

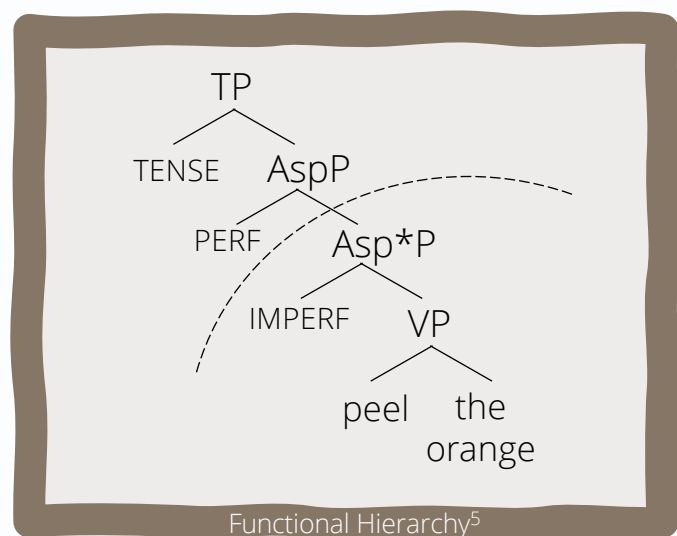
The effects of tense on event representations during processing

Emma Wing* & Pavel Koval**
*University of Connecticut
**New York University: Abu Dhabi
contact: emma.wing@uconn.edu

Background

During event comprehension, we track and represent changes to event participants (objects) over time.¹

- Events described by telic state-change predicates (*clean the pot*) activate representations of objects in their event-initial (*dirty pot*) and event-end (*clean pot*) states.²
- Event content is rich in that it mirrors our environment in various ways.^{3,4}
- But do all linguistic features combine with event representations in a *grounded way* during sentence processing?^{6,7}



Grounded Representation^{8,9}

more isomorphic mapping to our perception of the environment

e.g. event representations are comprised of perceptual features salient to a comprehender

Amodal Representation^{10,11}

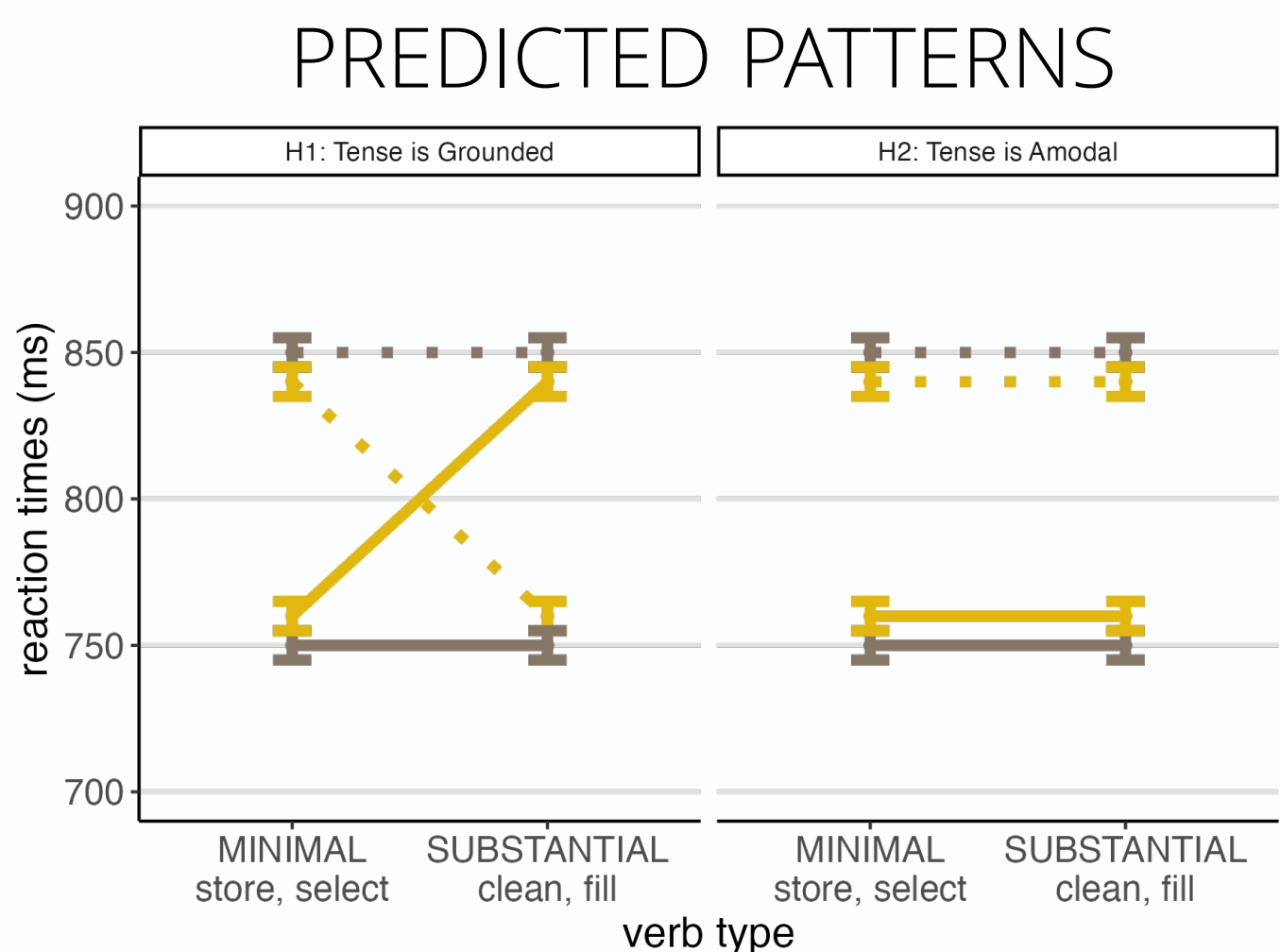
more abstracted away from our perception of the environment

