Conceptualization in process: Motion event processing in English and French

Helen Engemann, Coralie Vincent, Efstathia Soroli, Maya Hickmann

▶ To cite this version:

Conceptualization online:
Processing motion events in English and French

Helen Engemann[1], Coralie Vincent[2], Efstathia Soroli[3], Maya Hickmann[2]

[1]Goethe Universität Frankfurt, [2]Laboratoire *Structures Formelles du Langage*, CNRS & Université Paris 8,
[3]Laboratoire *Savoirs, Textes, Langage*, CNRS & Université Lille 3

The *Att*entive *Lis*tener in the Visual World (3rd AttLis Workshop), 10-11 March 2016, Postdam, Germany

Introduction

Thinking-for-speaking hypothesis [1,2]
- Language as filter on event construal
- Language-specific encoding patterns affect attention allocation during online speech processes
- Routinely encoded aspects of reality are more salient to speakers
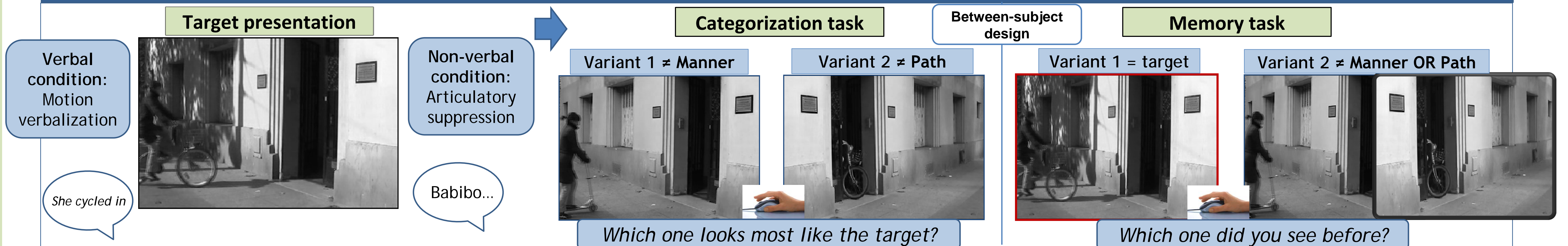- Effect on children's conceptual and linguistic development [3,4]

Motion Event Typology [5]

Satellite-framing ⟷ **Verb-framing**

MANNER: verb
(run, jump)

PATH: verb
(traverser, monter)

+

PATH: satellite
(up, down, away)

MANNER: gerund, adverbial
(en courant)

