

## The incremental processing of accomplishment predicates

Accomplishment predicates like “peeling an apple” denote events that have a duration and a culminating point (Vendler, 1967). When marked with a past perfective form, as in the Italian sentence (1) Valeria ha<sub>AUX-PF</sub> sbucciato<sub>PAST-PF</sub> la mela [lit. Valeria has peeled the apple], they are considered to be true only if the telos has been reached (i.e., when the apple has been completely peeled in case of (1)). Previous experimental studies show that verb aspect generally constrains situation model construction (Madden & Ferretti 2009; also Frazier et al. 2006) and perfectives yield a representation of a completed event (Ferretti et al. 2009). Nonetheless, telicity inference is shown to be costly: participants do *not* make rapid use of verb/verb+obj information (Proctor et al. 2004); also, comprehenders do not immediately commit fully to the telicity of events (Pickering et al. 2006; Piñango et al. 1999; Todorova et al. 2000). However, these results might depend on the methods employed in those studies, mostly based on behavioural and reading data that might be not sensitive enough to capture this inference. We investigated the online processing of accomplishment verbs in the perfective form in Italian by means of the Visual World eye-tracking paradigm (Tanenhaus et al. 1995), in which participants process sentences in front of a visual context (Altmann and Kamide, 1999). Our aim was to test if and to what extent the telicity inference is computed and/or exploited incrementally upon encountering a telic predicate in the perfective form.

### The experiment.

Participants were 29 adult Italian native speakers. They were instructed to find the target between two pictures shown on the screen, following oral instructions in which a lead-in segment like “Dimmi dove...” [lit. Tell me where] was followed by sentences like (1). There were a total of 45 experimental trials and 4 practice trials to illustrate the task. Three conditions were created to test different predictions:

- **Perfective (PF)**, Fig. 1: sentences like (1) were shown in front of one completed event (an apple that has been completely peeled) and one incomplete event (an orange that has not been fully peeled yet). In this case, objects were different (apple vs. orange) but type of predicate was compatible with both (peeling)

→ participants should converge on the picture showing the completed event as soon as the telicity inference was exploited incrementally upon processing the perfective aspect on the verb (Aux+Past Participle);

- **Early Condition (EC)**, Fig 2. Object was the same in both pictures (*cornetta* ‘receiver’) but the predicate was compatible only with one event (has lifted the receiver, Fig. 2-left)

→ people should start to converge on the target possibly before encountering the post-verbal noun, because the predicate was compatible with only one pictured event;

- **Late Condition (LC)**, Fig 3. Predicates were non-eventive verbs, sharing initial form *ha* ‘has’ with the other two conditions. Objects were different (ipod vs. charger) but both were semantically compatible with the predicate (both are hand-held)

→ people must wait until the post-verbal noun has been processed (or partly processed) because the objects were different and the predicate was semantically compatible with both.

## Results.

Fig. 4 shows the timecourse of eye-movements toward the Target picture in the time-window that is settled to start from Aux-onset (time 0) in the three experimental conditions. What is evident is that in both PF and EC - but not in LC - the target gets significantly more looks than the competitor, suggesting that the preference to look at the target in PF starts before the full Noun is processed. A series of analyses of variance ANOVA show that in EC participants look significantly more to the target in the initial and middle portion of the noun than in the other conditions, as expected (all  $p < .01$ ). Also, they look significantly more to the target (the completed event) in PF than in LC in the second and final part of the noun ( $p < .01$ ). We also tested whether the log ratio mean of looks to target/competitor is significantly different from zero at the beginning of the noun and found that the target is looked at significantly more than the competitor in EC and PF ( $p < .01$ ), but not in LC ( $p = .97$ ). This gathered indirect information about anticipatory looks to target, i.e. looks occurring before Noun onset.

## Conclusions.

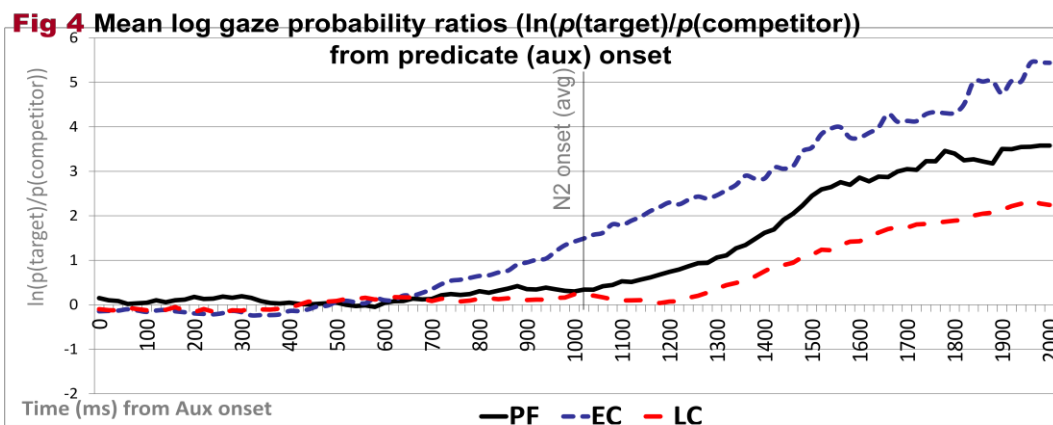
We present the first study investigating the online processing of telicity using the visual world paradigm. We found that, when processing an accomplishment predicate marked at the perfective form, comprehenders converged on target (the completed event) before the noun was fully spelt out. Specifically, in the critical condition (PF) we observed a significant preference for the target (over the competitor) already in the very early part of the post-verbal noun, while this preference emerged later in LC. Contra previous studies, our results suggest a relatively early and easy integration of the telicity inference (triggered by perfective aspect on verb) during online incremental processing. Future experiments are planned to compare perfective and imperfective aspect with a similar paradigm.



**Fig. 1 Perfective (PF)**  
*ha sbucciato la mela*  
 [has peeled the apple]

**Fig. 2 Early-Control (EC)**  
*ha sollevato la cornetta*  
 [has lifted the receiver]

**Fig. 3 Late-Control (LC)**  
*ha in mano un ipod*  
 [...has in hand an ipod]



Note: Pos. value=Target preference; Neg. value=Competitor preference; 0=No preference