

Incremental processing of telicity in Italian children

Accomplishment predicates (like 'peel an apple') describe events that have a duration and a culminating point (Vendler 1967). When combined with perfective aspect they have a completion entailment that the telos has been reached (the apple is completely peeled). Using behavioural and reading methods, previous studies show that participants do not immediately commit to the telicity of event descriptions (Pickering et al. 2006). Using the visual world eye-tracking paradigm, Foppolo et al. (2016) and Zhou, Crain & Zhan, (2014) showed that Italian adults and Mandarin-speaking young children and adults incrementally used the temporal information encoded in aspectual morphemes to facilitate event recognition during online sentence comprehension in a visual context: participants looked more at the completed event (e.g. a completely peeled apple) than an ongoing event (e.g. a half peeled mandarin) when hearing a perfective aspectual morpheme, reflecting a rapid mapping of grammatical aspect onto the temporal structures of events depicted in the visual scene.

Building on the paradigm used by Foppolo et al. (2016), we tested 26 monolingual Italian children between the ages of 8 and 10 ($M = 9;3$). Participants were presented with a visual scenario depicting two pictures showing completed or ongoing actions, while their eye-movements were recorded. They heard Italian sentences with a verb in the *passato prossimo* tense, in which the auxiliary (*ha*) is combined with a past participle to trigger the completion interpretation, as in *Guarda in quale foto ha colorato la stella* ('Look in which picture he/she colored the star'). In the Aspect condition, the pictures displayed two actions at a different state of completion (e.g., a half-colored star vs. a fully colored star, Figure 1), so that the correct picture could be selected based on the aspectual information morphologically expressed by the verb that should trigger the inference that the telos is reached. In the Semantic condition, the correct picture could be selected on the basis of the lexical meaning of the verb, (e.g., an object that can be colored, like a star, vs. an object that cannot, like a tower), as in the pioneer study by Altman & Kamide (1999). In the No-Prediction condition the target picture could only be selected upon hearing the direct object, as the predicate can apply to both objects, so the sentence remains ambiguous until the noun (e.g., a fully colored star vs. a fully colored leaf).

Hypothesizing that Italian children incrementally process aspectual and lexical information on the verb, we predicted that children would start directing their gaze to the target before the final noun is heard in the first two conditions. Hypothesizing that grammatical aspect is more complex to process than lexical semantics, we expected children to be faster in the Semantic condition than in the Aspect condition.

The timecourse of eye-movements is plotted in Figure 2. The data were analyzed by means of logistic generalized linear mixed effect models on the proportion of fixations on the target as a function of condition, with random intercepts for subjects and items. First, the proportion of looks to the target during the determiner (immediately following the verb and immediately preceding the disambiguating noun) was significantly greater in the Semantic condition compared to the other conditions (Est. odds ratio=1.32, 95% CI =1.28-1.35, $p < .0001$). Second, during the NP the proportion of looks to the target was greater in the Semantic/Aspect conditions compared to the No-prediction condition (Est. odds ratio=1.47, 95% CI =1.44-1.51, $p < .0001$), although looks to the target were still more likely in the Semantic condition than the Aspect condition (Est. odds ratio=1.63, 95% CI =1.57-1.70, $p < .0001$).

This pattern suggests that monolingual Italian children are able to incrementally integrate the aspectual information expressed by the verb, although this takes longer than the integration of the simple lexical meaning of the verb, which is immediately integrated during processing.

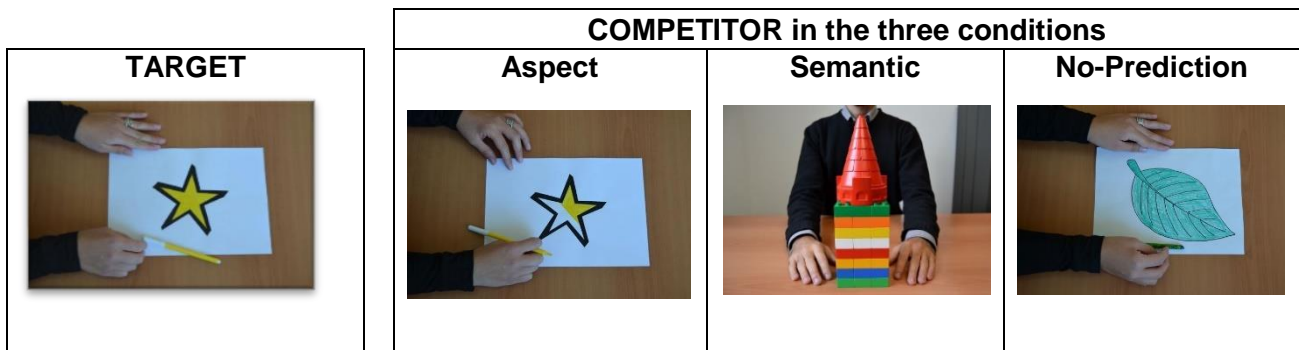


Figure 1. Target (left) and competitor images in each of the 3 conditions.

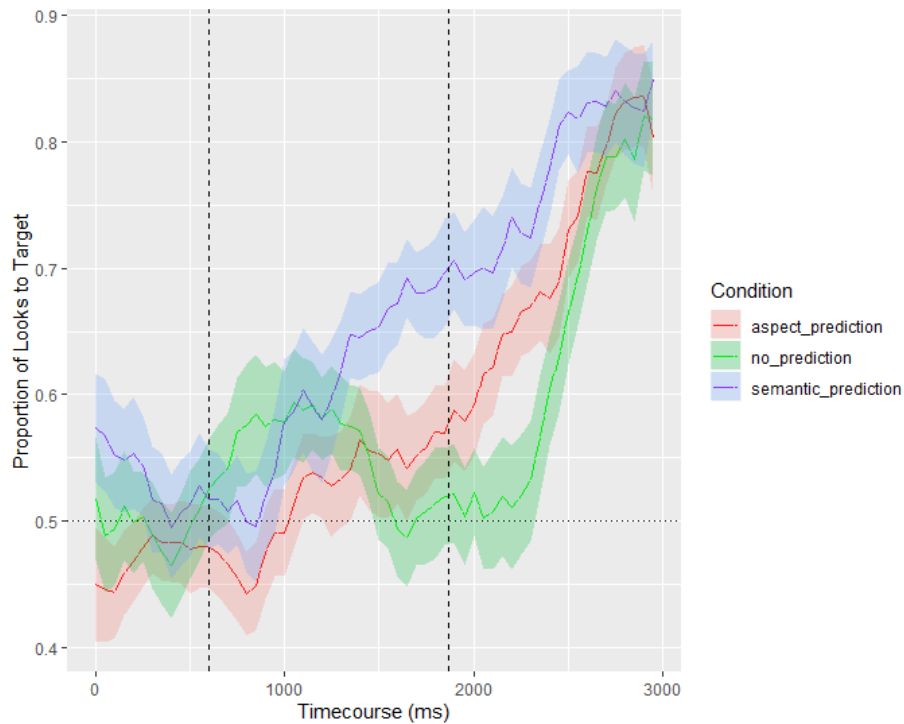


Figure 2. Timecourse of looks to the target (vs. competitor) in the three experimental conditions. The first dashed vertical line represents auxiliary onset; the second dashed line represents determiner onset preceding the final noun (shifted 200 ms to account for saccade planning).