

The impact of focus types on the prosody-gesture link in Catalan and German: a focus elicitation production study

BACKGROUND

Focus

Cognitive domain that refers to the presence of alternatives in the discourse. (Krifka, 2008)

- **Information focus:** most important information.
- **Contrastive focus:** overt presence of alternatives.
- **Corrective focus:** disagreement to a previous statement.
- **Background:** non-focused constituents.

Prosody

- **Pitch accentuation** is used across intonation-based languages (e.g. German, Catalan) to confer prosodic prominence to target syllables.
- Focused constituents receive **nuclear accentuation**, while background information is frequently deaccented (e.g., Féry & Kügler, 2008)
- Other **prosodic prominence measures:** intensity, duration, pitch range

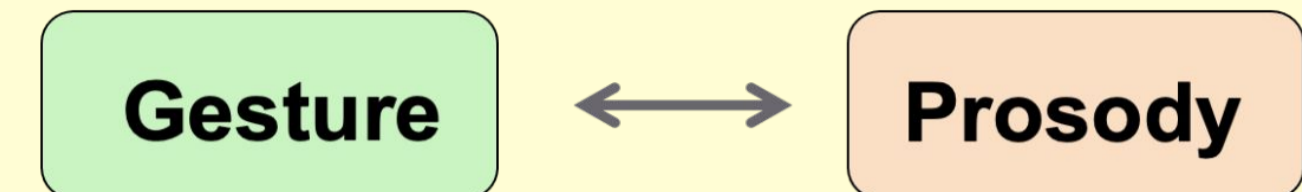
Co-speech gestures

Visible body movement accompanying speech (Kendon, 2004) → **manual gestures**
Gesture **stroke:** obligatory core movement of a gesture.
Integrated with speech semantically, pragmatically, and phonologically (McNeill, 1992)

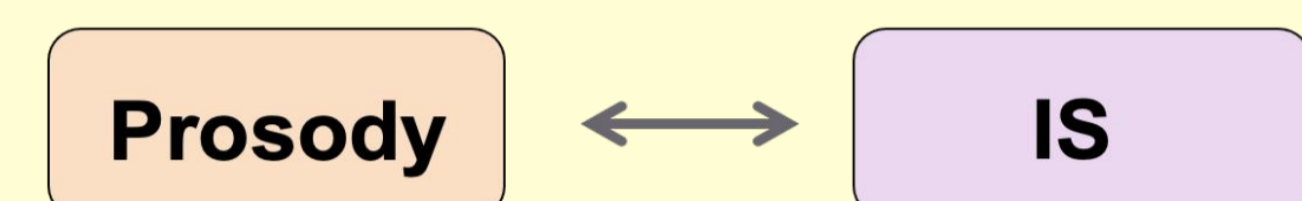
- Referential gestures: clear referent in speech
- Non-referential or “beat” gestures: no clear semantic meaning in speech, **discourse-marking functions**

Interactions

Gesture and speech are highly interconnected (McNeill, 1992)



Information structure and prosody correlate in terms of prominence (Féry & Kügler, 2008)



Less is known about the impact of focus types on the correlation IS-prosody and on the gesture use in adult speech

Prosody

IS

?

Gesture

RQ: Are focus types marked multimodally (by both gestural and prosodic prominence)? Is the relation between gesture presence and focus types direct, or is it mediated by prosody?

METHODOLOGY

Participants & Material

Participants: 3 German native speakers
Material: 84 items
Target Phrase (TP): ADJ (color) + NOUN
Focus conditions

- Information Focus (21 items)
- Contrastive Focus (21 items)
- Corrective Focus (21 items)
- Background (20 items: 1 excluded, no target)

