

Gesture, speech, and when they meet

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A growing number of studies have dealt with to understanding multimodal links between gesture and speech, tackling it from different perspectives [1, 2, 3]. One of this perspectives is treating gestures as an (almost) prosodic component [4, 5].

In the search for gestural features that would indicate a connection to prosody, namely pairing movements with nuclear accents or stress syllables. This was taken into scrutiny in a corpus study (RQ 1). As a follow-up study, two experiments are currently being elaborated (RQ 2 & RQ 3).

RQ 1: Can the overlap ratio be explained by the perception of a prosodic association within the gesture? If yes, can we rely on phonological anchors to find the affiliates?

A multimodal corpus in Portuguese and Spanish was compiled, made up by eight short monologues of 30 to 90 seconds. An extensive annotation was undertaken to determine how gesture features could be associated with speech. The analysis was based on current literature that uses overlap and phonological anchors as indicators of this coordination.

An important factor is gesture representationality, i.e., how schematically/iconically tied they are to the meaning they convey. Just looking for gesture overlap does do indicates representationality, but there seems to be a preference for non-representational gestures to co-occur with phonological anchors

Based on this corpus study, there seems to be evidence that different gesture types can overlap and coordinate with speech in different ways. Hence, it is proposed that a division between structure and time is made.

Association is a structural relationship between gesture and speech, precise timing not being critical for establishing affiliation.

Synchrony refers to coordination along the temporal axis, such as when iterative gestures synchronize with non-prominent points on the phonological grid. When association and synchrony occur together — such as with pointing gestures, where the pitch accent coincides with the gesture's apex — there is an **alignment**.

Manual_GUnit [p]
Man_GPhase [p]
Man_Apex [p]
Man_Apex_Id [p]
Man_GPhase_Type [p]
Semantic_Id [p]
Non_referential [u]
Iconicity [p]
Metaphoricity [p]
Deixis [u]
Emblem [p]
Semantic_Articulator [p]
string [p]
PAC [p]
Prosodic_Articulators [p]
Prosodic_Domain [p]
Prosodic_Function [p]
Comments [p]
phones [p]
syll [u]
stress [u]
tones [p]
words [p]
breaks [p]
metric [p]
ortho [u]
tones_final [p]
strings [p]

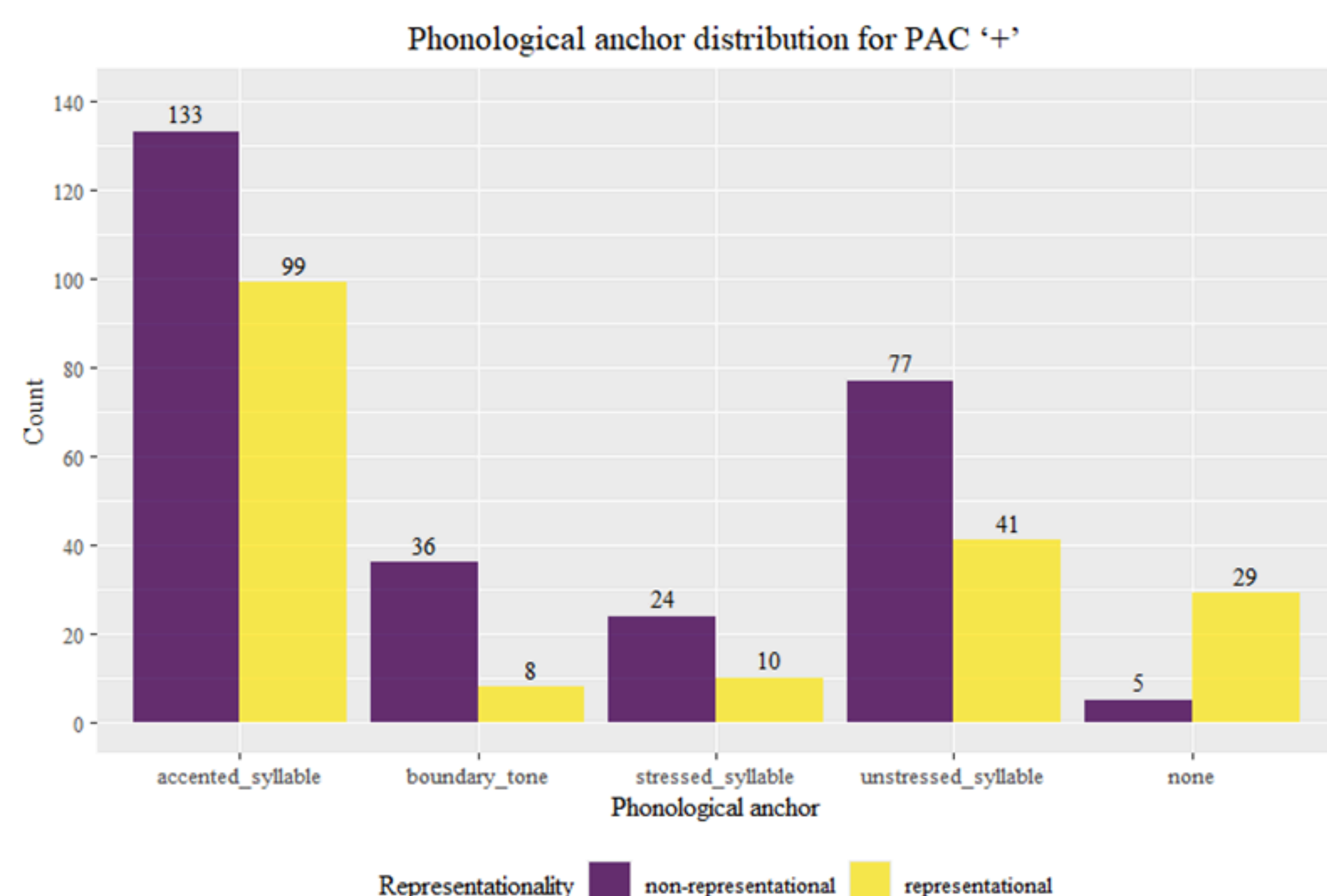
To tackle this question, two experiments (below) are being elaborated to assess if:

RQ 2: the presence of a co-speech manual gesture indicating contrast (Ring-gesture) differentially impact the interpretation of functionally different nuclear accents?

- Experiment 1: 2x2 (gesture vs. no gesture, assertion vs. reversal), between-speakers

RQ 3: the timing of the placement of the gesture apex (Ring-gesture) in relation to a nuclear accent (con azúcar) can impact the interpretation an utterance?

- Experiment 2: independent variable - position of gesture within an utterance, between-speakers



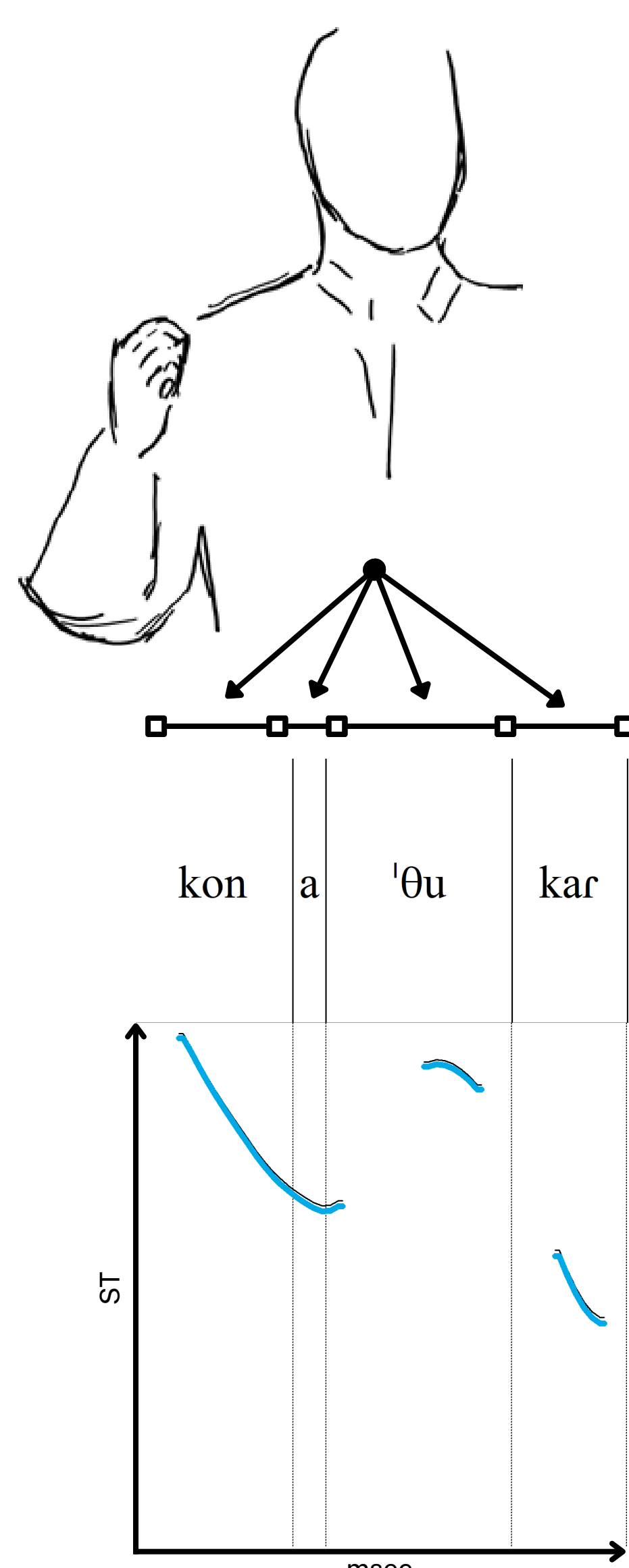
Synchrony

Association

Experiment 1

Alignment

Experiment 2



Assertion

¿Cómo bebes el café?
'How do you drink your coffee?'

Con aZÚcar
'with sugar'

Reversal

¿Bebes el café con edulcorante?
'Do you drink your coffee with sweetener?'

Con aZÚcar
'with sugar'

¿Cómo te pareció la escena?

inadecuada adecuada