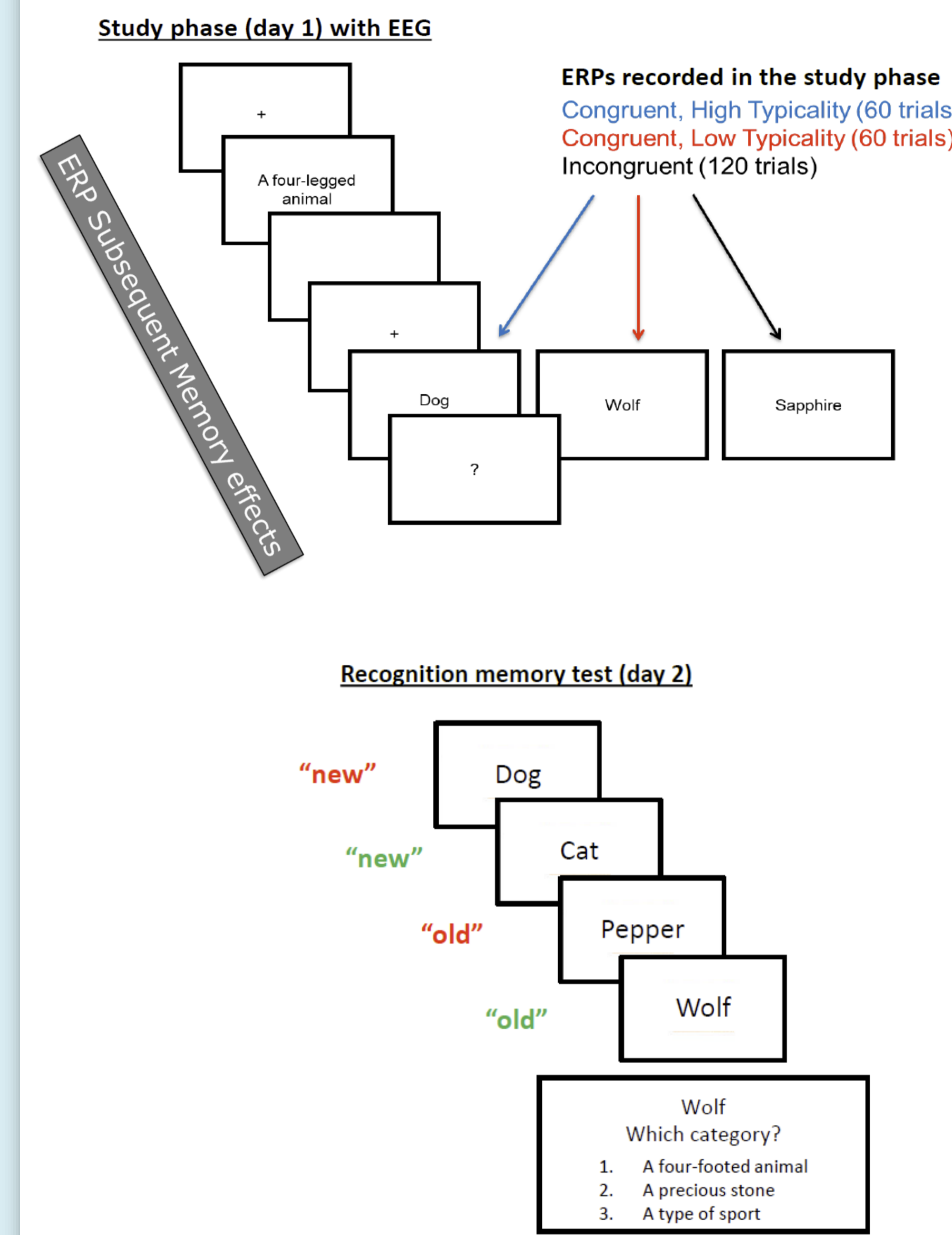
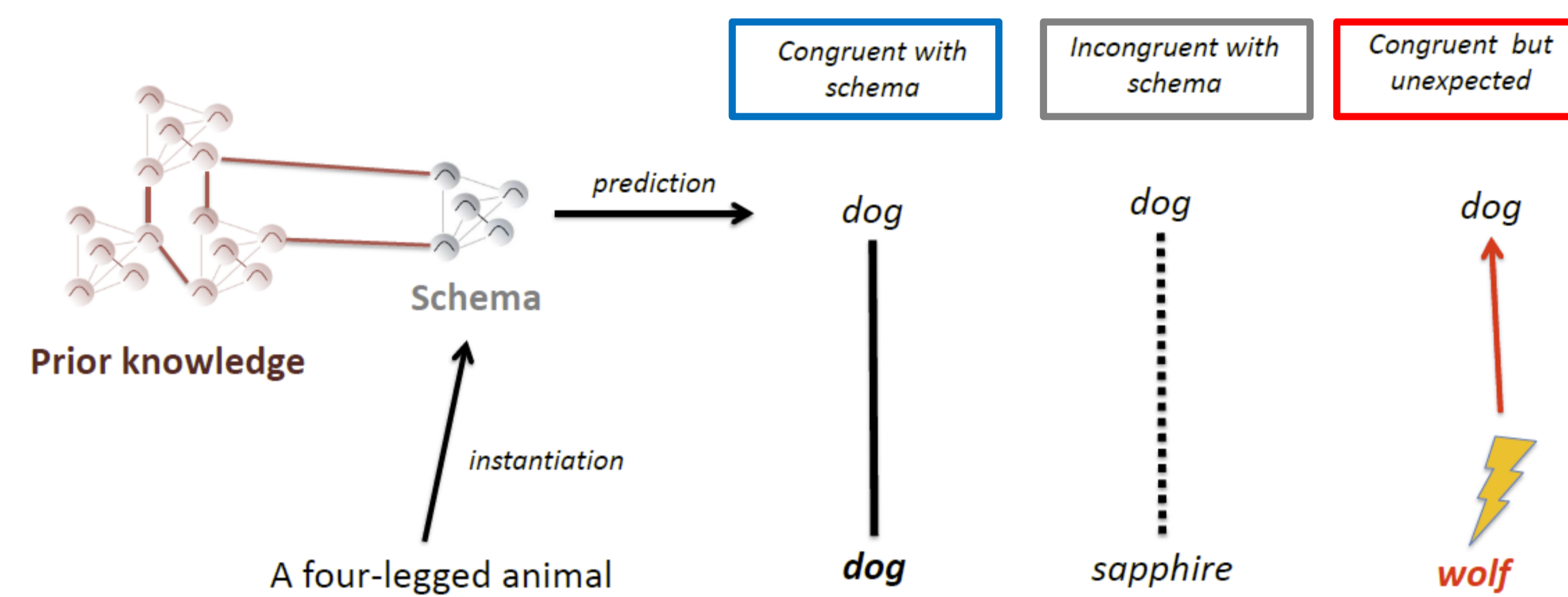


