



Early (predictive) detection of conflicting constraints? ERP evidence from Georgian

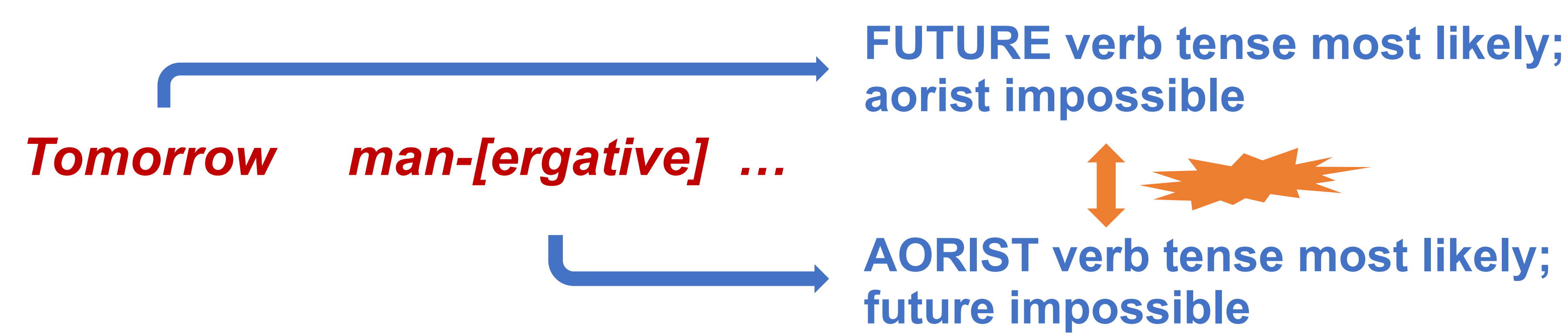
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Introduction

Do conflicts between expectations have the same status as conflicts in the bottom-up input?

- Common view is that comprehension involves rapidly generating expectations about upcoming input
- We probe the nature of these expectations by looking at what happens when two elements of the input conflict not in themselves, but in the morphosyntax they predict for the upcoming verb
- We use Georgian, a split-ergative language, to accomplish this



Methods

- ERP data recorded from 31 native speakers of Georgian in Tbilisi
- Stimuli visually presented in Georgian script with a 600ms SOA
- Task: end-of-sentence acceptability judgment
- 120 item sets of 6 conditions + 240 fillers, half acceptable
- Design: one pair to demonstrate simple violation of adverb constraint², one pair to demonstrate simple violation of case constraint² and critical pair to evaluate cue conflict; constraint confirmed with offline completion norming
- Because error in stimuli creation compromised simple adverb pair, here we present data from remaining four conditions:

