Iconic Gestures in Focus -

Synchronization of Prosody and Gestures in Prominence

Frank Kügler & Alina Gregori, *Goethe University Frankfurt, Germany*

Iconic Gestures

"visible bodily action accompanying speech" Kendon 2004

additive or complementary movement contributing to a spoken expression

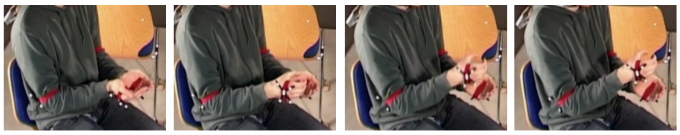
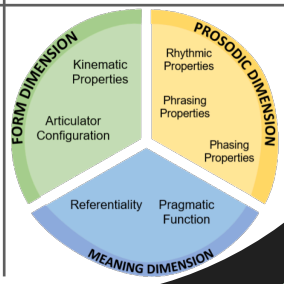


Figure 1: Example of an iconic gesture: Person says "Säule" *pillar* and imitates the narrow shape with their hands.

Traditional McNeill 1992	Multidimensional Rohrer et al. 2023
clear form-meaning relation to discourse referents formal / structural resemblance to events	

Prosody

Prosodic domains Selkirk 2011 ↔ Prosodic categories Gussenhoven 2004

Pitch accents have a highlighting function (German) Féry & Kügler 2008

Pitch accent types bear inherent prominence (German) Baumann & Röhr 2015

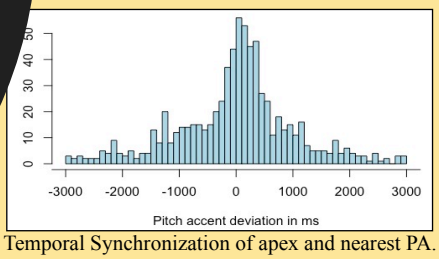
Focus

"presence of alternatives that are relevant for the interpretation of linguistic expressions" Krifka 2008

Background (non-focus) ↔ Focus

Focus is marked prosodically (German) Kügler & Calhoun 2020: Focus is prosodically more prominent than Background

Gesture-Prosody Link



Temporal Synchronization of apex and nearest PA. Non-referential gestures from Gregori 2022.

Phonological Synchrony Rule McNeill 1992: Gestural stroke occurs at stressed syllable

Gesture and speech are temporally integrated Loehr 2012, Gregori 2022, Esteve-Gibert & Prieto 2013

Method

German Speech and Gesture Alignment corpus Lücking et al. 2010

Annotation of pitch accents (p = 4.394; GToBI Grice et al. 2005), gesture apexes and referentiality (i = 1.627; M3D Rohrer et al. 2023) and focus (nf = 2.251, f = 2.773; LISA Götze et al. 2007)

Temporal alignment:
ms-distance between gesture apex and nearest pitch accent Loehr 2012
split by focus (focus vs. non-focus)

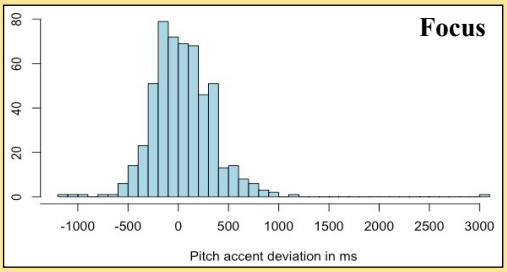
Research Question

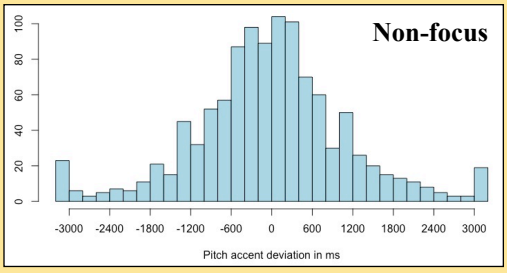
Do iconic gestures appear in focus and do they align closely with pitch accents in prominent position?

→ Yes, assuming that gestures have semantic and rhythmic dimensions Rohrer et al. 2023

Results

Temporal alignment of pitch accent and apex is more precise in focus

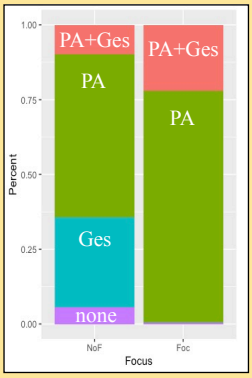




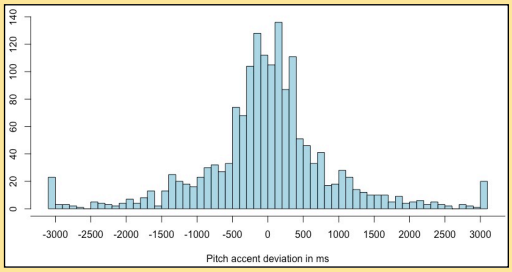
	Focus	Non-focus
mean (ms)	41	-9
SD (ms)	267	416

Table1: Mean and SD of temporal alignment split by focus.

Occurrence Cues (%)



Temporal Synchronization of apex and nearest PA



Iconic gestures are (temporally) aligned with prominence marking pitch accents

Discussion

Iconic gestures occur in prominent contexts (focus) together with pitch accents, in background mainly in unaccented contexts

Similar distribution to non-referential gestures Gregori 2022

Iconic gestures and pitch accents are synchronized temporally (in line with phonological synchrony rule McNeill 1992)

Temporal alignment is more precise in focus than in background (cf. articulatory Hyperarticulation Lindblom 1990, Hanssen et al. 2008)
→ **multimodal Hyperarticulation**

Iconic gestures express semantic meaning, BUT also have a prominence marking dimension in line with multidimensional approach McNeill 2006, Rohrer et al. 2023

Take Home Message

Focus is marked by prosodic AND gestural cues
→ more communicative effort on prominent constituents

Iconic gestures are **not limited to their iconic function**
→ but may additionally have a pragmatic highlighting function

Acknowledgments

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References & Contact