Unexpected but plausible: The consequences of disconfirmed predictions for episodic memory formation

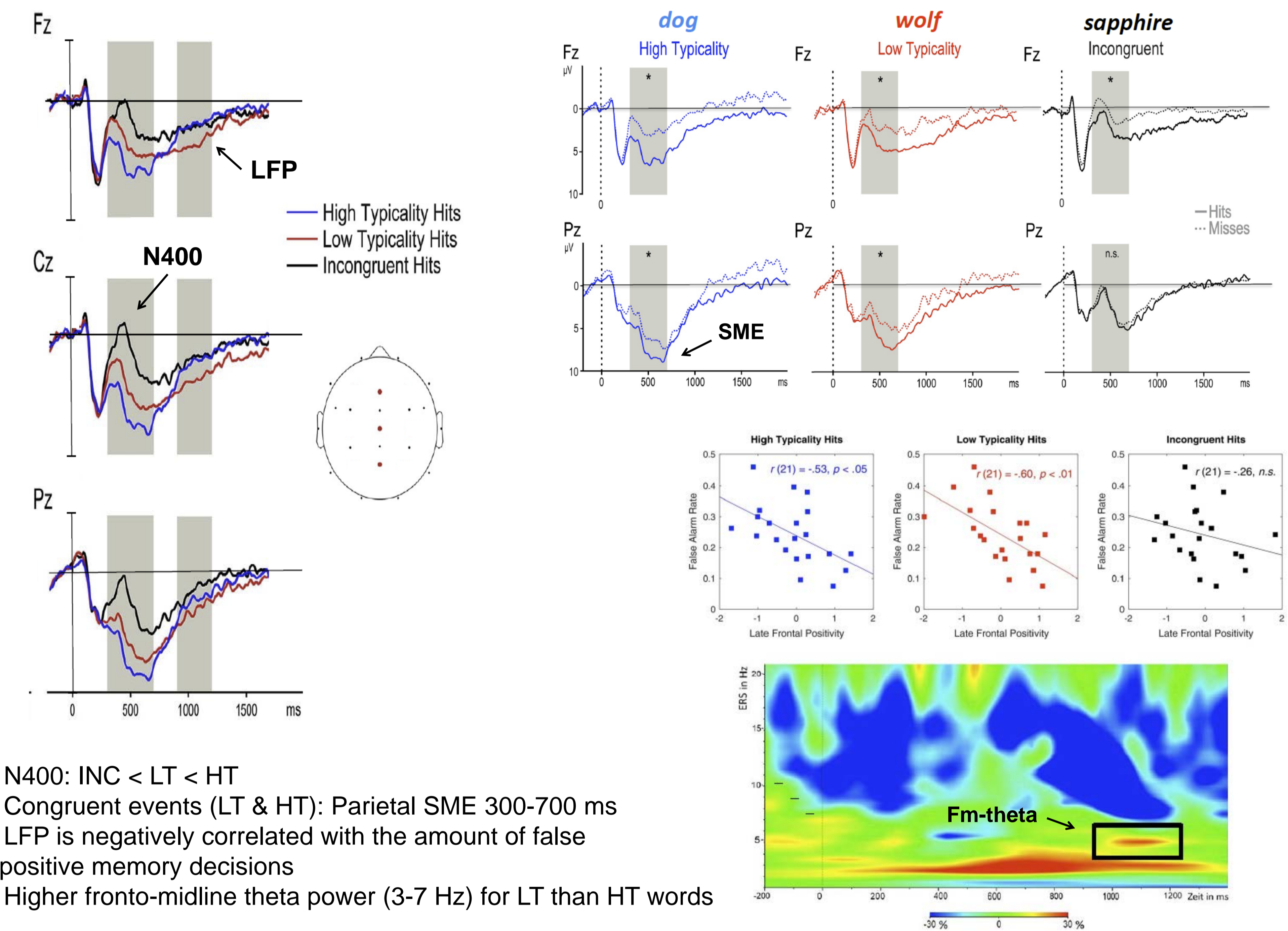
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1 Introduction