jumping up

monter (en sautant)
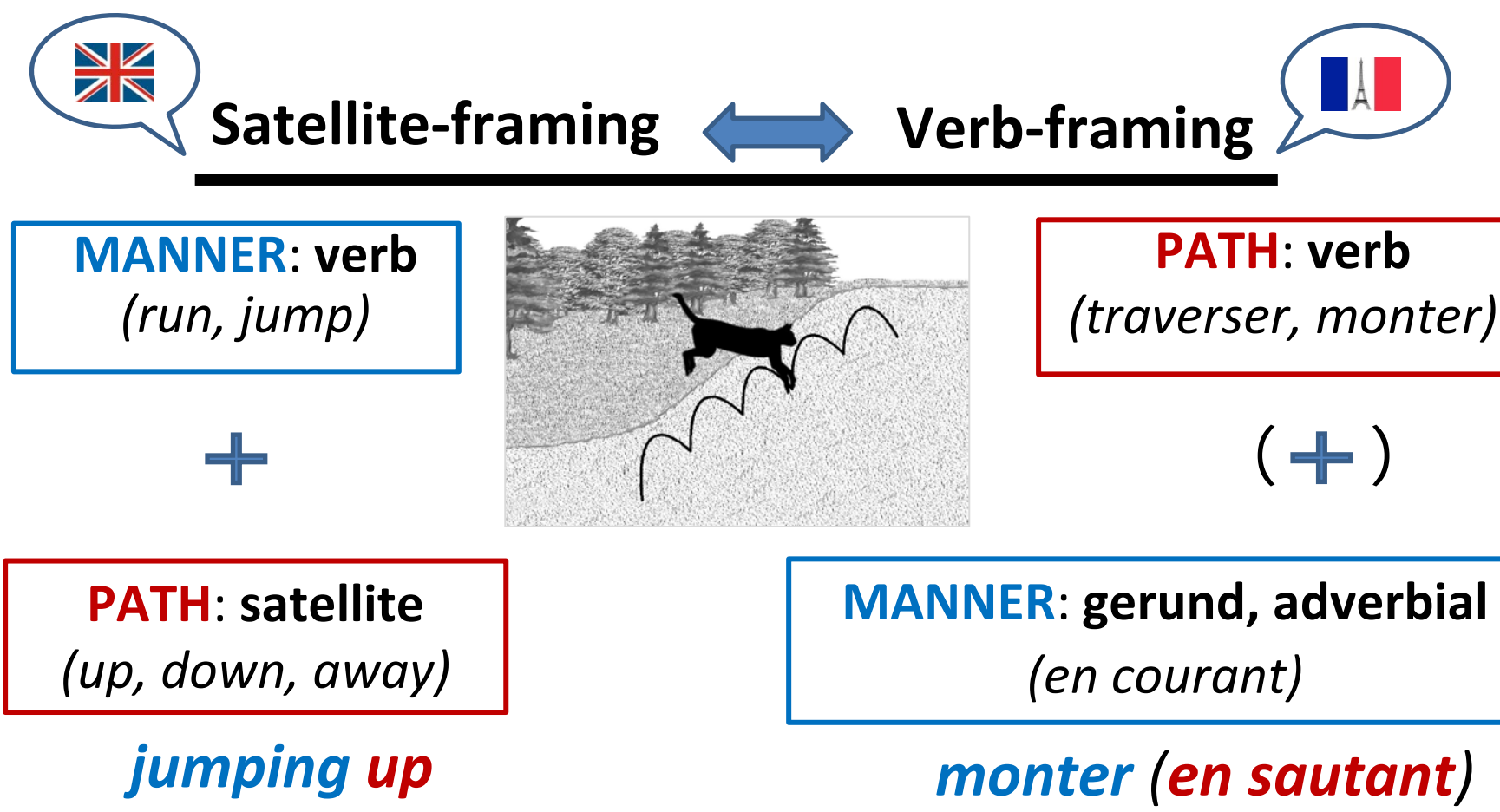
Research Questions

❖ **Q1:** Do cross-linguistic differences in motion expression affect motion event processing?

❖ **Q2:** Which domains of cognition are affected and in what condition (verbal and/or non-verbal)?

❖ **Q3:** Does typology impact children's linguistic and conceptual development of motion representation?

Materials & Procedure

Target presentation

Verbal condition: Motion verbalization

Non-verbal condition: Articulatory suppression

She cycled in

Babibo…

Categorization task

Between-subject design

Variant 1 ≠ Manner

Variant 2 ≠ Path

Which one looks most like the target?

Memory task

Variant 1 = target

Variant 2 ≠ Manner OR Path

Which one did you see before?

Eye-tracking: Dynamic AOIs

Fig 1. Definition of dynamic zones of interest

- Tobii X120 head-free binocular remote desktop eye-tracker (120 Hz)
- Dynamic AOIs hand-drawn for each stimulus, allowing precise monitoring of fixations

Exploratory gaze analysis [8]

Classification using PyMVPA algorithm

Hypotheses

- **Categorization:** Manner criterion EN > FR
- **Memory:** Manner recognition errors FR > EN
- **Gaze pattern:** Total fixation duration on Manner-relevant AOI EN > FR

Participants

Adults	NV English	NV French	VE English	VE French
Categorization	22	19	18	19
Memorization	19	20	19	18

Results eye movements [6,7]

