

Event structure modulates anticipatory looks to potential next referents

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Verbal aspect influences the situation models we construct, which in turn yield expectations about how a discourse will continue and who will be mentioned next: perfective aspect leads to the construal of an event as completed, favoring (re)mention of referents associated with the end state (Kehler et al., 2008); events described with imperfective-marked verbs are construed as ongoing (Moens & Steedman, 1988), with focus on all event participants (Madden & Zwaan, 2003; Magliano & Schleich, 2000). Such referential biases arise rapidly, as demonstrated via ERP indices of surprisal when a pronoun mismatches in gender with the referent favored for re-mention given verbal aspect cues in the previous sentence (Ferretti et al., 2009). It remains unclear, however, to what extent these effects are due to *integration* of the pronoun when it is encountered versus a *prediction* violation. Here we use Visual World eye-tracking to test for anticipatory looks to available referents following descriptions of completed (perf.) versus ongoing (imperf.) transfer of possession events **before** a subsequent pronoun is encountered, similar to the paradigm employed by Pyykkönen & Järvikivi (2010), who observed expectations about upcoming reference based on implicit causality.

Experiment 1: Native English speakers ($n=54$) listened to perfective- versus imperfective-marked context sentences describing transfer-of-possession events (*Donald was bringing/brought Melissa a fancy drink*) while viewing a visual scene comprised of the Source, Goal and Theme (Donald, Melissa, drink). The context sentence was followed by 2500ms of silence, after which they heard a continuation beginning with a pronoun, whose gender disambiguated reference to the Source in half the critical trials and to the Goal in the other half (*He/She obviously liked hosting parties*). Fig.1 shows the proportion of looks to Source and Goal by aspect during the silence and continuation regions. Mixed-effect empirical logit regression models (Barr, 2008) show a significant effect of aspect on the likelihood to look at the Goal (vs. Source) during the Silence region ($t_1=2.3$, $p=.02$; $t_2=2.0$, $p=.05$; Silence region defined as starting 500ms after offset of the context sentence to allow for sentence wrap-up, and extending to 200ms after onset of the continuation). Separate models for each aspect condition show significant intercept terms in the perfective ($b_1=.23$, $t_1=3.5$, $p < .001$; $b_2=.25$, $t_2=3.6$, $p < .001$) but not in the imperfective ($b_1=.01$, $t_1=.1$; $b_2=.05$, $t_2=.5$), indicating that following completed events, participants favored the Goal, whereas no such preference was found following incomplete events. Importantly, this preference emerged well before a referential expression was encountered, suggesting participants were creating a proactive bias about upcoming reference based on the construal of the transfer-of-possession event in the preceding sentence.

Experiment 2: The goal of Exp2 was to explore whether the effect of event structure observed in Exp1 would continue to emerge in richer discourse contexts. To this end, prior to each context sentence in Exp2, a preamble introduced three human referents (depicted in a 5-AOI visual scene; Fig.2) to establish a reference set for an additional prosodic manipulation of information structure not discussed here. Preliminary results ($n=27$ /ongoing; Fig.2) indicate the emergence of an effect of aspect very similar to that observed in Exp1.

These results fit within a growing body of work on anticipatory processing (see review in Kuperberg & Jaeger, 2016). This work suggests that comprehenders use available cues to generate predictions about upcoming material, and that these predictions, not just integration, affect processing at a target word. In addition, these two studies highlight the importance of testing next-mention expectations alongside other measures of coreference processing. Studies that target only the interpretation of the pronominal form itself risk conflating expectations about who will be mentioned with the updating that may occur when a particular referring expression is encountered (see Kehler & Rohde, 2013). Taken together with earlier, offline studies, the current results provide strong support for the incremental and expectation-driven use of event structural cues. Such cues allow comprehenders to construct both a model of the underlying events and a model of how utterances about those events combine in a coherent discourse.

