

Electrophysiological insights on aspectual coercion

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This ERP study investigates the electrophysiological cues of aspectual coercion to ascertain whether lexical aspect is projected or composed. The rationale of the study is that the prepositions *in* and *per* featured in Dowty's aspectual diagnostics – given their skewed distribution, polysemy, and entropy – are the place where telicity is triggered rather than checked. We recorded the ERPs (59 active electrodes) of 28 right-handed Italian native speaker (Mean Age =24.46, Range=20-37) while they read 120 sentences adapted from the Dowty's test:

| | | Acceptable | Unacceptable | |
|--------|--|-------------------|--------------------|--------------------------------------|
| Telic | <i>Maria ha svuotato la borsa</i> | <i>in</i> | <i>*per</i> | <i>un attimo al metal detector.</i> |
| | <i>Maria emptied the bag</i> | <i>in</i> | <i>*for</i> | <i>a snap at the metal detector.</i> |
| Atelic | <i>Giuseppe ha camminato con piacere</i> | <i>per</i> | <i>*in</i> | <i>due ore nel parco.</i> |
| | <i>Giuseppe walked pleasantly</i> | <i>for</i> | <i>*in</i> | <i>two hours in the park.</i> |

Sample stimuli in the four conditions. ERPs were time-locked to the words in bold. The star sign (*) marks unacceptability.

After signal pre-processing (BrainVision Analyzer 2, filter: 0.15-35Hz; ICA for ocular artifacts; semi-automatic artifact rejection: 9.17%), we tested the effects of [Acceptability and Telicity] and [Longitude (Frontal, Central and Parietal)] at the past participle, the preposition and the noun (time window: 400-700ms) with linear mixed models in R. We found a significant effect at the preposition only. In particular, we report (A) a sustained anterior negativity or SAN (and no N400) in the 'unacceptable' condition for atelic but not telic predicates (Figure 2 (Telicity*Acceptability*Longitude: $F=7.79$, $p<.001$; Atelic unacceptable: $-0.78\mu V$, $t=-2.03$, $p=.04$), an index of integration processes (Paczynski et al., 2014), (B) which was larger for verb-preposition pairs that are less frequent in temporal contexts in the Italian input (driven by the telic 'acceptable' condition); (C) No differences between achievements and accomplishments. We suggest that predicates' telicity was not projected top-down but computed online via an *aspectual calculus*, which was modulated by the distributional properties of the prepositions. Therefore, the adverbial test might actually be a telicity reagent, not a telicity diagnostics.

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