Fixation duration during viewing for production

$p < 0.01$ effect of language
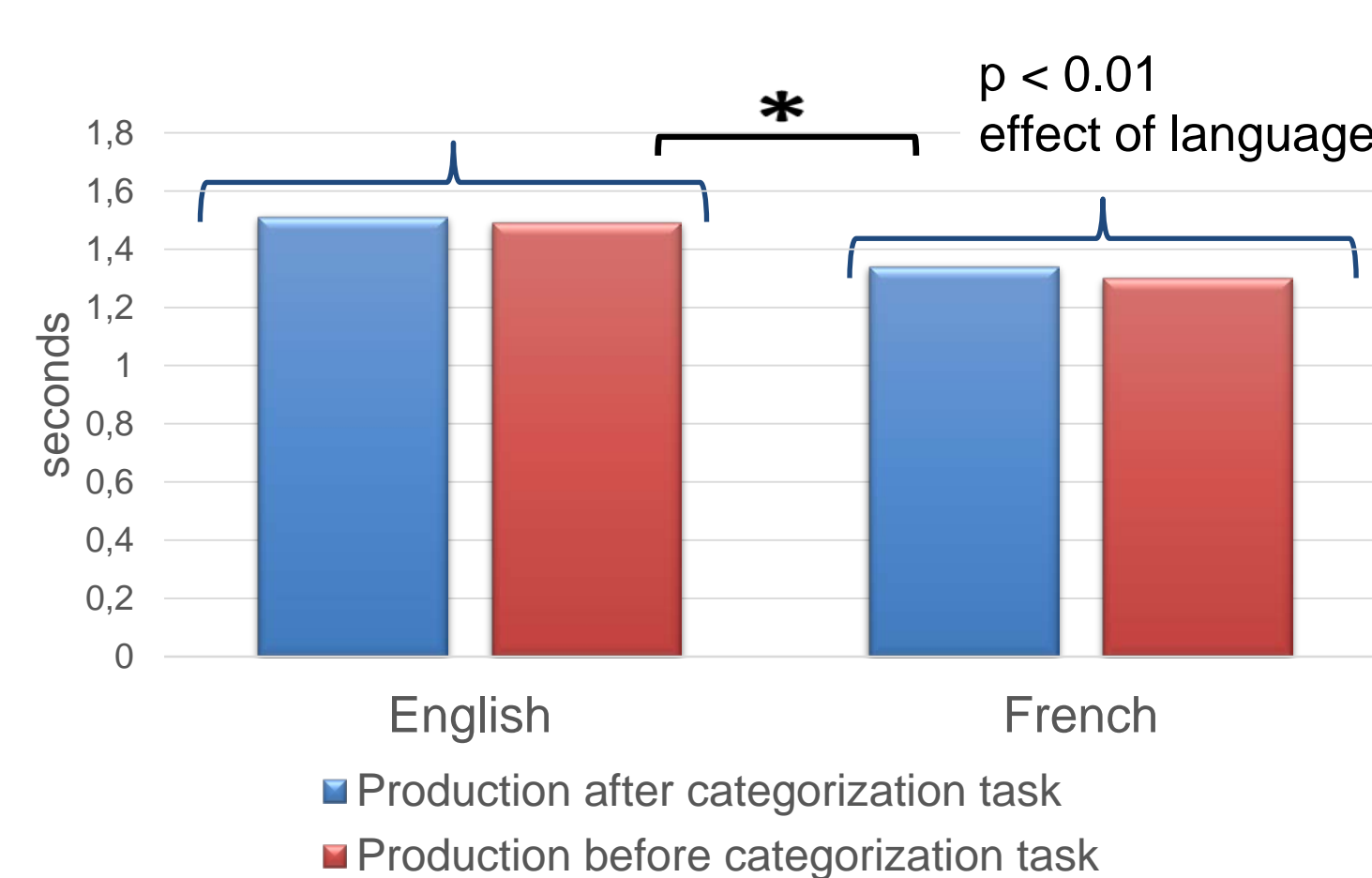
Fig 2. Total fixation duration (means) on Manner-AOI (Legs)