Data Coding & Analysis

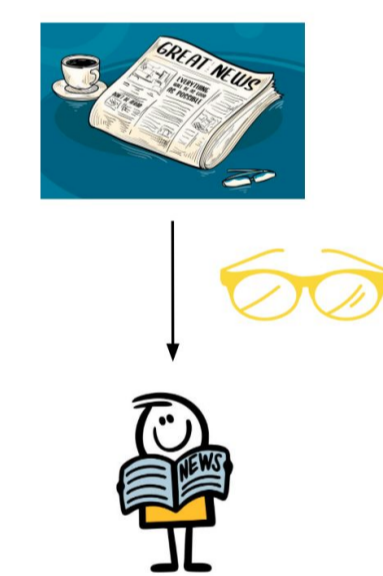
- **Annotation:** Praat (accentuation, Boersma & Weenink 2022), ELAN (manual gestures, ELAN)
- **Systems:** GToBI (Grice et al. 2005), M3D (Rohrer et al. 2023)
- **Statistics:** R Studio
- **Analysis:** first explorative analysis of pilots
- **Variables:** main accent of TP, gesture strokes

Data Collection / Experimental Procedure

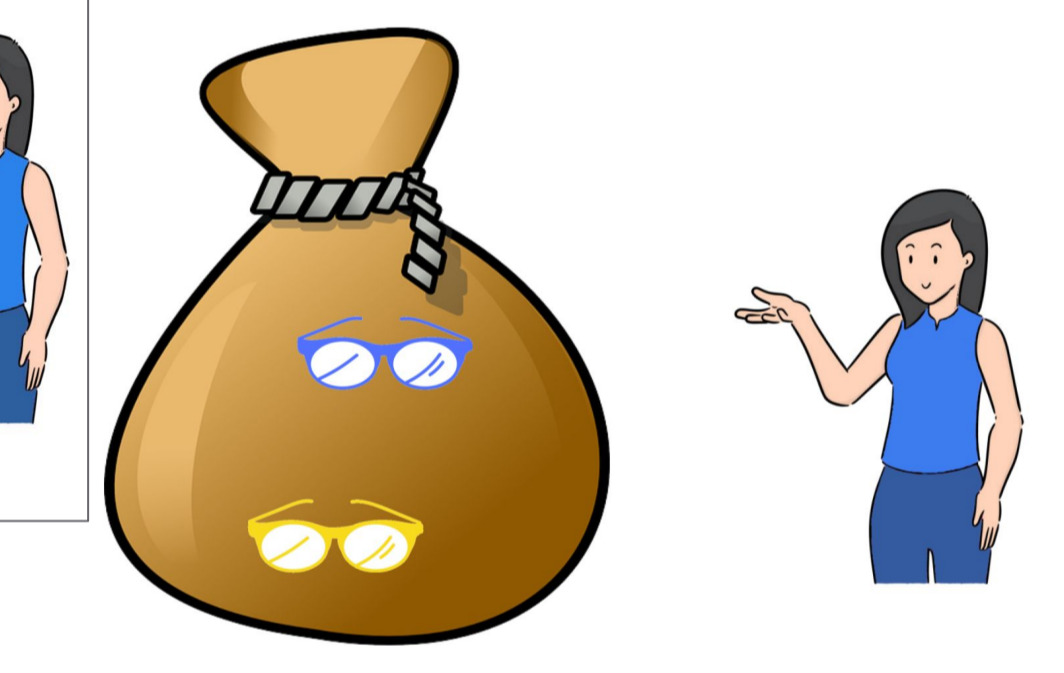
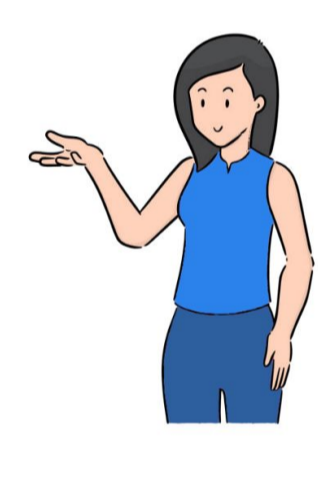
- Participants sitting in front of a screen on a high chair, and instructed to talk to a language learner.

- They are helping her learning the language, by instructing her to take certain objects from a bag (Esteve-Gibert et al. 2021).

