

Gestural alignment in experimentally elicited dialogues

Marc Swerts

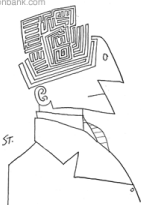
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The Netherlands

Alignment and mimicry

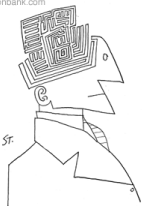
- People adapt their behaviour to that of the people with whom they are interacting
- For instance, we regularly observe cases of mimicry (copying behaviour); people do what they observe others doing
- Mimicry have been investigated for different kinds of features (e.g. words, syntactic structures, prosody)

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Nonverbal mimicry

- People also copy/mimic nonverbal features, such as posture and bodily gestures
- Previous work has very much focused on mimicry of
 - Conventionalised gestures (meaningful)
 - Spontaneous gestures (meaningless)





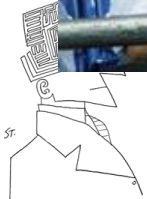
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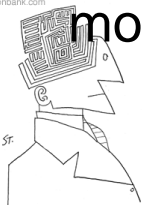


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Behaviour – perception link

- People have been claimed to copy non-communicative gestures for social reasons; to indicate that they “belong together” (Chameleon effect)
- The mechanism behind the Chameleon-effect is assumed to rely on a tight link between perception and behavior
- How about spontaneous, not conventionalised, gestures that have a more communicative function (meaningfull gestures)?

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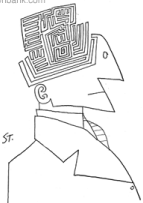
Gestural mimicry and adaptation

- Various studies have provided evidence for gestural mimicry (Kimbara 2006, 2008; Parrill and Kimbara 2006)
- Holler and Wilkin (2011) used a director-matcher paradigm, in which a director has to instruct a matcher on how to order a set of tangram figures
- Directors and matchers were more likely to produce similar gestures when they could see each other, compared to a condition in which they could not.



Adaptive processes in gestures

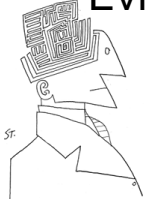
- Mol et al (2009, 2011, 2012) have provided more insight into how speakers adapt their gestures to specific addressees
- To understand adaptive processes in gestural behaviour, we need to take into account:
 - The kind of addressee
 - The addressee's perspective
 - The meaning of the gesture



Effect of kind of addressee

- Paradigm: speakers have to recount a scene of a cartoon to another person, or to a machine (audiovisual speech recognizer)
- Setting for participants is exactly the same (have to speak into a camera), and cannot see addressee
- Participants produce relatively more gestures when addressing a human rather than a machine (adaptive behaviour)

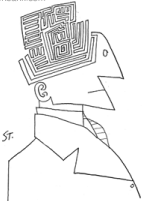
L. Mol, E. Krahmer, A.A. Maes and M. Swerts (2009): The communicative import of gestures: Evidence from a comparative analysis of human-human and human-machine interactions. *Gesture* 9 (1), 97-126.



Effect of addressee's perspective

- Paradigm: again recount cartoon scene
- Two settings: either addressee can see speaker (but not other way around), or speaker can see addressee (but not other way around)
- Speakers gesture more when they know the addressee can see them

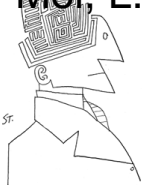
L. Mol, E. Kraemer, A. Maes and M. Swerts (2011): Seeing and being seen: the effects on gesture production. *Journal of Computer-Mediated Communication* 17 (1), 77-100.



Effect of meaning of gesture

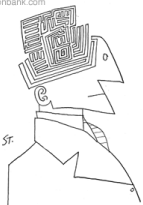
- Paradigm: participants observe a video of another person who is describing a cartoon of a scene, and are instructed to repeat that description to a third person
- Two conditions: person in video produced congruent or incongruent gestures (that match or do not match content)
- Participants were more likely to repeat the congruent gestures (meaning matters)

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Mol, L., E. Krahmer, A. Maes and M. Swerts (2012). Adaptation in gesture: Converging hands or converging minds? *Journal of Memory and Language*, 66, 249-264



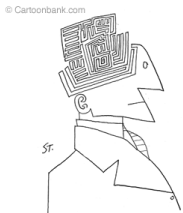
Current study

- Very much based on the Holler and Wilkin (2011) study, including the use of tangram figures
- Difference: director and matcher switch roles, which allows us to study copying behaviour within and across speaking turns
- In addition: goal to have a stronger focus on aspects of gestural mimicry/adaptation that have received little attention (timing, relation to prosodic structure, differences in dialogue contexts, ...)



