A: "okay now there's a guy who looks it could wear could be a woman because it looks like she looks like she's got very big pointy boobs she looks like madonna like a virgin and she's sitting down on a triangle like couch doesn't look very comfortable and she's got her feet out and pointy to her foot you can only see one and it's to the left and she's got a diamond for a head could you move her down one okay obviously not okay she's got it's a diamond for a head and her body the diamond is placed like towards the end of her body on the right and her body is kind of sticking out to the left and in a sort of triangular sharp uhm some sharp angle and it's kind of like a diagonal diagonal lines and it looks like boobs and she's sitting down on something and looks like she's got her legs out she's sitting down like on an invisible chair but you can see the back triangle of it so she's got the back to the right and she's got one big foot coming out to the left can you move her down one"

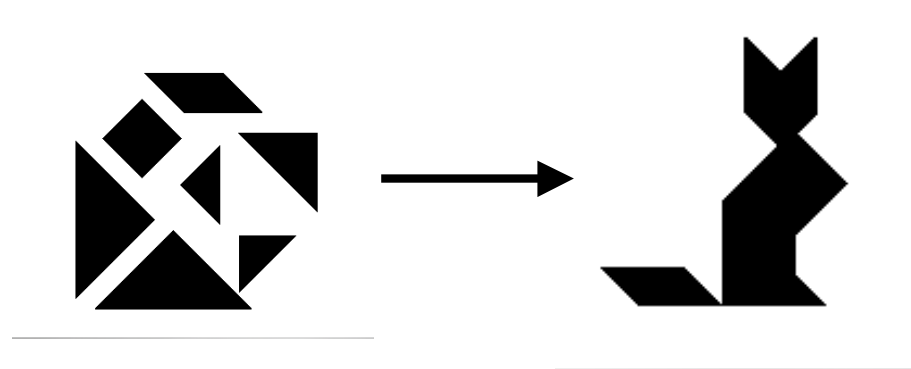# talking about talking about tangrams

feedback effects on alignment in dialogue

Kerstin Hadelich

TANGRAMS??

- Tangram is an ancient Oriental game which consists of 7 pieces: 5 triangles in different sizes, 1 square and 1 parallelogram. The objective of this game is to form a given shape using all of the 7 pieces. Here's an example:

outline

- Alignment:
  - general
  - Alignment model
  - alignment and feedback
- Scottish tangrams
- German tangrams

alignment

- Definition:
  - Alignment is …

    … to line up the top, bottom sides, or middle of text or graphic elements on a page.

    … when interlocutors achieve similar mental models of the situation under discussion.

    (Such situation models are multidimensional representations of the situation under discussion, including such elements as time, place, causality and reference to the main individuals under discussion)

alignment

- Studies
  - Lexical alignment:

    e.g., Garrod & Anderson (1982): maze game

    Branigan et al (2004): card descriptions
  - Syntactic alignment

    e.g., Levelt & Kelter (1982): "At what / What time do you close?",

    Branigan, Pickering & Cleland (2000): DO-PO alternation in dialogue,

alignment

- Studies
  - Social interactions

    e.g., Branigan et al. (2004): human-human vs. human computer interaction (or even: different computer programs :),