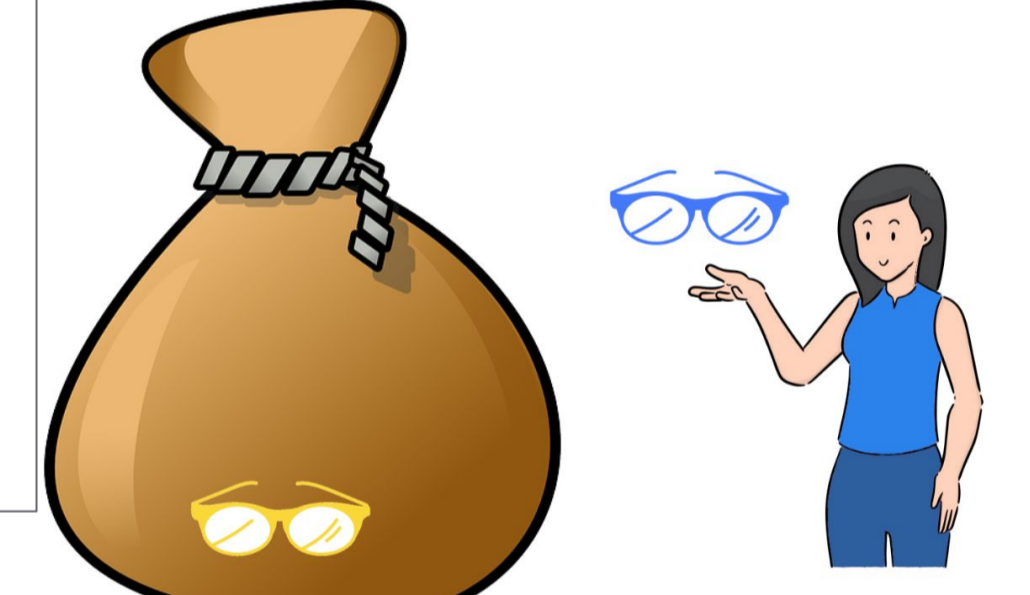
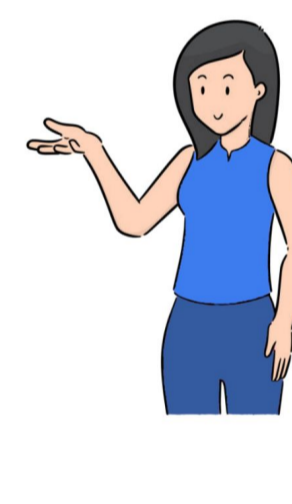
When you see her bag, tell Maria which object she must take to read the newspaper.



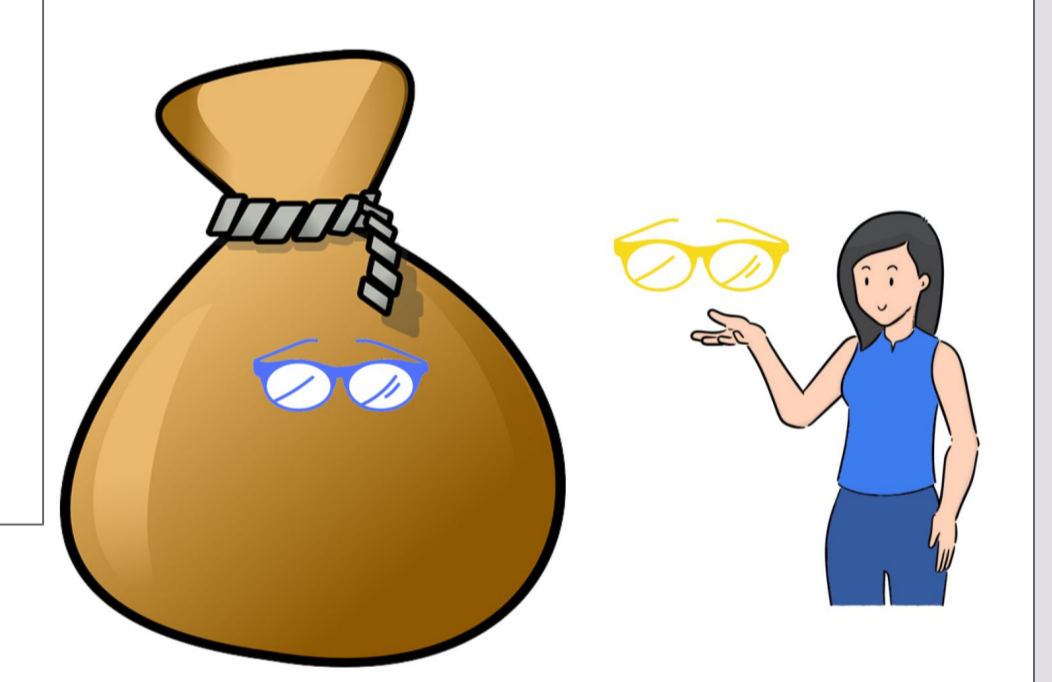
A context slide shows the target object



The objects contrast in color



Maria confuses the objects and takes the wrong one (due to color preferences)