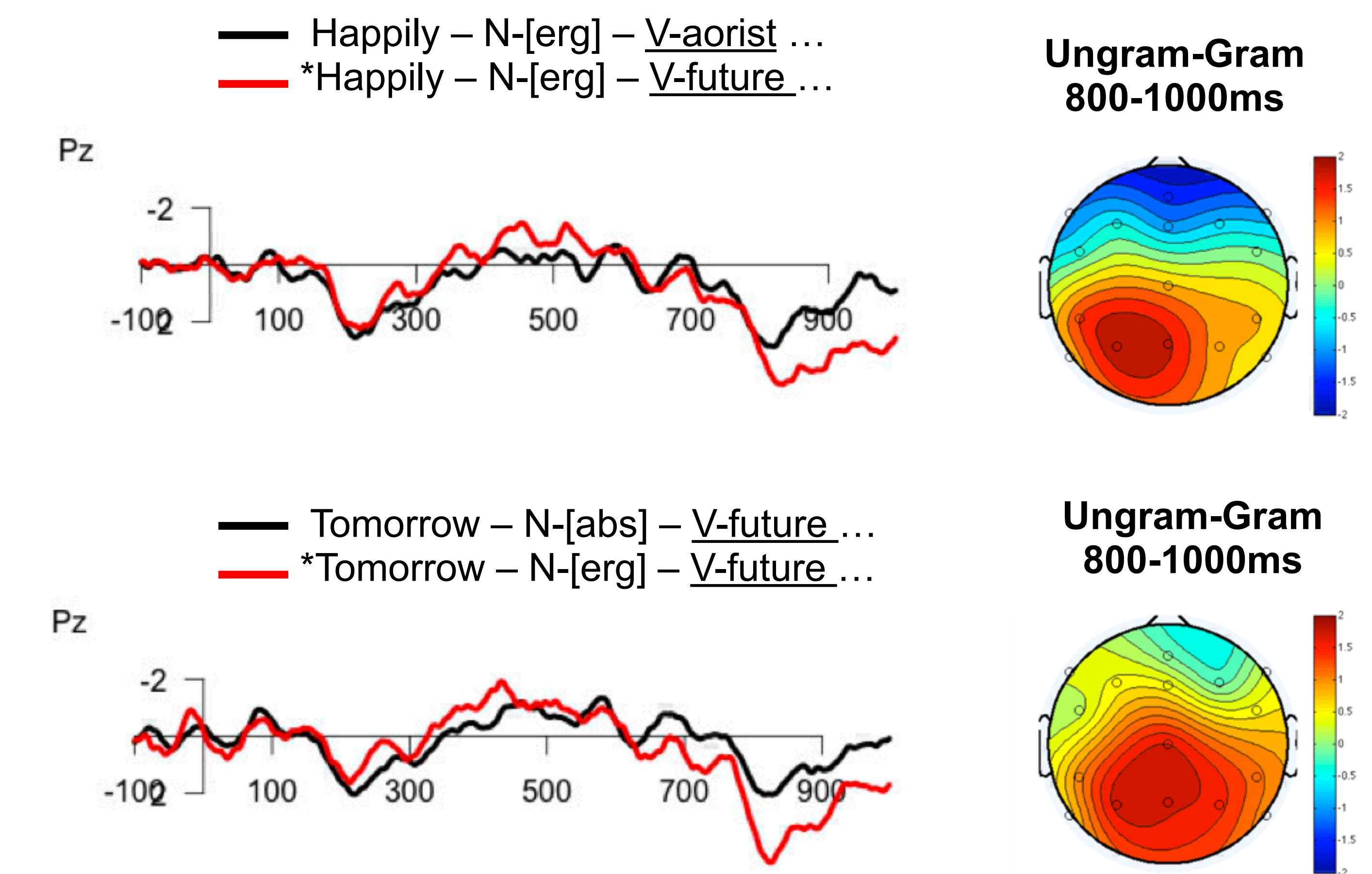
Case Match:	Cue-conflict Control:
(1) თბილისში კავმა ბარში დალია ღვინოს და... tbilis-si k'ac-ma bar-si dali-a gvino da... tbilis-in man-ERG bar-in drink-AOR wine and 'In Tbilisi, the man in the bar drank wine and...'	(3) ხვალ კავი ბარში დალ-ევს ღვინოს და... xval k'ac-i bar-si dal-avs gvino da... tomorrow man-NOM bar-in drink-FUT wine and 'Tomorrow, the man in the bar will drink wine and...'
Case Mismatch:	Cue-conflict Mismatch:
(2) *თბილისში კავმა ბარში დალ-ევს ღვინოს და... *tbilis-si k'ac-ma bar-si dal-avs gvino da... *tbilis-in man-ERG bar-in drink-FUT wine and 'In Tbilisi, the man in the bar will drink wine and...'	(4) *ხვალ კავმა ბარში დალ-ევს ღვინოს და... *xval k'ac-ma bar-si dal-avs gvino da... *tomorrow man-ERG bar-in drink-FUT wine and 'Tomorrow, the man in the bar will drink wine and...'