    Flett et al. (2004): syntactic alignment in L1 vs. L2 speakers
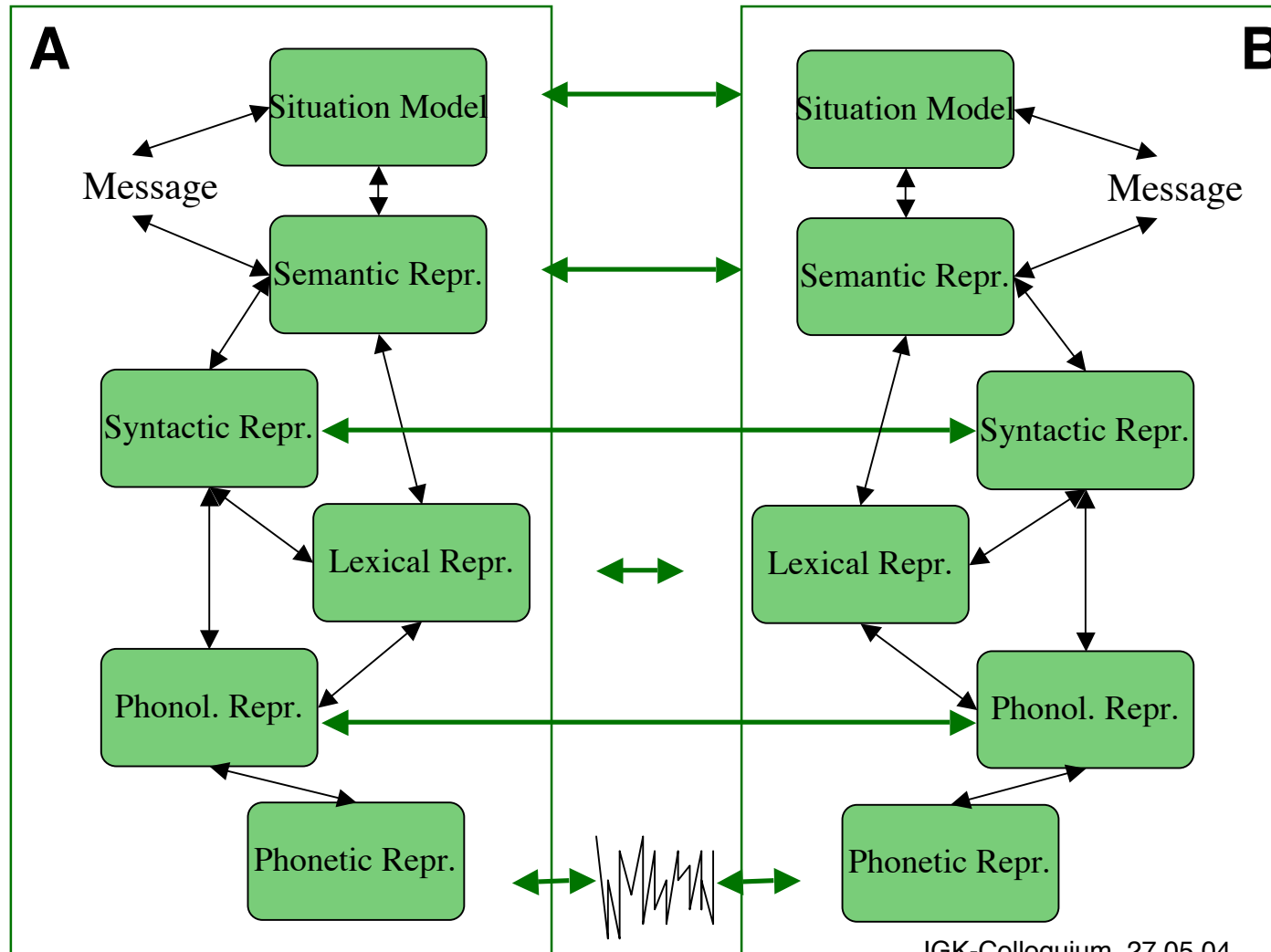
alignment model

- Pickering & Garrod (in press):

  "The account assumes that, in dialogue, the linguistic representations employed by the interlocutors become aligned at many levels, as a result of a largely automatic process."

- Automatic priming processes underlie alignment

- Alignment percolates: alignment on one level leads to alignment on other levels

(Pickering & Garrod, in press)

alignment

A

Situation Model

Message

Semantic Repr.

Syntactic Repr.

Lexical Repr.

Phonol. Repr.

Phonetic Repr.

B

Situation Model

Message

Semantic Repr.

Syntactic Repr.

Lexical Repr.

Phonol. Repr.

Phonetic Repr.

feedback

- Feedback in dialogue
  - Feedback helps participants to be more effective (both in finding names for items under discussion and in solving the task, e.g., Clark & Wilkes-Gibbs, 1986; de Ruiter et al., 2003)
  - Different feedback modalities
    - verbal feedback: uhu, yeah, …: measured using "lingustic parameters"
    - Other /vsiual feedback: nods, blinks, …: measured in terms of success, rapport, …

