

1. Introduction

The role and content of the lexicon has been recently debated in the psycholinguistic literature. From the point of view of some connectionist and radical pragmatic approaches, meaning is always constructed by integrating cues from different sources, and in that sense the 'meaning' of a word does not exist independent of context. Relative to this is the pervasive priming between event-related nouns and typical participants, agents and instruments. The type and amount of information that can be quickly accessed from the lexicon, as shown by these experiments, argues against theories that posit a rigid meaning associated with words, favoring a more shallow, context-dependent access to various types of information.

An alternative interpretation is that lexical semantics is stored more or less rigidly, but that there is also a store of instances where these words were used, episodes, which are frequently accessed.

In this work we tested this prediction by using priming and event related potential (ERP) studies.

Objectives

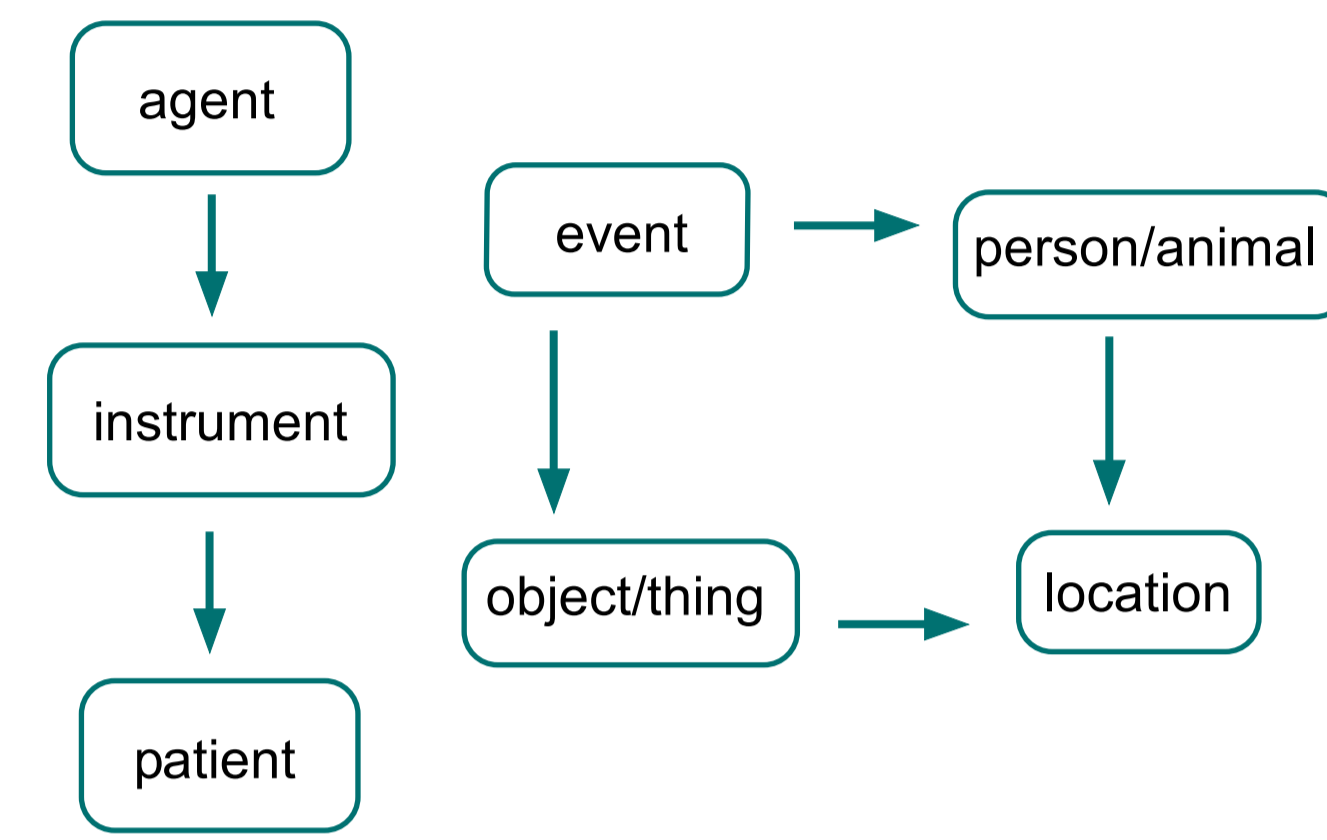
General

Contribute to the knowledge of the lexicon's organization and the way lexical knowledge is access in connection to memory systems.