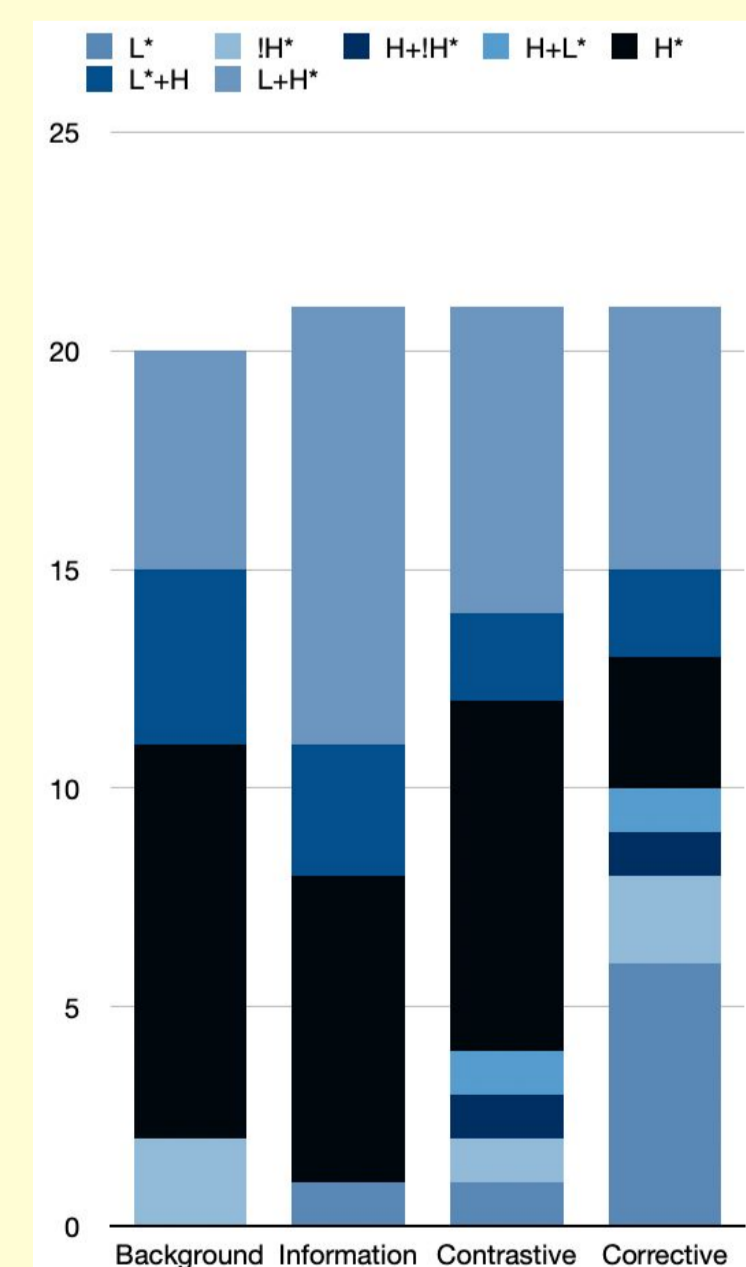
The participant checks Maria's actions and corrects her

Contrastive focus trial:
“Maria, take the [YELLOW glasses]_T (from the bag).”