Fixation duration during categorization
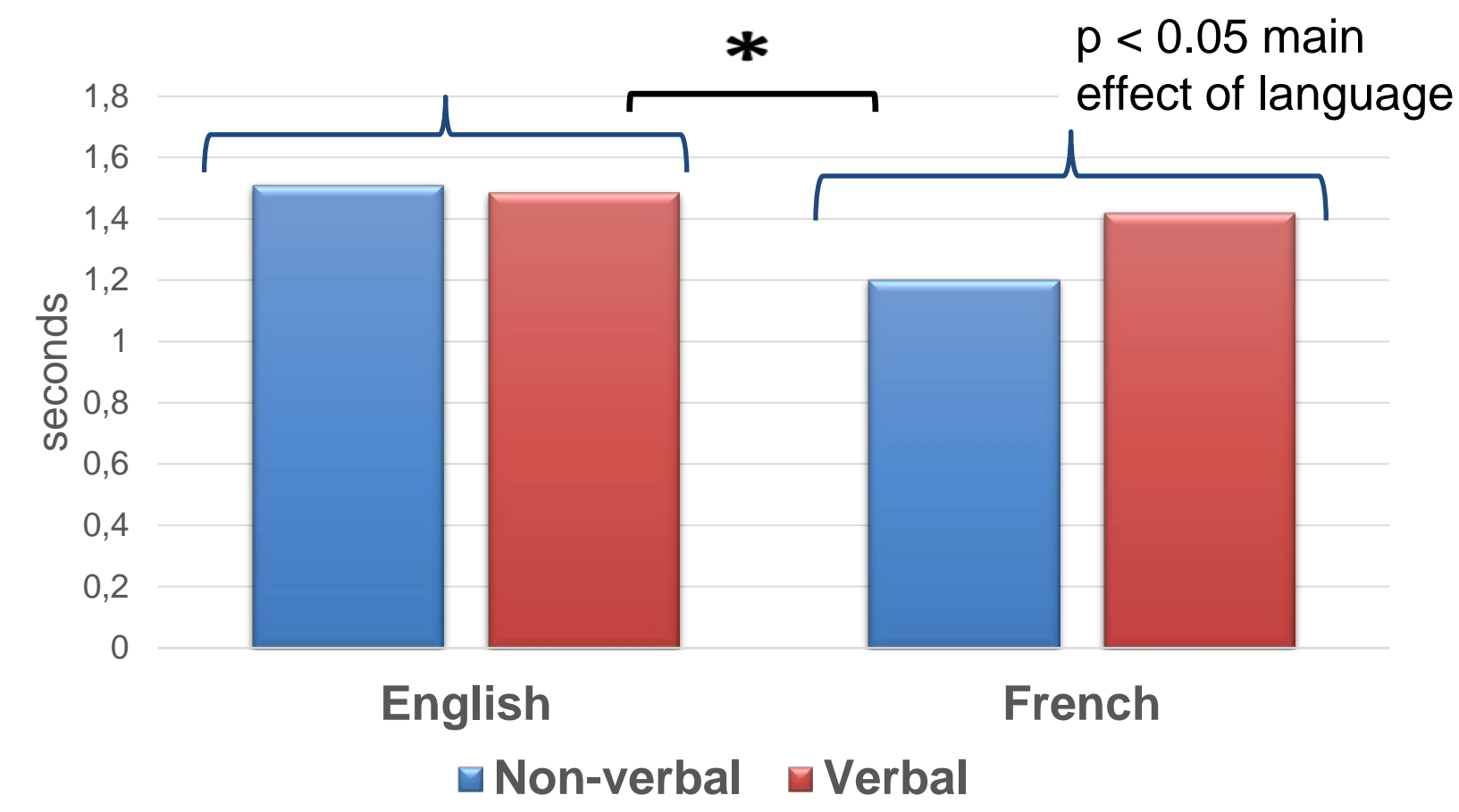

$p < 0.05$ main effect of language

Fig 3. Total fixation duration (means) on Manner-AOI (Legs)

