Cognitive Load in the Visual World: The Facilitatory Effect of Gaze

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Questions

1. Does following a gaze cue influence the cognitive load required for processing the corresponding linguistic referent?
2. Is considering the gaze cue costly? Is there a distribution of cognitive load between the cue and the referent?
3. Can a gaze cue have a disruptive effect on processing the linguistic referent?

- We used **the Index of Cognitive Activity** (ICA: Marshall, 2000; Demberg & Sayeed, 2016) **-** a novel measure that allowed us to collect both:
  - **eye-movements** - to detect patterns of anticipation;
  - **cognitive load** - to measure the cost of linguistic processing online, as influenced by the gaze cue.
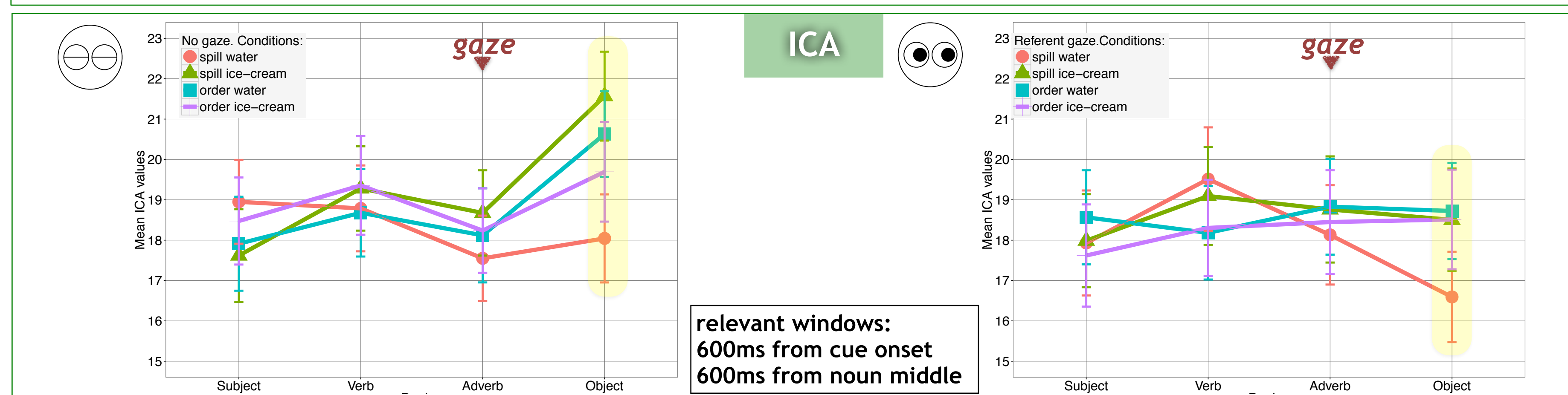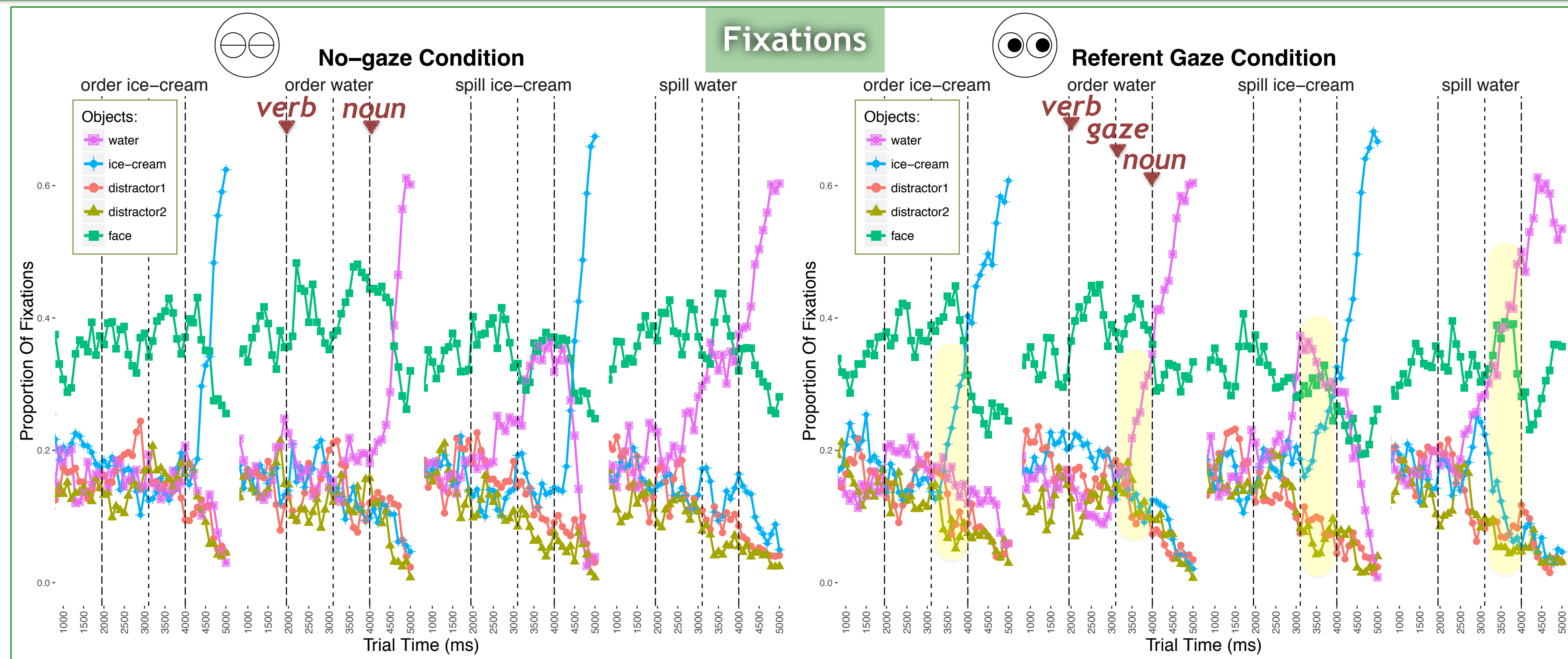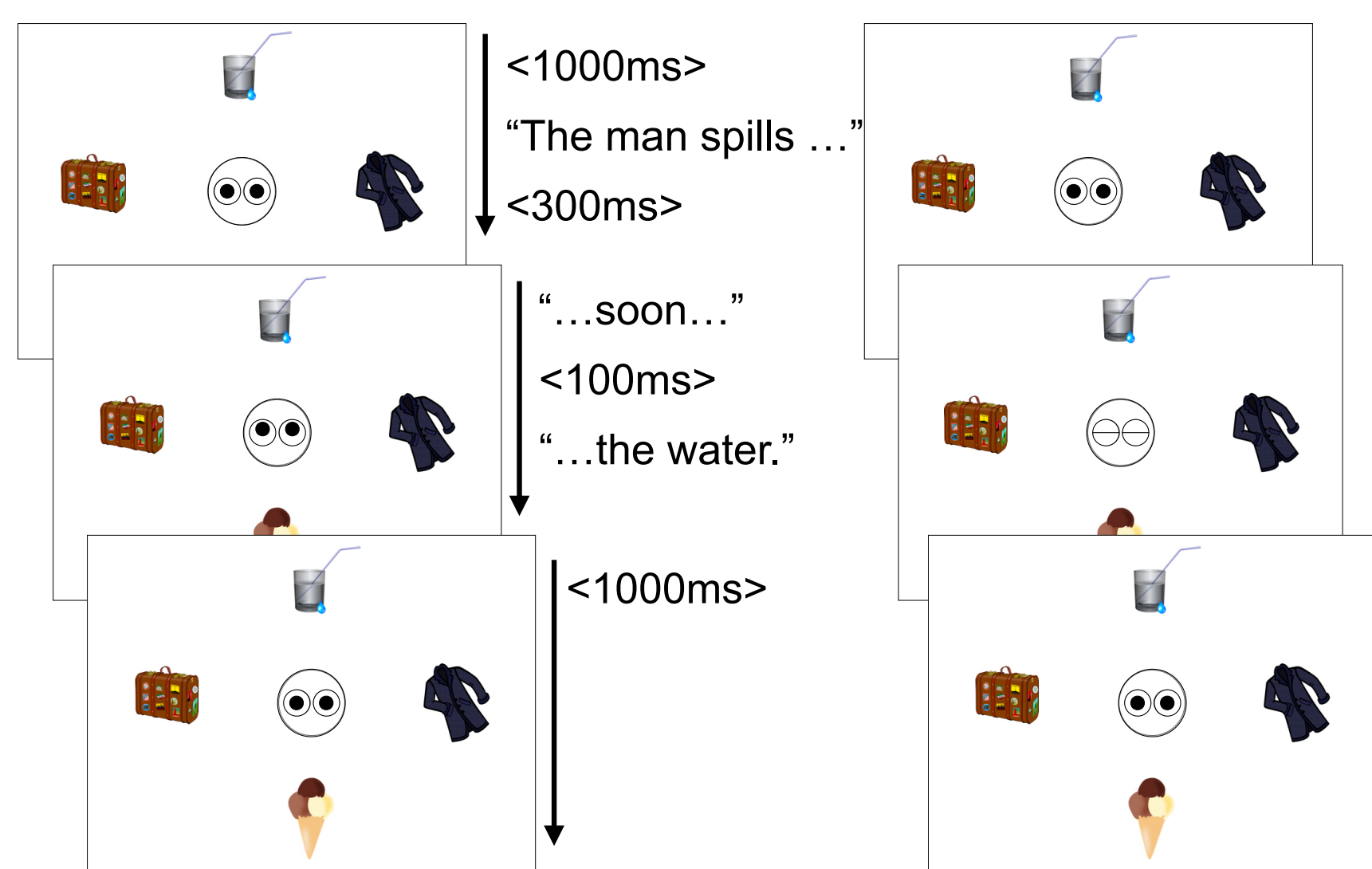
1 The Fitting - Congruent Study