Game

- Always played between 2 people: instructor has to describe a specific tangram figure (from a set of 4), and follower has to decide whether that figure does or does not match a figure that he or she has.
- Instructor and follower switch roles in every next turn (18 rounds)
- Tangram figures in one round always belong to the same “category” (e.g. ships, birds, ...)



Technicalities

- Video:

Model: 2 Panasonic HC-V700 camera's

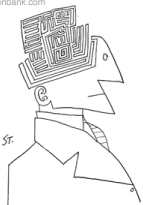
Video: H264, MPEG-4 AVC, 1920x1080, 25 fps

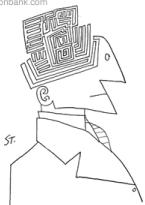
Audio: AC3, stereo, 48 kHz, 256 kbps

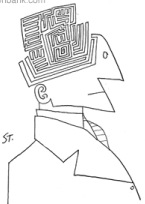
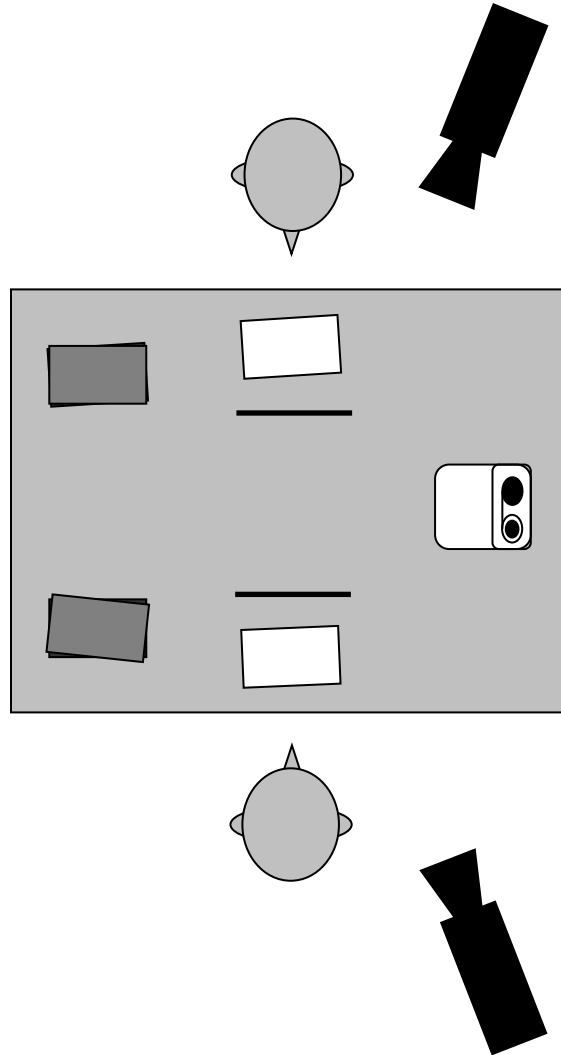
- Audio:

Marantz PMD-660

PCM WAV, mono, 16 bit, 44.1 kHz

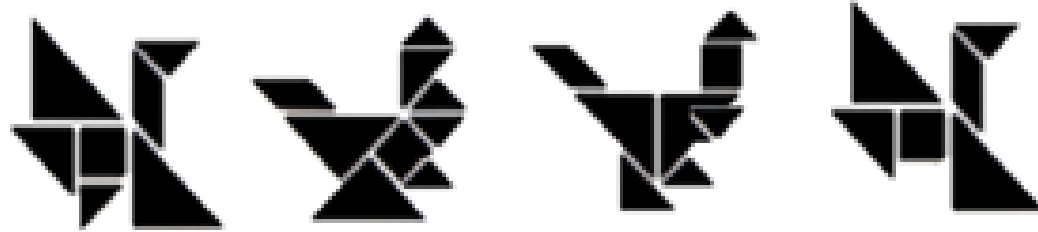




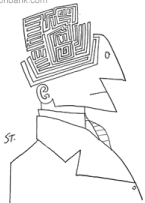


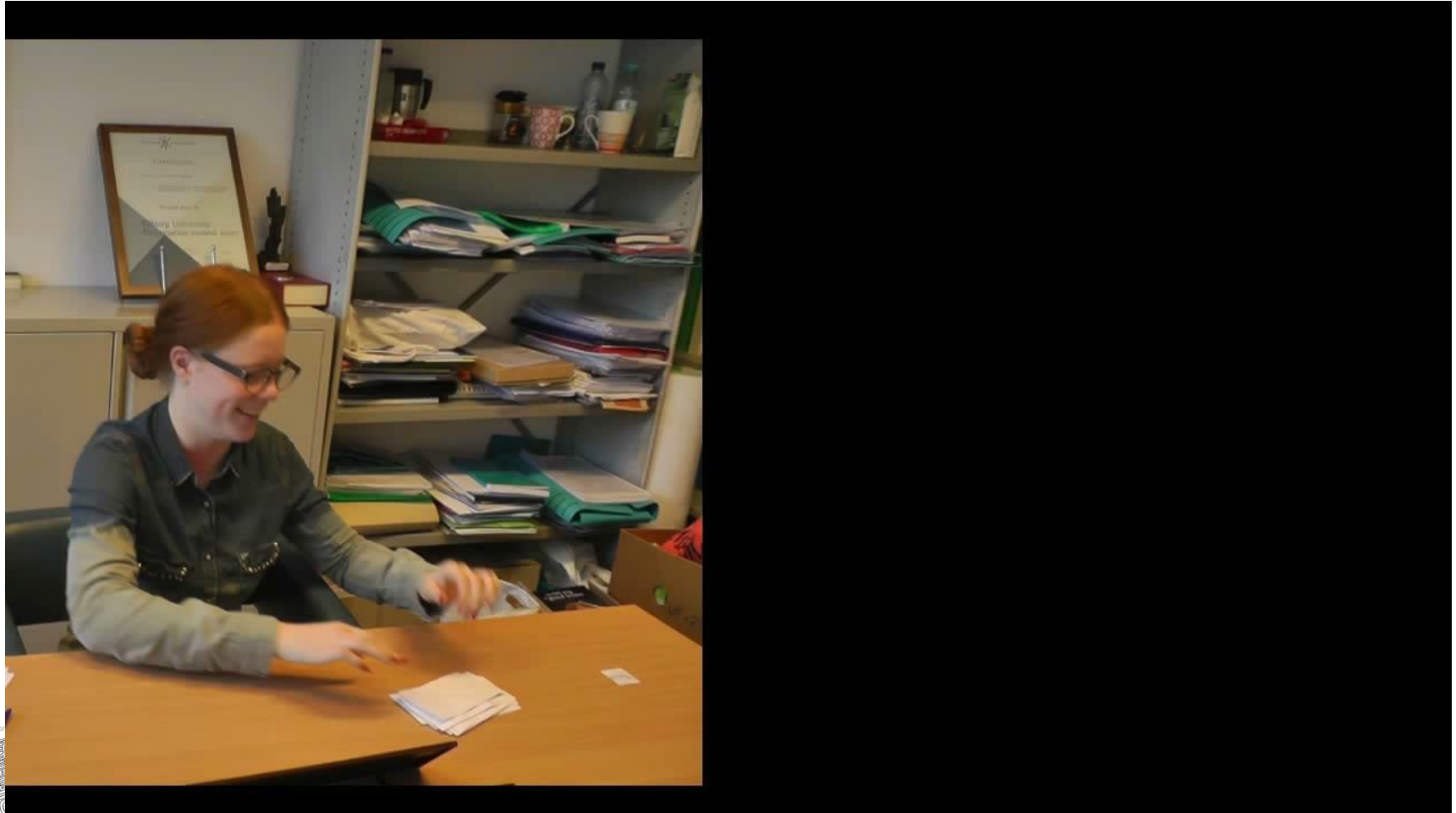
Match

■ Instructor:



■ Follower:





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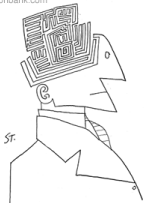


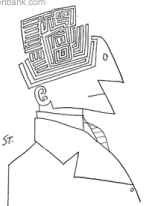
Mismatch

■ Instructor:



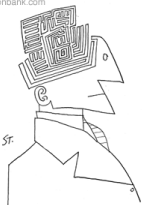
■ Follower:





Sofar...

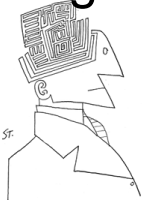
- Till now, we have collected data from 15 couples (BA and premaster Dutch students at Tilburg University) (25 women; 5 men)
- The game takes between 10 and 20 minutes, depending on how talkative/explicit speakers are, and people seemed to like it
- People are usually successful, but not always



Questions (1)

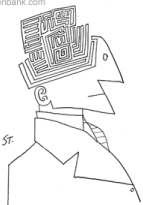
- How often do people gesture?
- Does behavior depend on smoothness of interaction?
- Do gestures of one person elicit gestures in the other person?
 - during interaction,
 - in subsequent turns
- What kind of gestures do people produce and copy? (illustrative, beat gestures, hand and head)

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Questions (2)

- Is gesture behaviour different in matching and mismatching contexts?
- Is gesture behaviour different in first and second descriptions of object?
- Is gesture behaviour different for difficult and easy objects?
- How are gestures timed? (e.g. head nods as feedback cues related to prosodic phrasing of other person's speech?)



Thank you!