Specific

Evaluate the effect of episodic priming for a set of spanish stimuli.

Explore by means of event related potentials episodic priming in opposition to semantic priming using a bimodal priming paradigm.

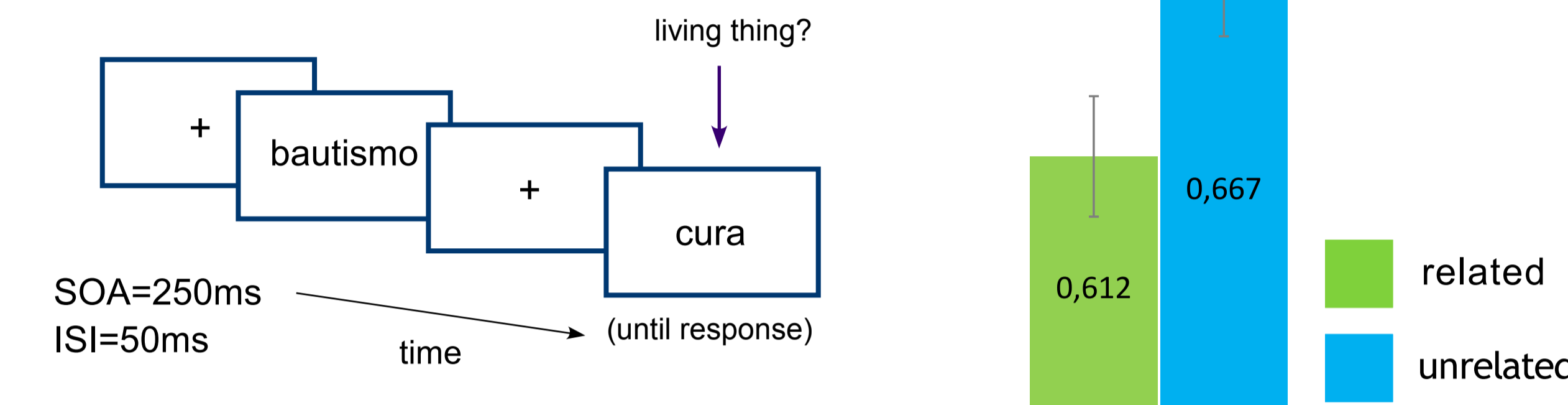


Arrows show the direction of episodic priming reported by Hare et al, 2009.

2.1. Episodic priming for events and typical participants

Reaction time experiment to test priming of events and typical participants of these events for a set of 20 spanish stimuli.

- Mean association strength = 0.03
- **Subjects:** N=26, 18-30 years old.
- Two way ANOVA, relation and list.