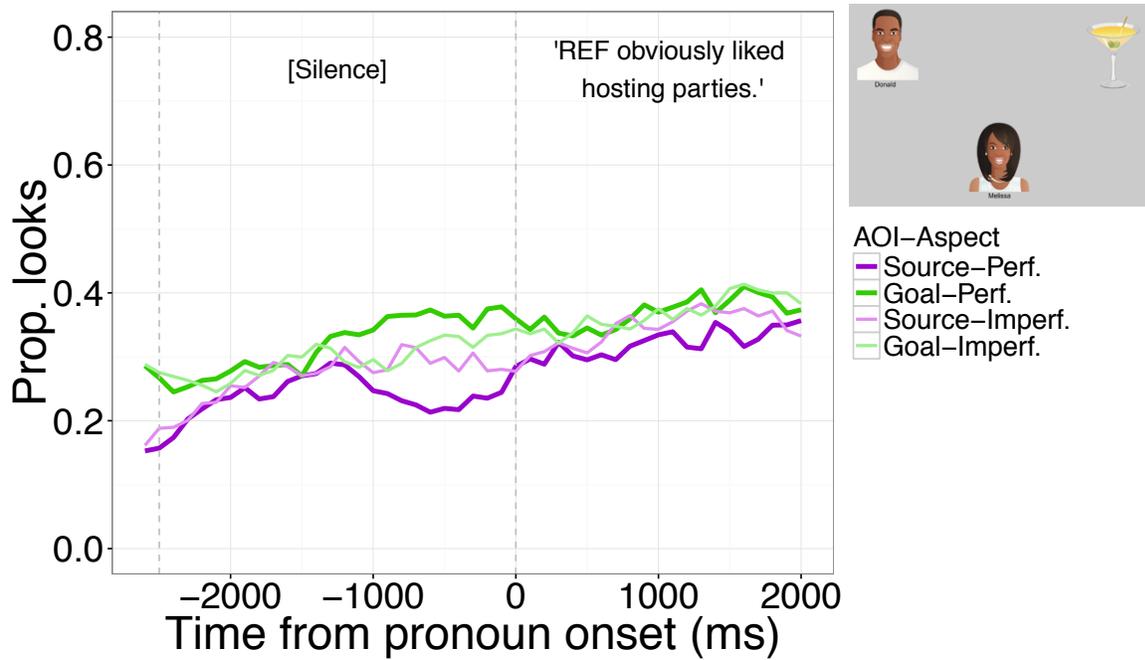


Figure 1. **Experiment 1** (n=54): Proportion of looks to Source and Goal by Aspect (perf., imperf.), collapsing over Reference, during the Silence and Continuation regions.

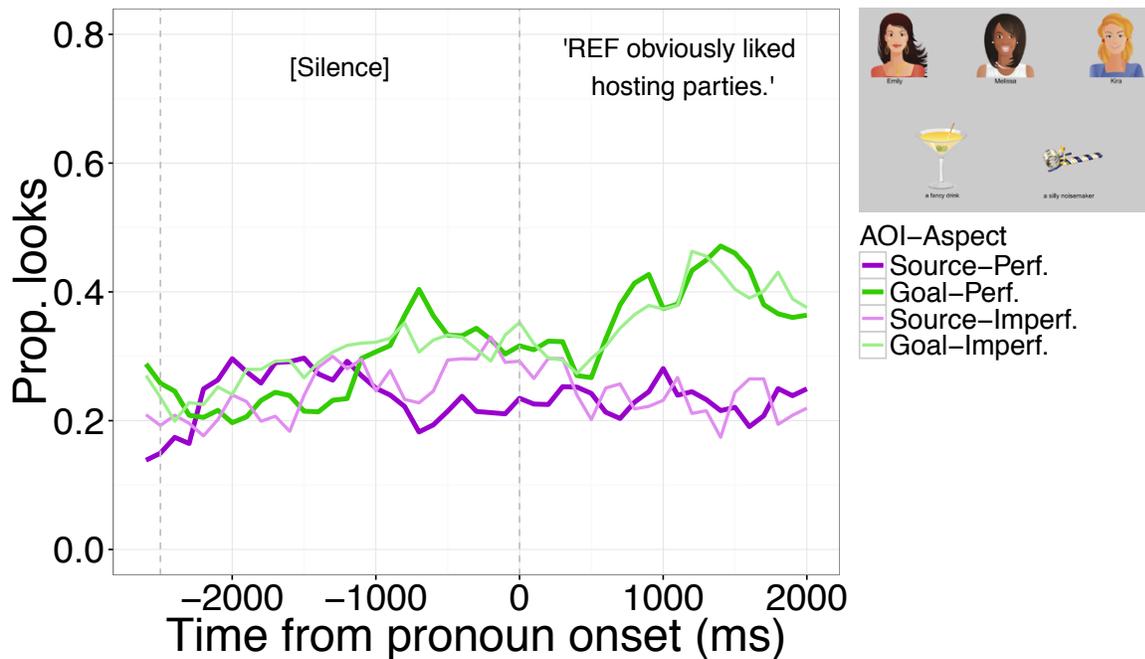


Figure 2. **Experiment 2** (n=27/ongoing): Proportion of looks to Source and Goal by Aspect (perf., imperf.) during the Silence and Continuation regions.