- The semantic congruency of an event in a given context has a strong impact on subsequent memory performance.
- Events that conform to our expectations because they are congruent with our world knowledge can be rapidly assimilated into a schema (2). This supports semantic integration and leads to more easily accessible memory traces (3).
- However, events that are unexpected in a given schema context are also better remembered than unrelated events (1), but it is not yet clear by which mechanisms memory formation for these events is supported.



3 ERP/EEG Results



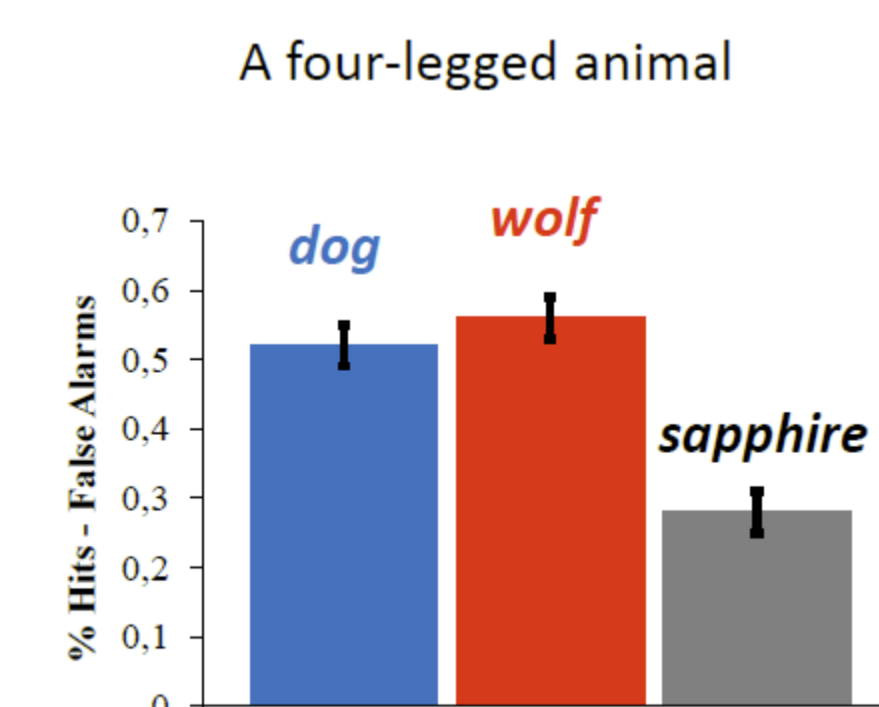
2 Methods

- 28 participants (21 female, mean age: 23)
- 60 phrasal category cues / 480 category exemplar words

Category Cue	High Typicality	Low Typicality	Incongruent
A four-footed animal	Dog	Fox	Pepper
A fruit	Apple	Apricot	Hair
A vegetable	Carrot	Zucchini	Puzzle
A metal	Steel	Zinc	Bear
A part of the human body	Arm	Tongue	Tin
A toy	Doll	Marble	Mango

- Study Phase: (240 trials) Four words per category cue. Congruency judgments
- Test Phase: (480 trials) after 24 h. Old /new judgements followed by source (category cue) judgments
- EEG recordings with 28 electrodes; Subsequent Memory Analyses (SME) (> 7 trials per condition), mastoid reference, ICA-based ocular artifact correction

3 Behavioral Results



- Congruent words were better remembered than incongruent ones. Memory performance for HT and LT words did not differ.

4 Discussion

- The coincidence of better memory performance for congruent events and a parietal SME suggests that schema congruency does support declarative learning, however, not necessarily by semantic elaboration but by enhanced item-specific processing.
- The late frontal positivity (LFP) was larger for LT than HT words and correlated negatively with the amount of false positive memory decisions (3).
- The frontal positivity and theta activity (in the non-phase locked EEG data) reflect control processes initiated by disconfirmed predictions (4). These processes operate downstream from semantic elaborations (as reflected by the N400) and seem to support the contextual integration of unexpected words and the inhibition of expected ones (5).

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