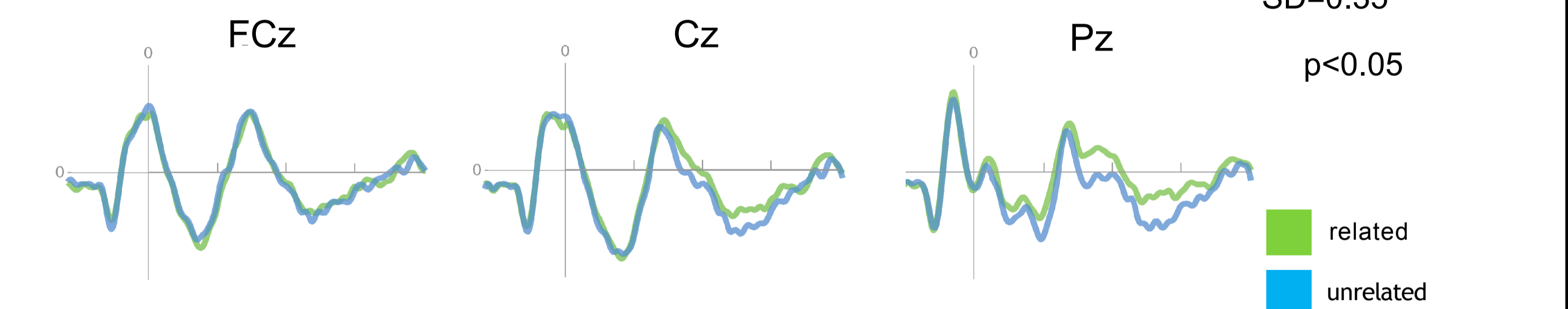


There was an episodic priming effect in our set of spanish stimuli both in reaction time and in ERP modulation.

2.2. Episodic priming for multiple relations

ERP experiment to test priming of events, locations, agents and instruments with objects as targets for a set of 120 spanish words.

- 19 electrodes recorded, referenced off line to mastoids.
- **Subjects:** N=30, 18-28 years old (20 female).
- SOA = 350 ms, ISI = 150 ms
- Filters - lp: 0.5 Hz, hp: 40 Hz
- Repeated measures ANOVA -3 columns x 5 electrodes
- Factors: condition and anterior-posterior