Fixation duration memorization: No sig. differences

Results offline measures
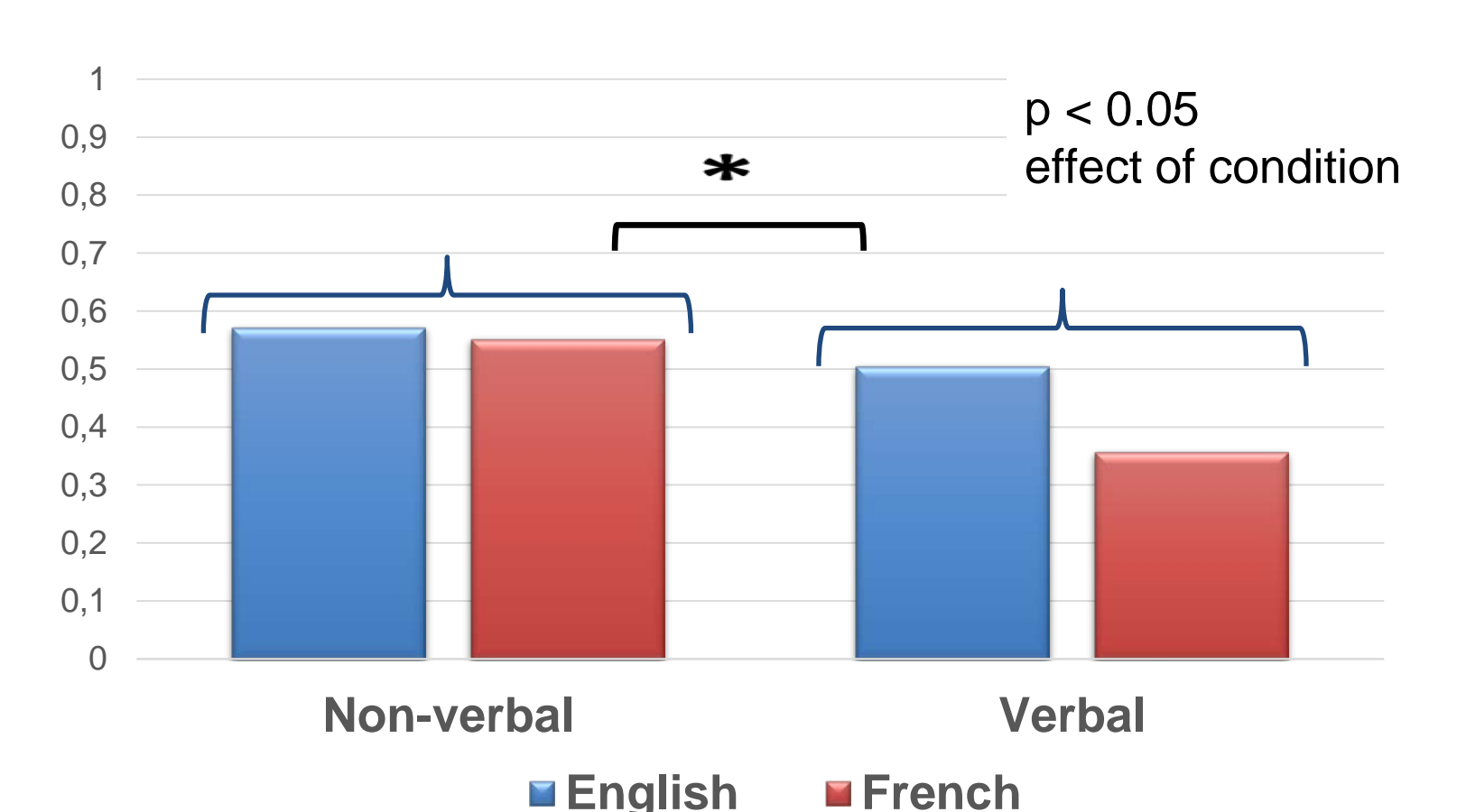
Categorization: Manner responses

$p < 0.05$ effect of condition

Fig 4. Categorization: Proportions of Manner choices

Memory: types of recognition error

$p < 0.0001$ effect of error type
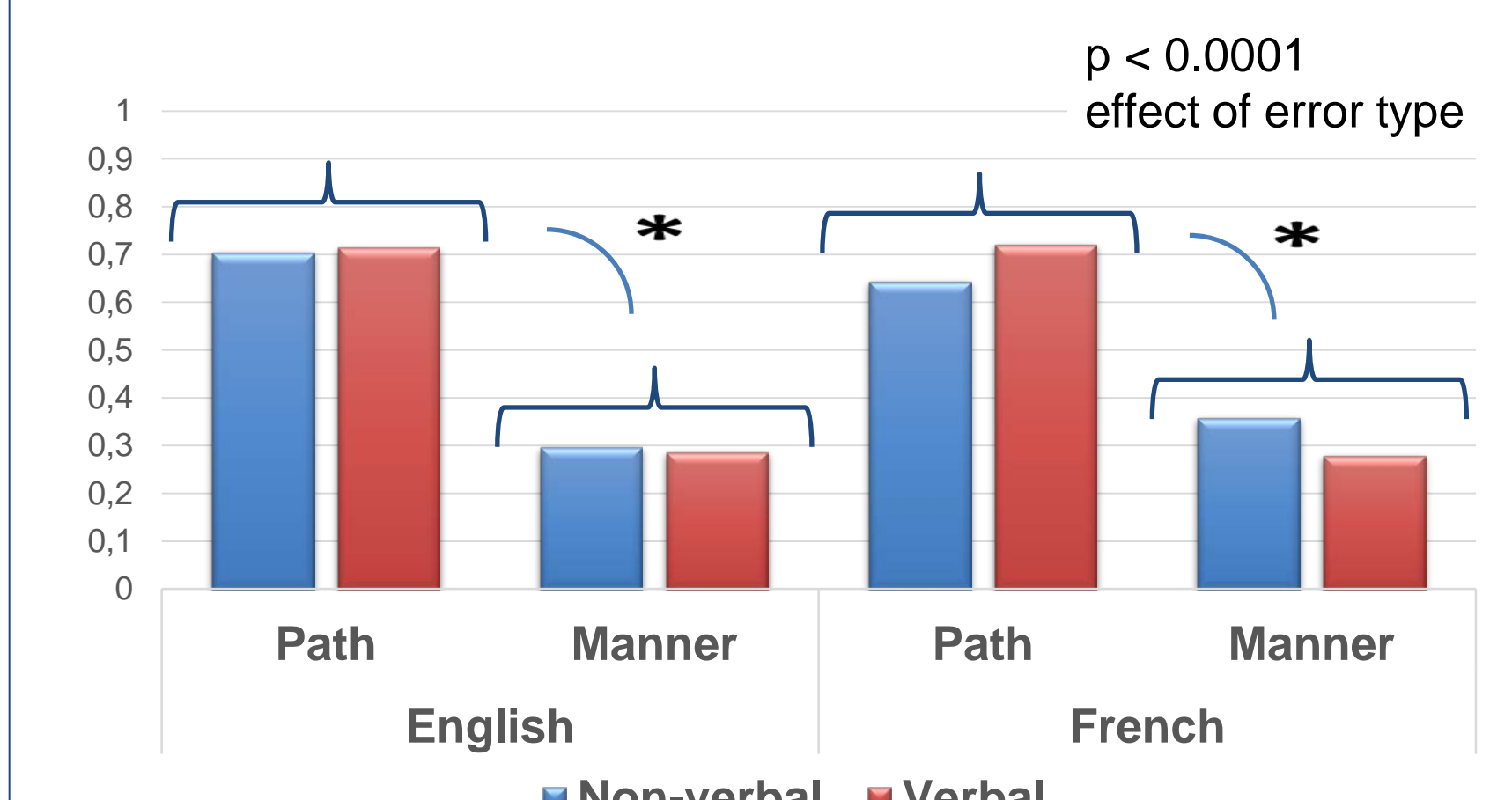
Fig 5. Error types as proportion of total recognition errors