RESULTS

Preliminary Results

Main accent of TP

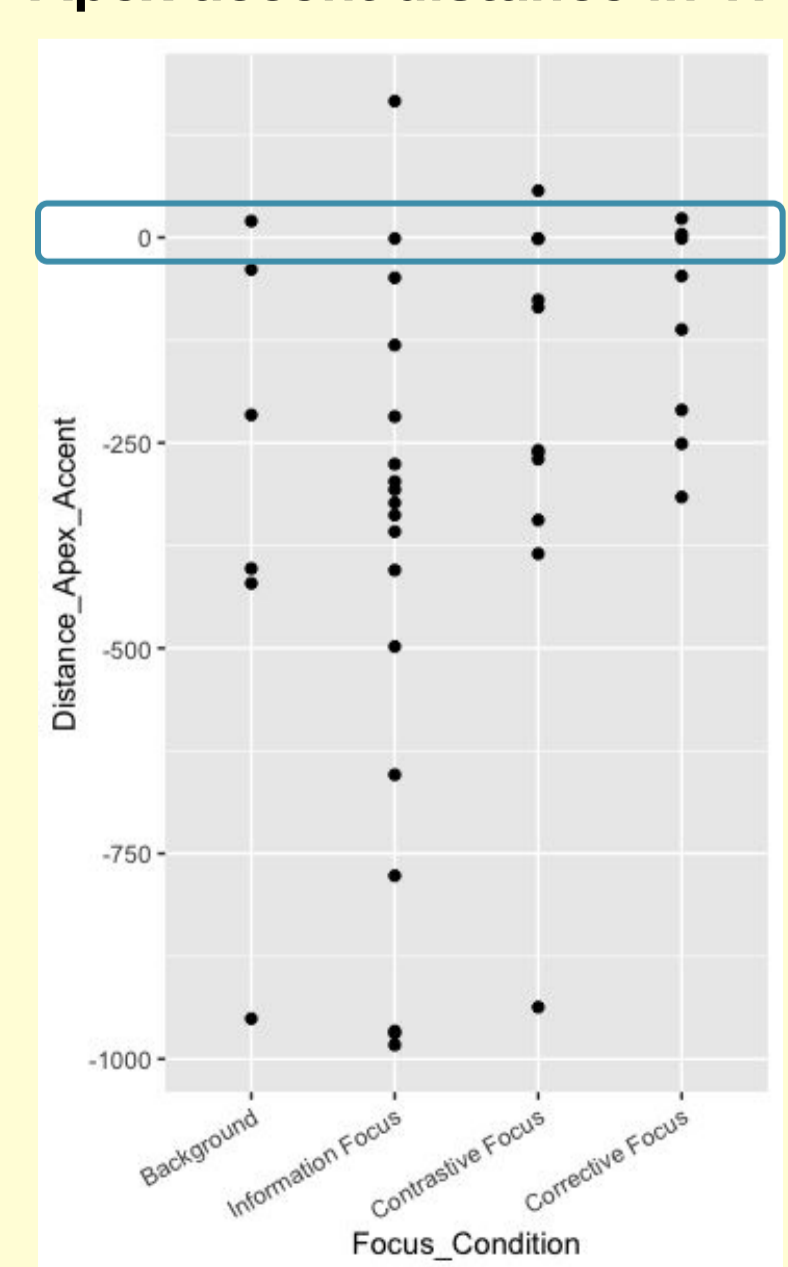


- Pitch accents alone do not fully express pragmatic prominence → other prosodic measures
- Multimodal prominence marking:
 - most gestures on **contrastive** focus
 - most accurate apex accent alignment on **corrective** focus
 - most gestures on target phrase: **information** focus

Gesture rate across whole utterance

Condition	Seconds (rounded)	Gestures	Gesture Rate (g/sec)
Background	170 sec	26	0,153
Information Focus	157 sec	35	0,223
Contrastive Focus	209 sec	62	0,3
Corrective Focus	156 sec	44	0,282
Total	703 sec	167	0,238

Apex accent distance in TP



Discussion & Outlook

- The method elicits natural gestures while enabling to control for focus
- Gestures occur more often on pragmatically more prominent focus types (contrastive & corrective focus)
- Interaction with prosody:
 - Prosody alone does not give a clear perceptual prominence indication
 - Temporal alignment of prosody and gesture is closest in corrective focus, more widespread in other conditions
- BUT: very preliminary results, next steps:
 - Catalan analysis, analyzing a representative sample
 - Gesture factors: referentiality, head nods, complexity of g-units
 - Perceptual prominence analysis
 - Relation of adjective and noun pitch accents

Gestures seem to show non-parasitic behavior in the correlation with prosody & IS

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