3.1. Semantic-Episodic priming

We selected as primes ambiguous nouns that denote events, agents, participants and instruments of events, but which also have another meaning unrelated to the event. Each prime was embedded in context sentences that bias the meaning toward either the event meaning or the semantic meaning. Target words that are related to the meaning of the primes in each type of context were used.

EEG recording: 64 electrodes at 512Hz. Referenced off line to the average of the 35 most stable electrodes.

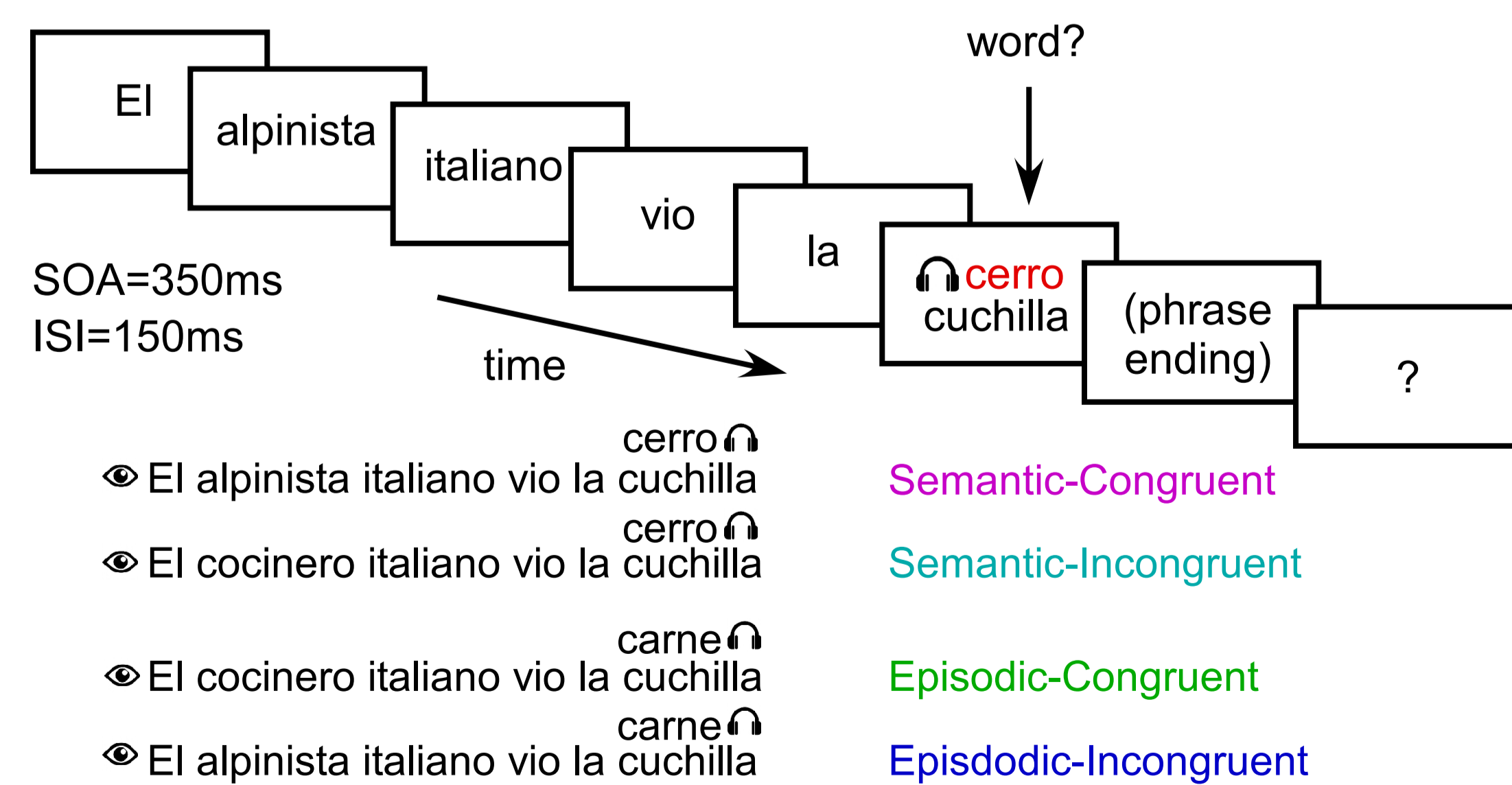
Subjects: N=38,17 Male, between 19 and 26 years old, all right-handed.