e.g. event representations are arbitrary, abstract, and not connected to perception

Research Question

Does tense affect the activation of the internal content of an event during sentence processing according to relevance to the comprehender?

- Hypothesis 1: Tense is Grounded**
States of event participants that are more relevant from the comprehender's perspective at Utterance Time (now) are activated more (past=end; future=initial).
- Hypothesis 2: Tense is Amodal**
Tense does not affect individual states of event participants and acts on the entire event.



Methods

Participants: Self-reported monolingual native English-speaking adults recruited via Prolific (Exp 1: N=179; Exp 2: N=189; Exp 3: N=364)

Procedure: Sentence-Picture Verification task administered online via Gorilla

Stimuli: 64 target telic external change-of-state predicates and corresponding minimal change verbs (V+DP), 128 images; 64 fillers

Picture conditions: Initial and end state images. Overall, end states were rated as more typical in an offline norming task.

Sentence conditions:

- Alan **stored** the pot.
- Alan **cleaned** the pot.
- Alan **will store** the pot.
- Alan **will clean** the pot.

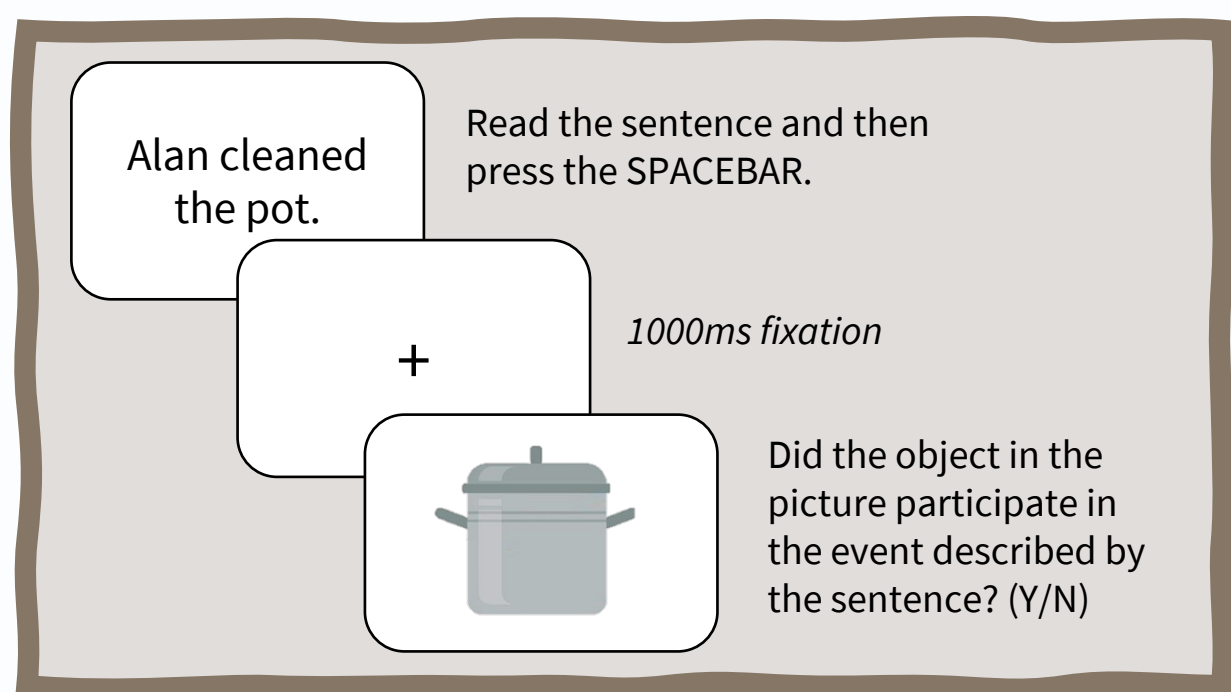
MINIMAL CHANGE	SIMPLE PAST
SUBSTANTIAL CHANGE	SIMPLE PAST
MINIMAL CHANGE	SIMPLE FUTURE
SUBSTANTIAL CHANGE	SIMPLE FUTURE



