

Moving Meetings by Moving Prosody and Gesture

Alina Gregori¹

Susanne Fuchs^{2,3}

¹Goethe University Frankfurt
gregori@lingua.uni-frankfurt.de

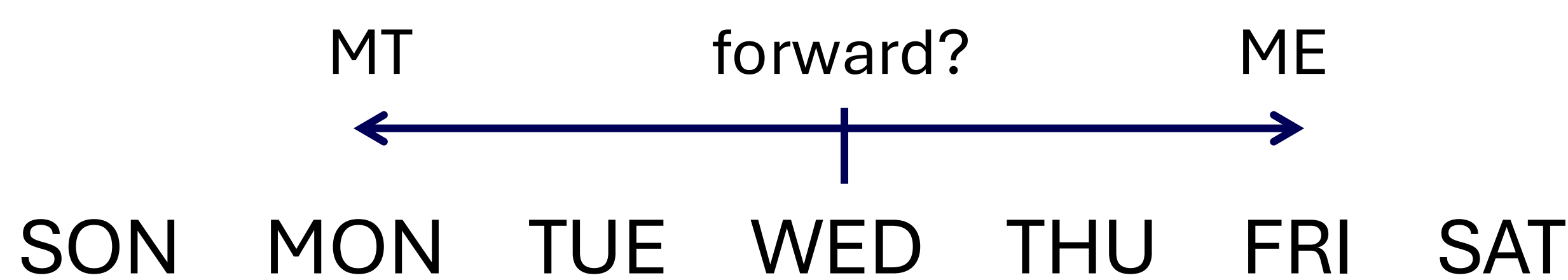
²Leibniz Center for General Linguistics (ZAS),
³ILCB and IMéRA at Aix-Marseille University



Next Wednesday's meeting has been moved forward two days. On what day is it now?

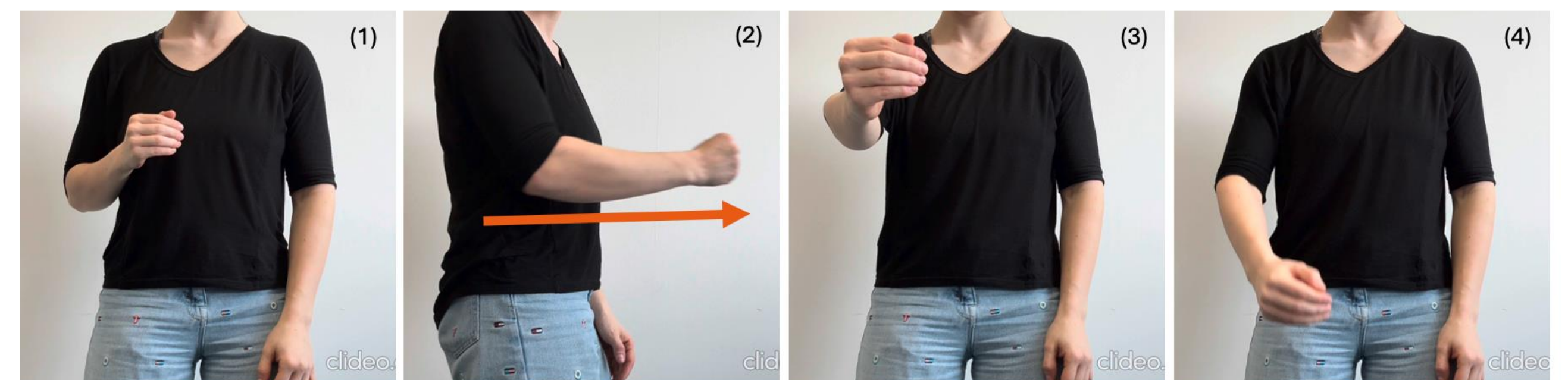
Next Wednesday Question Paradigm

- Known in cognitive sciences (Boroditsky, 2000; Lewis & Stickles, 2017)
- Sentence is **ambiguous** due to combination of verb and adverb
- External factors can influence decision (e.g., a persons' movement)
- Winter & Duffy (2020) examine **influence of gestures** on paradigm:
 - Gestures play a role, but manipulation of speech more important
 - Gesture handshape and speaker likeability influence results



Gestures

- “Flat wall” hand shape, one handed gesture
- Moving horizontally in front of the speaker's body
- **Forward** gesture (away from speaker)
- **Backward** gesture (towards speaker)



Study Design and Stimuli

- **RQ:** Do spatial gestures help the disambiguation of the Next Wednesday Question?
- Remote perception Study via Prolific; participants answer the NWQ in multimodal setting; between-subject design
- 2 x 3 Design: **Gesture Direction** (forward gesture / backward gesture) x **Gesture Position** (adverb / sentence final / verb)
- **Adverb Presence** (adverb “forward” / no adverb) as an additional factor by merging gesture positions
- Stimuli pre-recorded; female native speaker of British English
- Participants: Native speakers of English; answered an attention question; N = 274
- Analysis: Proportion of “Monday” / “Friday” responses; **Bayesian logistic regression models**
- Target sentence with assigned gesture positions:

Next Wednesdays' meeting has been moved (forward) two days ____.

Results



Intercept: “Friday” response

- **Gesture Direction** effect: $\beta = -1,78$; 95%-CI [-2,71, -0,88]
- **Adverb Presence** effect: $\beta = -1,93$; 95%-CI [-2,59, -1,30]
- **Gesture Position** effect verb – adverb: $\beta = -2,34$; 95%-CI [-3,07, -1,65]
- No Gesture Position effect verb – sentence final
- No interactions

Discussion and Outlook

- General preference for “Friday” response
- **Gesture Direction has disambiguating effect** on NWQ responses, but stronger for forward gesture than backward gesture
 - forward gesture leads to disambiguation and “Friday” response
 - backward gesture has no disambiguation effect, might be due to markedness
- **Adverb Presence has effect** on NWQ responses
 - adverb present increases “Monday” responses
 - adverb absent disambiguates to “Friday”
 - same pattern for both Gesture Directions, more “Monday” with backward gesture
- **No Gesture Position effect:** effect likely found due to Adverb Presence
- Follow-Up study: Does the manipulation of the **placement of prosody and gesture** 1) have an influence on responses to the NWQ? 2) evoke a Gesture Position effect?
 - Hypothesis 1: Generally **weaker effects** because prosody might overrule gesture effects
 - Hypothesis 2: **Gesture Position** effect becomes relevant due to interaction of prosody and gesture

References Boroditsky, L. (2000). Metaphoric structuring: Understanding time through spatial metaphors. *Cognition* 75(1), 1-28. - Lewis, T. N., & Stickles, E. (2017). Gestural modality and addressee perspective influence how we reason about time. *Cognitive Linguistics*, 28(1), 45-76. - Winter, B., & Duffy, S. E. (2020). Can co-speech gestures alone carry the mental time line? *Journal of experimental psychology: learning, memory, and cognition*, 46(9), 1768.