Lexical decision task: word - pseudoword, response hand was counterbalanced.

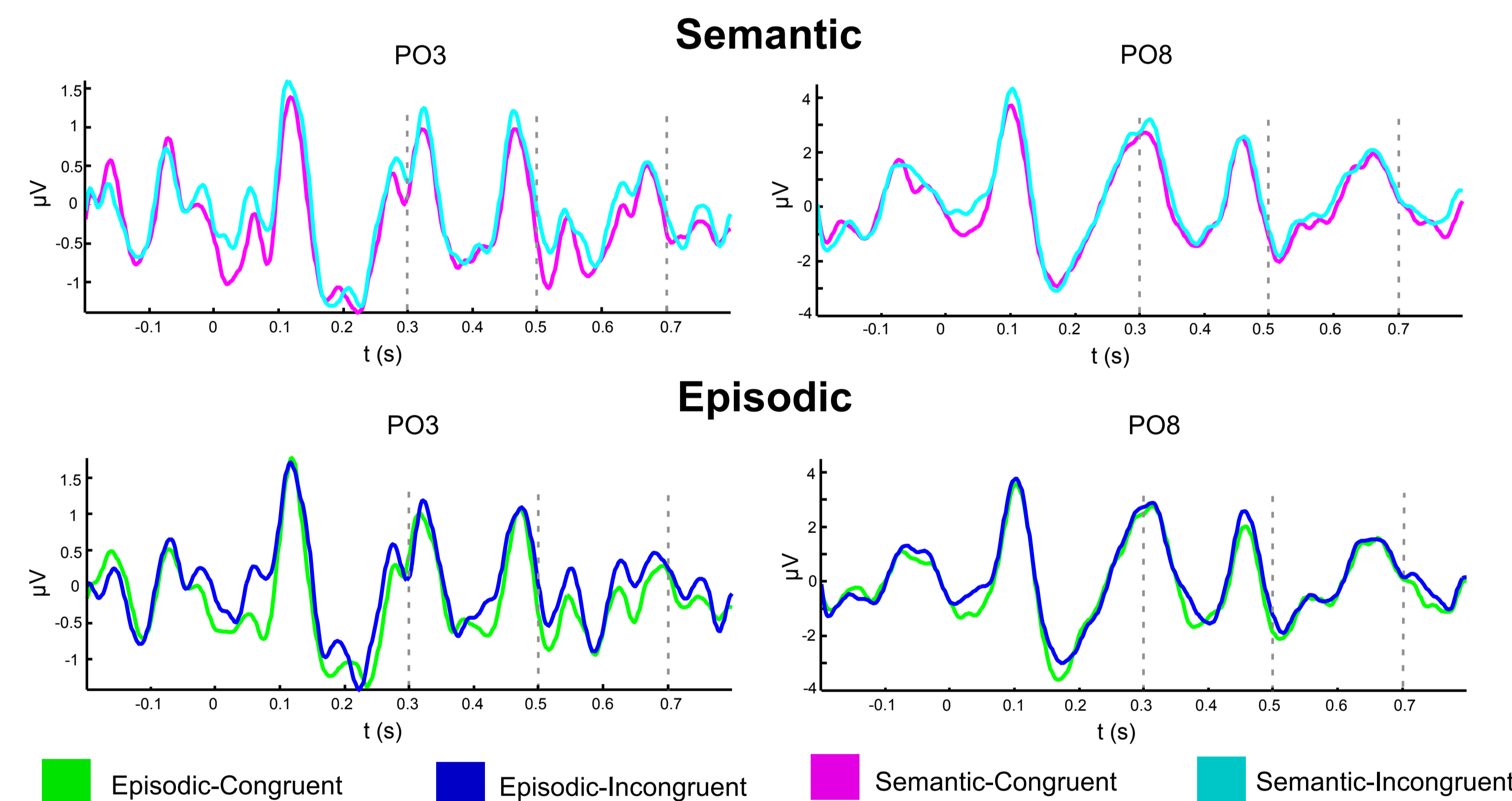
Bimodal priming SOA=0 ms

- Primes: 89 ambiguous words.
- Semantic targets: 89 words semantically related to the prime in one meaning
- Episodic targets: 89 words with an episodic relation to the prime in the other meaning.

