The Influence of Speaker's Gaze on Sentence Comprehension: An ERP Investigation

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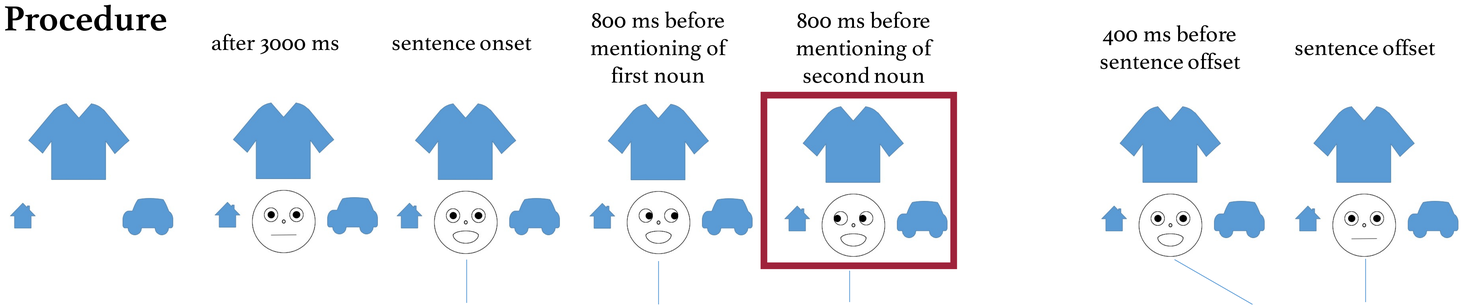
Gaze Cues in face-to-face interactions

- Speakers' direct their gaze toward an object approximately 800ms before mentioning.
  (Griffin & Bock, 2000; Kreysa, 2006)
- Eye-tracking studies provided evidence that speaker gaze cues are interpreted by listeners to contain referential intentions
  (Staudte & Crocker, 2011; Staudte et al., 2014)
- Do listeners utilize this external cue as soon as it is available to make predictions about the unfolding sentence?

Procedure



- The red box indicates the manipulated gaze cue
- The highlighted word indicates the region of interest

Verglichen mit dem Auto, ist das Haus verhältnismäßig klein, denke ich.
Compared to the car, the house is relatively small, I think.

Methods

Design:

- 72 experimental trials / 72 filler
- 3 lists (Latin square)
- 30 participants (age: 18–32 / mean age: 24 / male: 8)
- Comparisons between objects uttered by a text-to-speech system
- Gaze cue preceding second noun in the sentence by 800ms manipulated

Congruent **I**ncongruent **N**eutral

800 ms prior to "Haus" (house)

References

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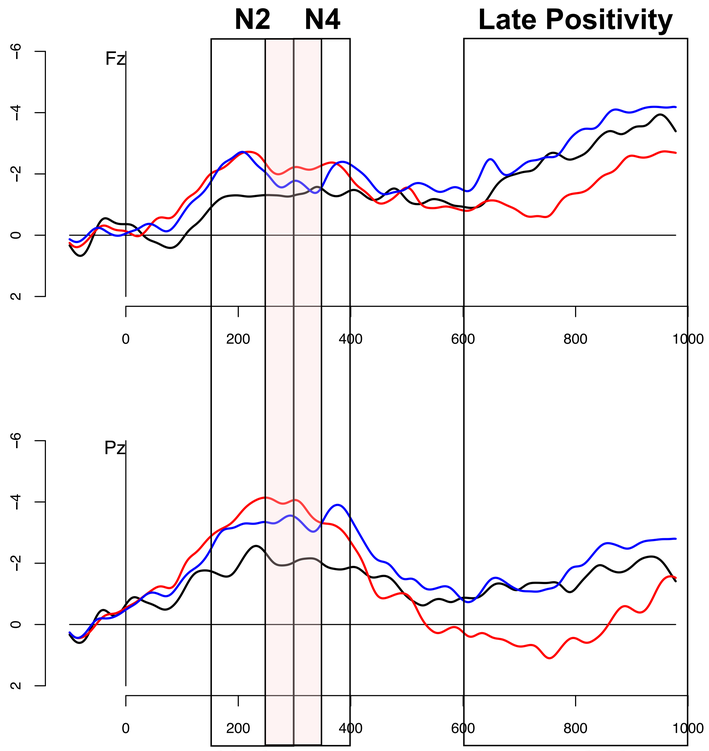
Results (second noun onset)



Congruent (black) – Incongruent (red) – Neutral (blue)

	Time Window	C - I	C - N	I - N
N400	150 – 400 ms	*	*	n.s.
N2	150 – 300 ms	*	*	n.s.
	250 – 350 ms	n.s.		
N4	300 – 400 ms	*	*	n.s.
LP	600 – 1000 ms	*	n.s.	*

Discussion

N2 : PMN – "mismatch between the expected word form given a context and the actual activated word candidates given the speech signal listeners perceive" (Hagoort and Brown, 2000)

N4 : Predictability driven N400 (Kutas, DeLong & Smith, 2011)

Late Positivity : Update of the situation model built on the preceding visual information expressed by a late positivity (Polich, 2007)

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