

People agree on the meaningfulness of co-speech gesture



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GOALS AND METHODS OF THIS BEHAVIORAL STUDY

Goal:

Develop and test a technique for investigating the interpretation of natural co-speech gestures

Subjects:

- 20 adults (average age 22 yrs, ± 4.3 years; 3 males)
- Native speakers of North American English
- Little to no experience with American Sign Language

Stimulus material:

- Culled from a recording of free-flowing speech and gesture on five topics
- Woman in the stimuli was naive to the purpose of the recording
- Video camera angle naturally removed multimodal communicative cues of the face and head

- Each subject viewed the segments of two topics, taking approx. 1.5 hrs and rating between 86 and 120 potential gestures
- Presentation of the topics was fully counter-balanced, yielding 20 different versions of the test
- Subjects watched a segment two times and then viewed each potential gesture
- After viewing each gesture, subjects reported their interpretations

TECHNIQUE DEVELOPED FOR COLLECTING PEOPLES' IMPRESSIONS ABOUT CONVERSATIONAL CO-SPEECH GESTURE

Presentation in Keynote for each segment

iPad here

Subjects answered this question for each potential gesture

Gesture #1

1. Do you feel that the gesture (circle A, B, or C)...

(A) might have some kind of meaning when it is combined with the speech. (B) is only rhythmic. (C) is not a gesture.

How clear is the meaning of the gesture (within the context of the entire speech segment)? Please circle a number...

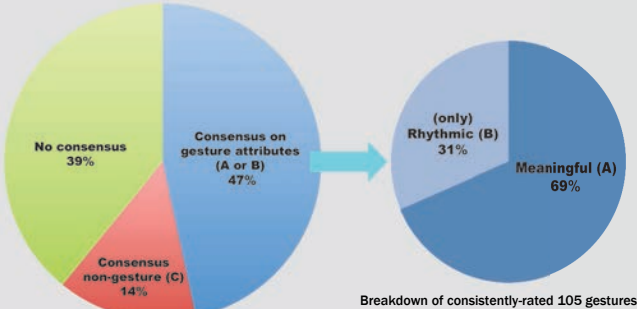
1 unclear 2 somewhat clear 3 mostly clear 4 very clear 5 perfectly clear

RESULTS

Gesture ratings and descriptions for segment playing on iPad (above)

<p>GESTURE 1 you know younger kids just (A) 1 (B) 6 (C) 1 + Flips hand over "younger" in her hand connecting "younger" and "little"</p> <p>GESTURE 2 they don't really care wh- how they look (A) 5 (B) 3 (C) 0 + Hand movement represents not caring or doesn't care if it doesn't matter. + Not important; thrown out. + So not want. + Don't care - hand tossed show "whatever" unimportant - away from body not towards. + when she say "they don't really care" she pushes her hand out away from her body representing the gesture commonly used with "not caring" or "not knowing"</p> <p>GESTURE 3 they don't have the um- (A) 7 (B) 1 (C) 0 + when trying to find her words she makes a gesture looking like she's trying to find the words + The speaker stretches her fingers indicating she doesn't know what to say next, drawing a blank + to want + fullness of that aspect + the way she moves her hands looks as if she is looking for the right words to express what she is trying to say + By closing and opening her hands in that manner, she's gesturing that she can't really find the words to describe what she wants to say in speech, so as she say "ummm" she grasps and opens her palms in efforts to describe the kids. + hand grasps - doesn't represent "um" but represents mental frustration/thinking, literally trying to "grasp" the word she's thinking.</p>	<p>GESTURE 4 the fright (A) 1 (B) 6 (C) 1 + Hands move toward stomach/fright is always "within" especially in the stomach area -> "sick to my stomach"</p> <p>GESTURE 5 they don't hope the uh (A) 0 (B) 1 (C) 7</p> <p>GESTURE 6 preconceptions (A) 1 (B) 7 (C) 0 + open palms as if she's holding the preconceptions -> the word "is" and winks her hands down.</p> <p>GESTURE 7 and ya know (A) 2 (B) 1 (C) 5 + worrying, confusion + quick hand snap for future thought, median hand prep.</p> <p>GESTURE 8 oh my gosh, I wonder what everybody's gonna think of me if I mess up (A) 3 (B) 4 (C) 1 + The body movement and rapid hand movements represent "I don't know" or "something dramatic." + rhythmic for "oh my god" but also the hands almost resemble people v. her when they can't see "mess up" / "messy" + This gesture seemed to be used to represent turmoil with someone when she says "oh my gosh I wonder what she's going to think of me..."</p>	<p>GESTURE 9 a lot of those kids (A) 2 (B) 5 (C) 1 + to not want</p> <p>GESTURE 10 don't even think about that (A) 8 (B) 0 (C) 0 + "don't even think about that" -> like throwing your arms up when you don't care. + Not important. + "Don't" -> "stop" / "wait" + Makes a gesture meaning more when saying "don't even think about that" + By rapidly pushing her hands out and away from her body, she's again making the common gesture which usually corresponds with "not knowing" or "not caring" or "not thinking." + She separates her hands from one another representing no or don't. + seems like she is saying "no" by the way she moves her arms like that</p> <p>GESTURE 11 and so they'll just go charge right out (A) 8 (B) 0 (C) 0 + Charging out + one hand represents before, second hand "charges"/punch/draw + Punching her hand forward in a fist represents a charge or something forced toward you. + to go for something, push + thinking through going + something positive, or encouraging + when she says "charge right out", it's very clear that she is combining her speech with the closed fist gesture to put emphasis on "charge" + makes the arm movement for charge when saying "charge"</p> <p>GESTURE 12 and just do it (A) 1 (B) 7 (C) 0 + Drop again to finish thought. "do it" + Preparing for next thought.</p>
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Subjects' consistency in selecting gesture attributes



Over the 22 segments, 225 potential gestures were viewed and categorized. The pie chart above shows the percentages of the 225 items that achieved (or did not achieve) a consensus rating. Consensus is defined here as consistency of ≥ 75% of viewers' reports.

CONCLUSIONS

- ▶ Even in the absence of training in the use of coding schemes, people are able to identify if and how hand movement impacts meaning in the context of natural speech.
- ▶ Within the current sample of free-flowing speech and body movement, people's interpretations and descriptions of gesture meaningfulness are highly consistent.
- ▶ The process of examining co-speech gesture can be informed by and tailored to the audiovisual material being investigated.

FUTURE DIRECTIONS

- ▶ Investigate how the brain processes different types of consistently-rated gestures
- ▶ Examine whether/how learning a signed language impacts neural processing of these gestures