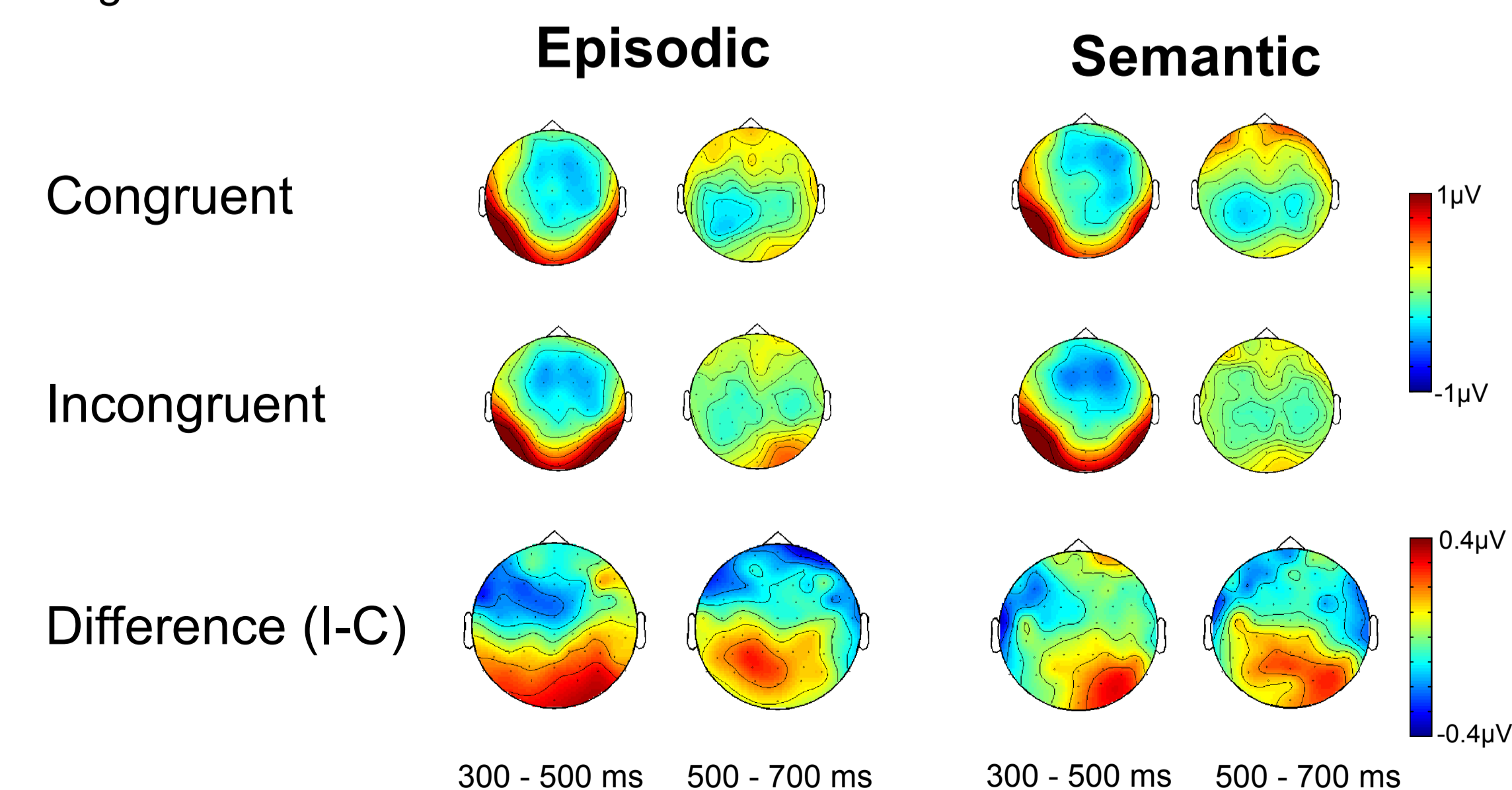
- Each target was presented in both contexts.
- Cloze probability for episodic and semantic context (p>0.05).
- Targets were balanced in frequency, number of letters, concreteness and number of associates (p>0.05).



3.2. EEG Results: Semantinc-Episodic priming



- Grand average ERPs for two representative electrodes for the four conditions.
- At 300-500 ms and 500-700ms Episodic-Incongruent condition is less negative than the Episodic-Congruent condition.



- No principal effects or interactions involving the condition factor were found to be significant.