- Only grammatical form compatible with the ergative and future adverbial is the relatively infrequent optative
- Therefore, if predictions of adverbial and case-marker immediately computed, expect cost associated with shifting the prediction

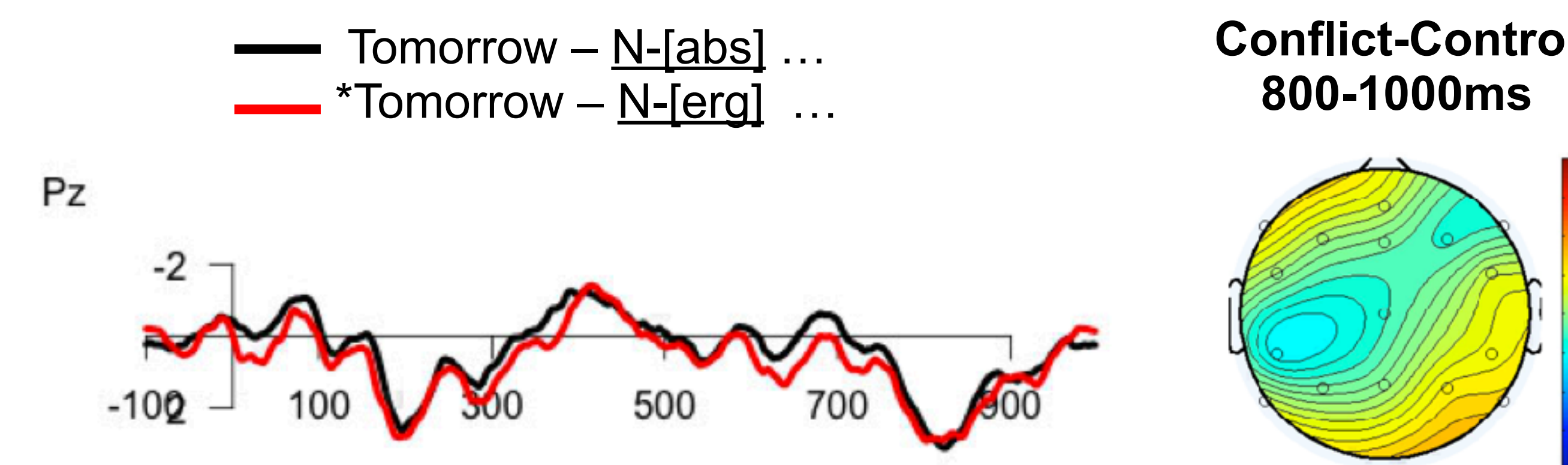
Results

1. Sanity check: ERPs to morphosyntactic violation at verb

- We observe a reliable late positivity 800-1000ms after the verb for morphosyntactic violations resulting from the combination of ergative marking on subject and future tense on verb
- Late positivity at verb is similar in amplitude whether or not the adverbial was also inconsistent with the ergative, although perhaps a slightly earlier onset when cues conflict



2. Conflict between expectations at case-marked subject?



- We observe no reliable differences in ERP response at the subject noun when case-marking conflicts with prediction of the adverbial for upcoming verb tense

• We note that due to experimenter error, the grammatical abs+future sentences often continued with a conjoined clause in the past tense, resulting in global unacceptability later in the sentence; however, the late positivity at the verb suggests that it did not obviate the neural response to violations earlier in the sentence.

Summary

Here, no evidence for processing difficulty when expectations conflict

- Absence of observable processing difficulty at constraint-conflicting case marker raises questions for accounts that assume morphosyntactic prediction³
- Could be taken as evidence against routine or widespread morphosyntactic prediction; but many alternative explanations still in play:
- Morphosyntactic predictions are generated from both cues, but reconciling them is not especially costly
- Not enough time to instantiate prediction at adverb before subsequent case-marking is encountered?
- Processing cost exists but not indexed by ERP
- Presence of errors early in the session itself triggers a more conservative processing strategy

References

[1]Van Petten & Luka, 2012; [2] Dillon et al., 2012; [3] Wagers et al., 2009

Acknowledgments

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