooky ghost story around the campfire **began** to tremble with fear.

This preregistered study was conducted on-line (PCLbex) with 96 native English speaking participants recruited over Mechanical Turk and Prolific. RT were faster and accuracy higher for congruent vs. incongruent flankers, as expected. However, this congruency effect was not modulated by the ambiguity of the preceding sentence (see Fig. 1 and 2 for RT and accuracy, respectively; $\beta = -0.809$, t -value = -0.107 ; $\beta = -0.010$, z -value = -0.081). Similarly, reading times showed the expected garden-path effect, but this was not modulated by the type of preceding flanker (LogRT: $\beta = 0.006$, t -value = 0.429 , Fig. 3). These findings suggest that conflict adaptation effects found in prior studies do not readily generalize to other ambiguities. This may be due to readers not considering a relative clause interpretation of the ambiguity, and hence not experiencing conflict between two meanings. We are currently investigating data from comprehension questions to shed light on this.



Response times (Figure 1) and Accuracy (Figure 2) to Flankers. Left column: congruent flankers; Right column incongruent flankers. Blue: preceding sentence is unambiguous; Red: preceding sentence is ambiguous. Error bars are standard errors.

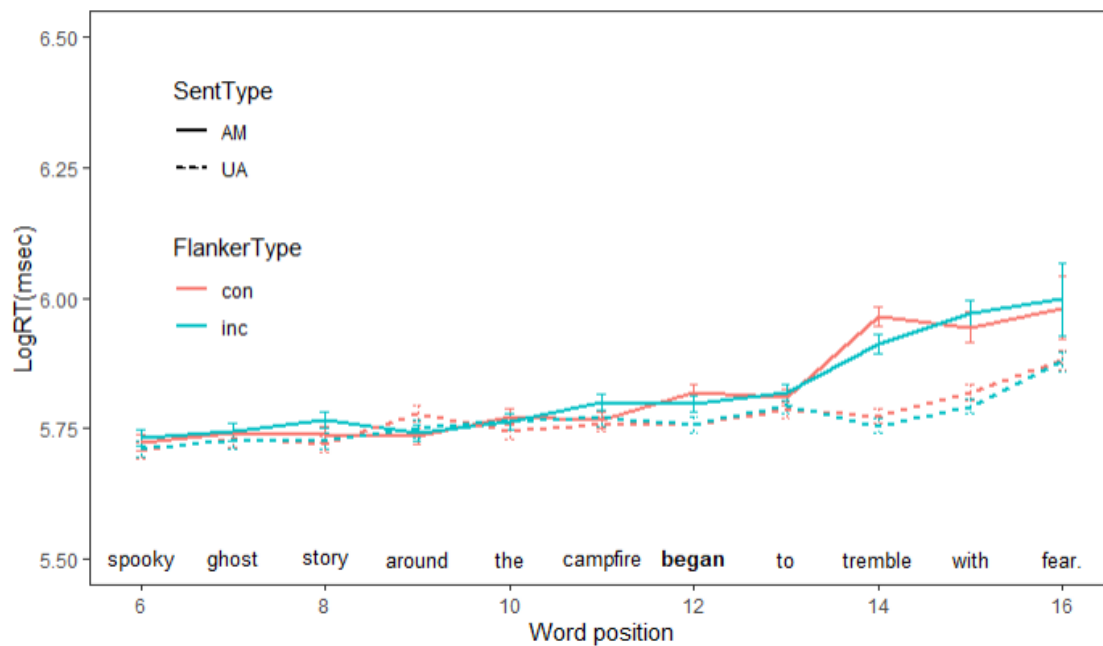


Figure 3: Log reading time reading time (for ambiguous (solid lines) and unambiguous sentences (dotted lines). Critical verb position is in bold. Red: preceding flanker is congruent; Blue: preceding flanker is incongruent. Error bars are standard errors.

Adler et al., JEP:LMC, 2020; Hsu & Novick, Psych. Sci, 2016; Hsu et al., LCN, 2020; Kan et al., Cognition, 2013; Botvinick et al., Psych. Rev., 2001; Botvinick, M., Cogn., Affective and Beh. Neurosci., 2007