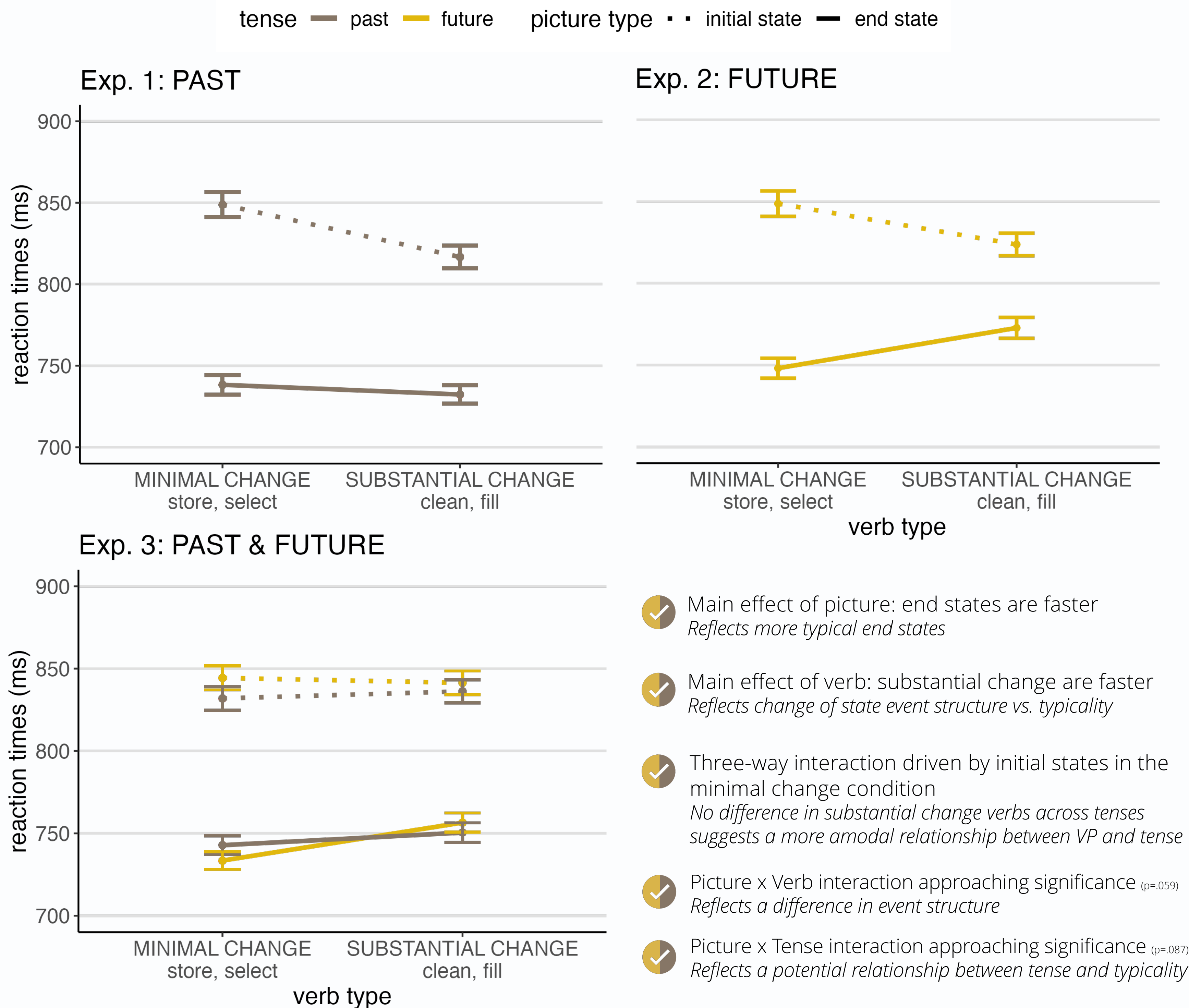
INITIAL STATE
[LESS TYPICAL]



END STATE
[MORE TYPICAL]



Results



- ✓ Main effect of picture: end states are faster
Reflects more typical end states
- ✓ Main effect of verb: substantial change are faster
Reflects change of state event structure vs. typicality
- ✓ Three-way interaction driven by initial states in the minimal change condition
No difference in substantial change verbs across tenses suggests a more amodal relationship between VP and tense
- ✓ Picture x Verb interaction approaching significance ($p=.059$)
Reflects a difference in event structure
- ✓ Picture x Tense interaction approaching significance ($p=.087$)
Reflects a potential relationship between tense and typicality

Discussion

The interaction between tense and event representations is more amodal than grounded: object states that are more relevant to a comprehender are not made more salient by tense. Substantial change events may be existentially bound at VP, and their content is therefore unable to be affected by tense.

Follow-up: Explore the potential relationship between tense and typicality¹².

predicates	images
Example stimuli	
unfold/encounter the map	
pack/ignore the suitcase	
open/clench the umbrella	

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