3.3. RT Results: Semantinc-Episodic priming

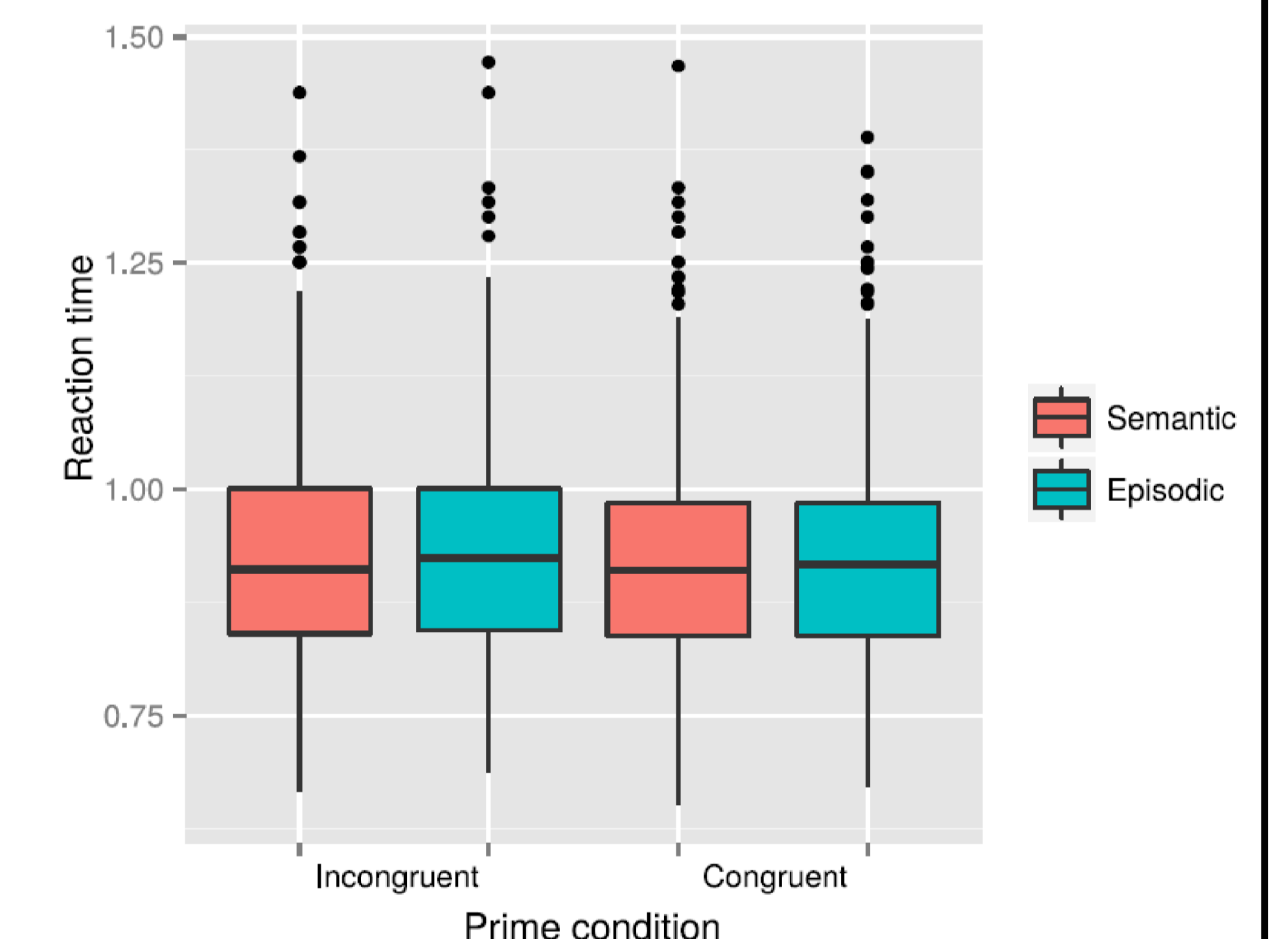
The same experiment was carried out measuring reaction times.

Subjects: N=32,9 Male, 18-25 years old
Response hand was counterbalanced

Cong-Incong: F: 8.22, p: 0.0041

Episodic-Semantic: F: 0.0055, p: 0.94

Interaction: F: 0.74, p: 0.38



Discussion

Episodic priming was observed for our set of stimuli in spanish. Specifically there were priming effects between events and typical participants of these events as shown by a decrease in reaction times compared to the unrelated condition.

Priming for different episodic relations was obtained in a EEG experiment. This facilitation is reflected in a less negative ERP at 350-550ms for related conditions.

The Semantic-Episodic priming according to context experiment, did not show differences between conditions with regard to the ERPs. It is possible that our experimental design has not enough power to obtain a positive result or that not all prime-target selected have the same "priming strength". Reaction times show an effect of Incongruence but no difference relative to the Semantic-Episodic condition.

An interesting perspective is that the relations established by Hare et al, 2009 are not fixed and depend strongly on the words chosen, primes that have a constraint context have clear targets to which they prime upon whereas some other words evoke a more loose episode diminishing their ability to prime.