- <u>gaze</u> always congruent with the referent noun: *Gaze* (no-gaze vs. referent gaze)
- <u>verb</u> more/less restrictive: *Constraint* (restrictive vs. non-restrictive)
- <u>referent noun</u> fitting the context: *Plausibility* (plausible vs. possible)

Der Mann **verschüttet** gleich **das Wasser.**
the man   spills   soon   the water
                                          das Eis.
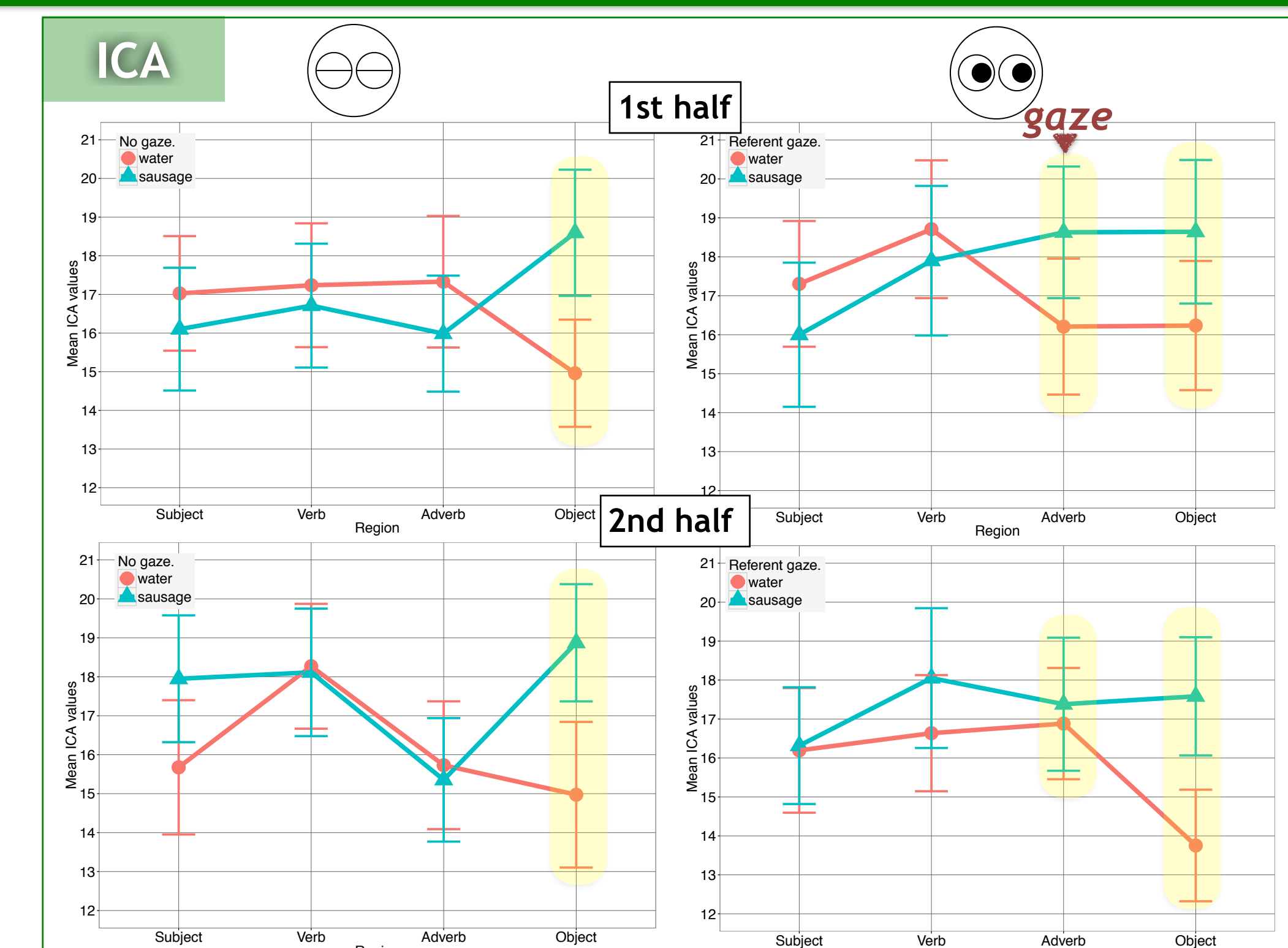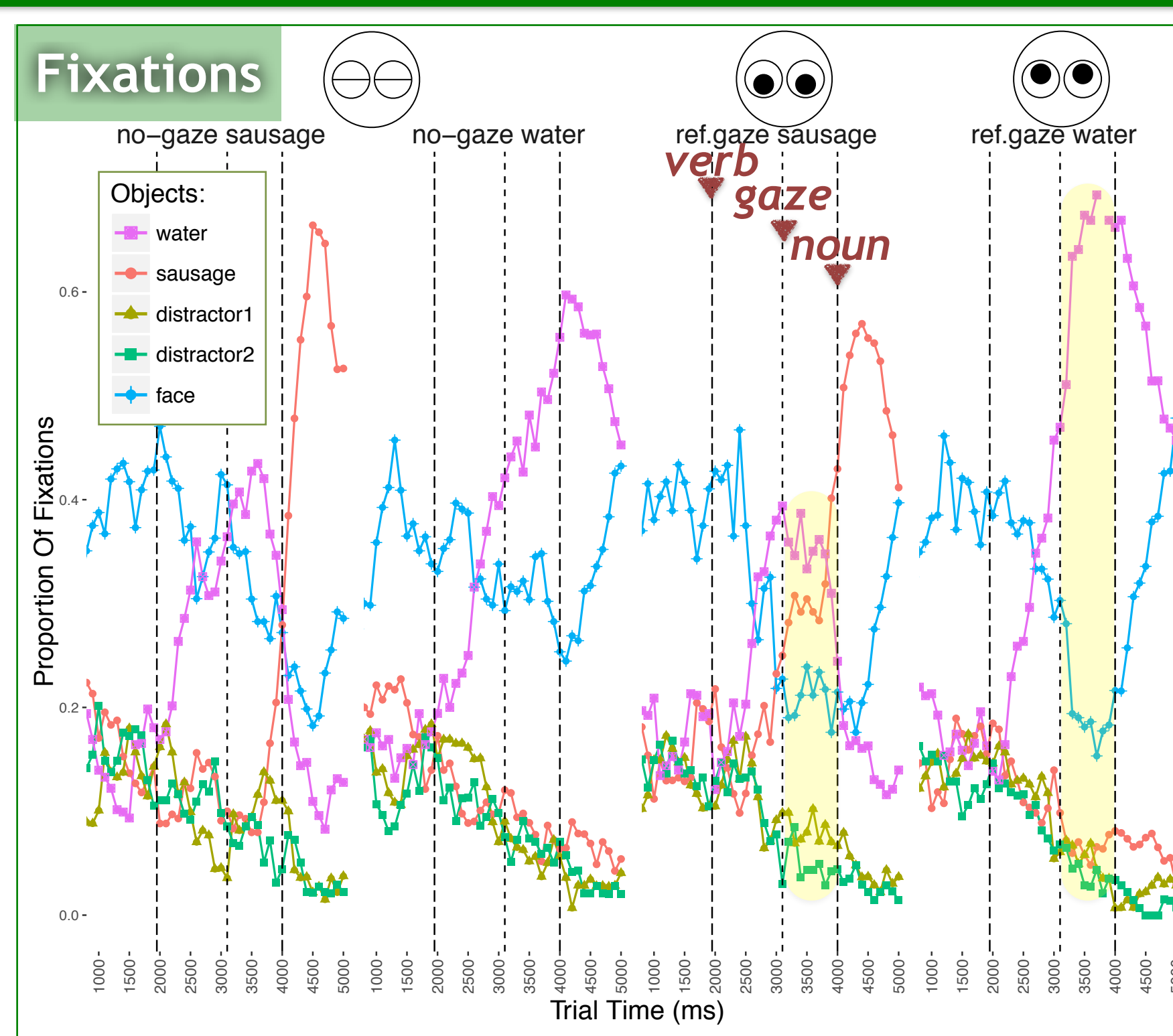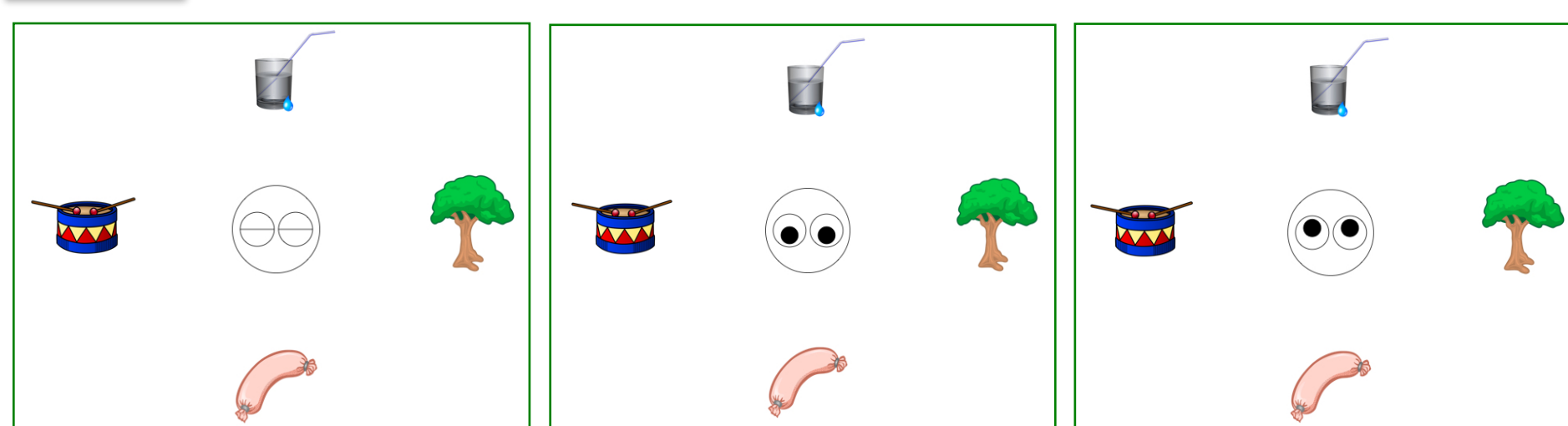   the ice-cream