Discussion & future directions

- Offline measures show effects of condition (NV vs. VE)
- Eye movements reveal significant language-specific processing differences, also in non-verbal conditions
- Not all cognitive processes affected alike: impact on fixations during categorization, but not memorization
- No meaningful results with classification analysis
- Future directions: Investigating motion processing in children's development and in bilingual speakers

Contacts

Helen Engemann
Institut für Psycholinguistik & Didaktik der deutschen Sprache
Goethe Universität Frankfurt
h.engemann@em.uni-frankfurt.de

Coralie Vincent and Maya Hickmann
Laboratoire *Structures Formelles du Langage*
CNRS & Université Paris 8

Efstathia Soroli
Laboratoire *Savoirs, Textes, Langage*
CNRS & Université Lille 3
efstathia.soroli@univ-lille3.fr

References

1. Slobin, D. I. (1996). From « thought and language » to « thinking for speaking ». In J. J. Gumperz & S. C. Levinson (ed.), *Rethinking linguistic relativity* (p. 70-96). Cambridge, UK: Cambridge University Press.
2. Slobin, D. I. (2004). How people move: Discourse effects of linguistic typology. In C. L. Moder & A. Martinovic-Zic (ed.), *Discourse across languages and cultures* (p. 195-210). Amsterdam & Philadelphia: John Benjamins Publishing.
3. Choi, S. & Bowerman, M. (1991). Learning to express motion events in English and Korean: The influence of language-specific lexicalization patterns. *Cognition, 41*, p. 83–121.
4. Choi, S. & Hattrup, K. (2012). Relative contribution of cognition/perception and language on spatial categorization. *Cognitive Science, 36*, 102–129.
5. Talmy, L. (2000). *Toward a Cognitive Semantics: Typology and Process in Concept Structuring* (Vol. 2). Cambridge (Mass.); London: the MIT Press.
6. R Core Team (2015). *R: A language and environment for statistical computing.* R Foundation for Statistical Computing, Vienna, Austria.
7. Bates, D., Maechler, M., Bolker, B. & Walker, S. (2015). Fitting Linear Mixed-Effects Models Using lme4. *Journal of Statistical Software, 67*(1), 1-48.
8. Hanke, M., Halchenko, Y. O., Sederberg, P. B., Hanson, S. J., Haxby, J. V. & Pollmann, S. (2008). *PyMVPA: A Python toolbox for classifier-based data analysis.* Poster presented at the 34th conference "Psychology and Brain" (Psychologie und Gehirn 2008).