Der Mann **bestellt** gleich **das Wasser.**
         orders   **das Eis.**

<1000ms> "The man spills …"
<300ms>
"…soon…"
<100ms>
"…the water."
<1000ms>

2 The Mismatching - Congruent Study

- <u>gaze</u> always congruent with the referent noun: *Gaze* (no-gaze vs. referent gaze)
- <u>referent noun (& gaze)</u> not always fitting the context: *Fit* (fitting vs. mismatching)

Der Mann **verschüttet** gleich **das Wasser.**
the man   spills   soon   the water
                                          die Wurst.
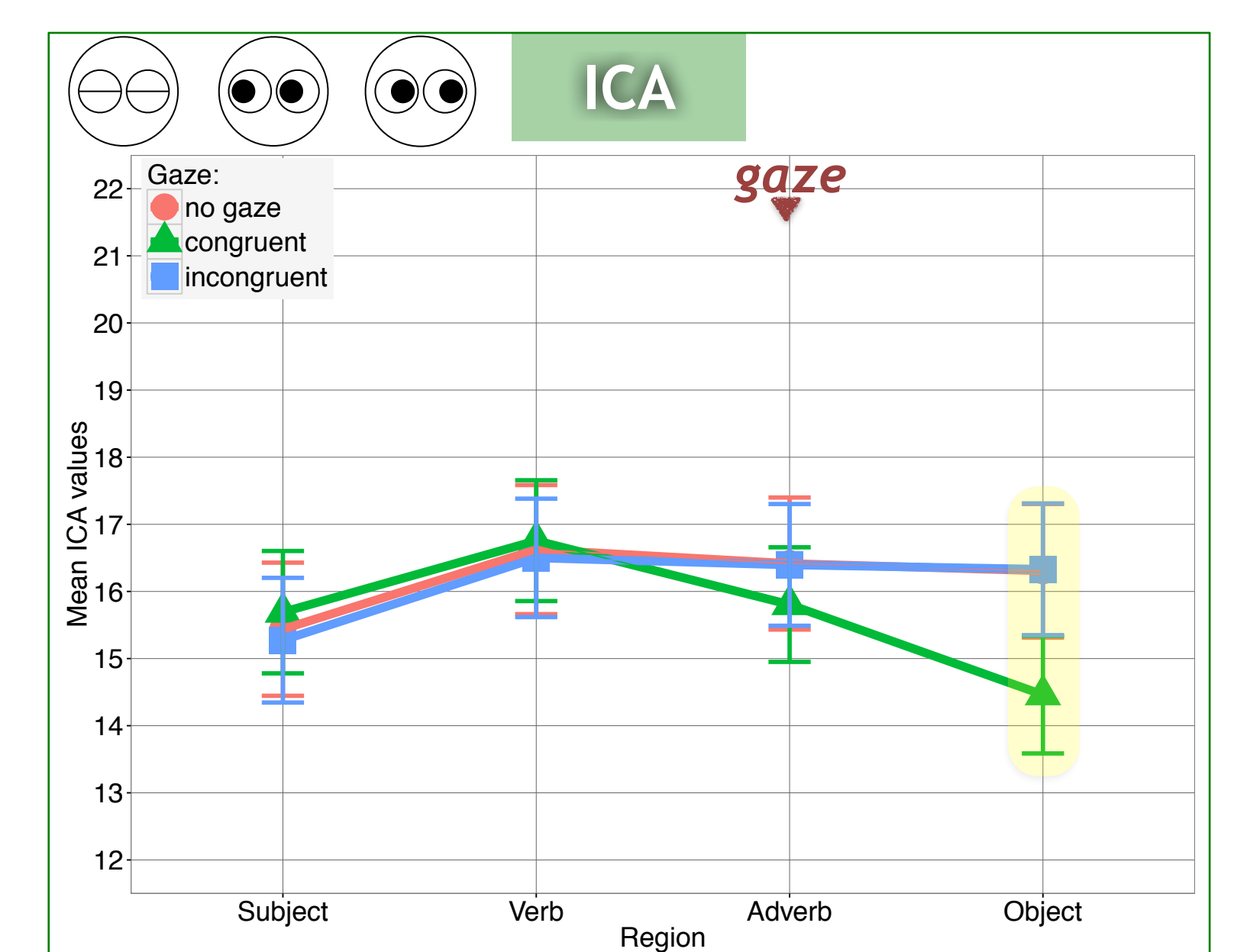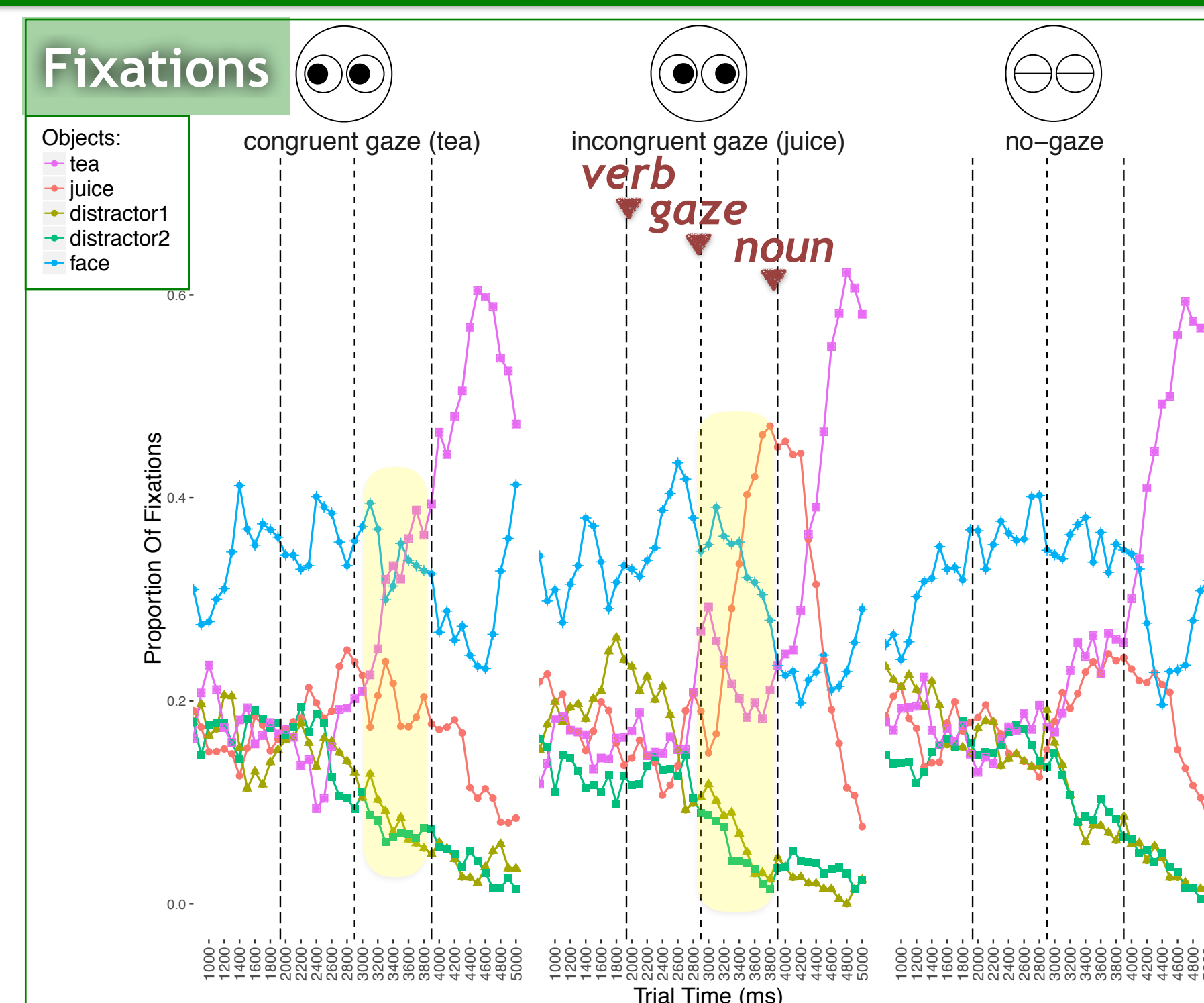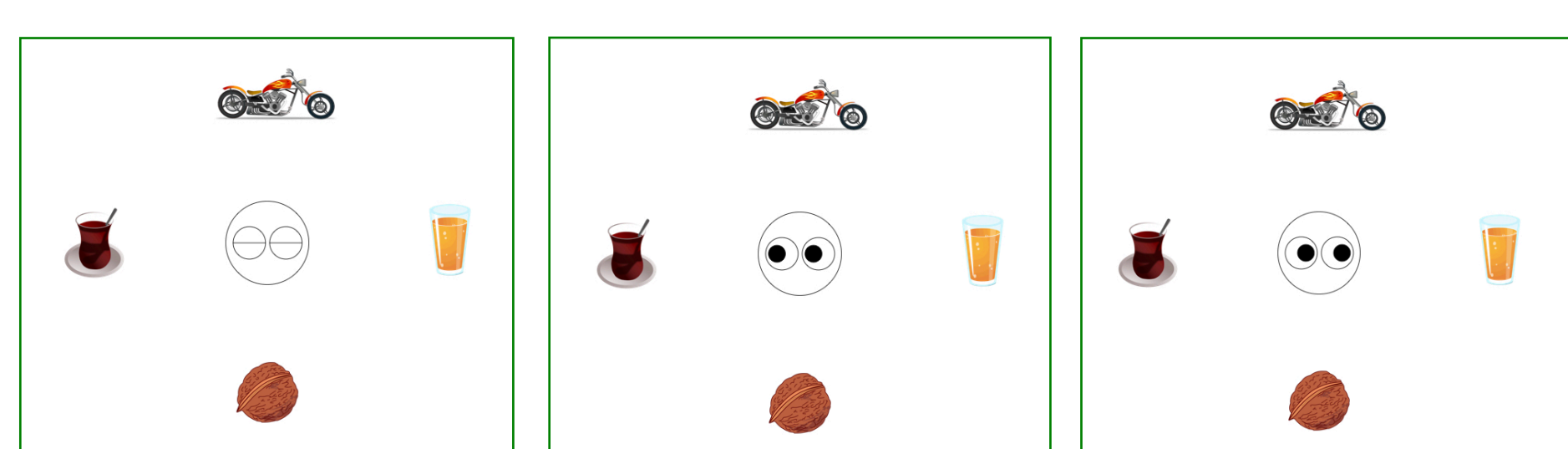   the sausage

3 The Fitting - Incongruent Study

- <u>gaze</u> not always congruent with the referent noun: *Gaze* (no-gaze vs. referent vs. competitor gaze)
- referent noun (& gaze) always fitting the linguistic context

Der Mann **verschüttet** gleich **den Tee.**
the man   spills   soon   the tea

Answers

- The gaze cue is followed and inspires prediction for the upcoming referent, which leads to it being processed with less cognitive effort.
- This holds even when the cue (and the corresponding referent) are mismatching with the previous linguistic context.
- The perception of the gaze cue itself proved not to be costly unless mismatching with the linguistic context.
- Congruent gaze cue helps reduce the cognitive load on the subsequent referent, while incongruent does not induce additional cost on processing the referent noun (fitting the linguistic context).

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