feedback

- Questions:
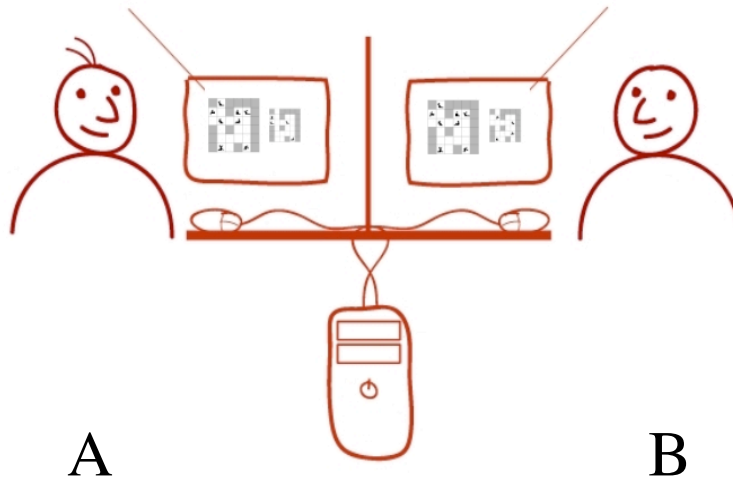 - Role of different feedback modalities on alignment (linguistic measures)
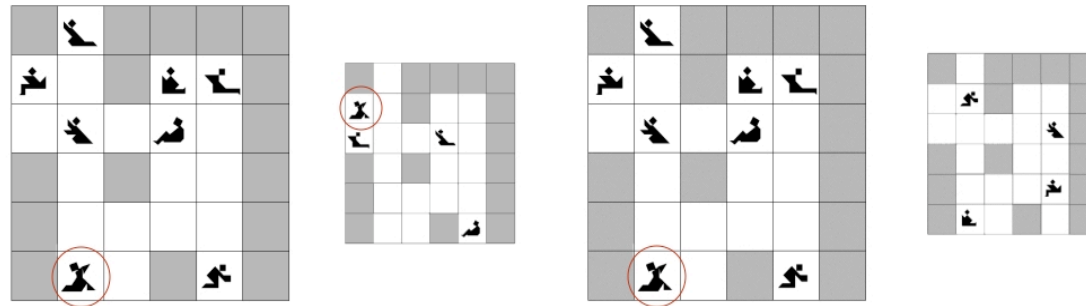
scottish tangrams

- Basic idea: two participants interact in a dialogue task
  - Manipulation: different feedback conditions
  - Variable of interest: alignment / linguistic measures (e.g., referring expressions: length, lexical overlap, …)

scottish tangrams

A   B

scottish tangrams

- Conditions:
  - Full feedback
  - Verbal-only feedback
  - Visual-only feedback
  - No feedback

scottish tangrams

- Specific questions:
  - Verbal feedback influences alignment more
    - participants "work" on expressions, more interaction
    - potentially less time between descriptions
  - Visual feedback affects length of descriptions rather than (lexical) alignment

scottish tangrams

- 16 pairs (Edinburgh University students)
- 8 tangrams per board, 2 sets of tangrams, 2 boards per set (-> subjects played 4 rounds)
- Durations: between ~15 and ~55 minutes playing time
- Speech recorded

scottish tangrams

- Analyses:
  - Full referring NPs
    - Example:

      "one figure that kind of has a triangle coming of it at the top right and there's a square box above it it's kind of attached to one of its corners and then there's a smaller triangle coming of it at the top left"

  - Only first phrases (intonational boundaries)
    - Example:

      "one figure that kind of has a triangle coming of it at the top right"

scottish tangrams

– Number of words per full description (44 in the example above)

– Number of words per phrase (15)

– Number of disfluencies per phrase

– Overlap between two phrases

  • Without function words

  • Including function words

scottish tangrams

- Example overlap:
  - A: one figure that kind of has a triangle coming of it at the top right
  - A: the figure with the triangle coming of right
  - B: the man with a sort of hunchback
  - A: the figure with the triangle

scottish tangrams

- More measures:
    - Order of mention (how often has an item been named before)
    - Distance between utterances
   - Board "transitions"

scottish tangrams

- Results:
  - General: Descriptions of an item get shorter, have fewer phrases
  - Significant effect of length of utterances:

    In no feedback condition less / later decrease
  - Significant effect of overlap:

    No feedback and visual feedback behave similarly - full feedback and verbal feedback behave similarly.
  - BUT: more overlap in no and visual feedback

line graphs
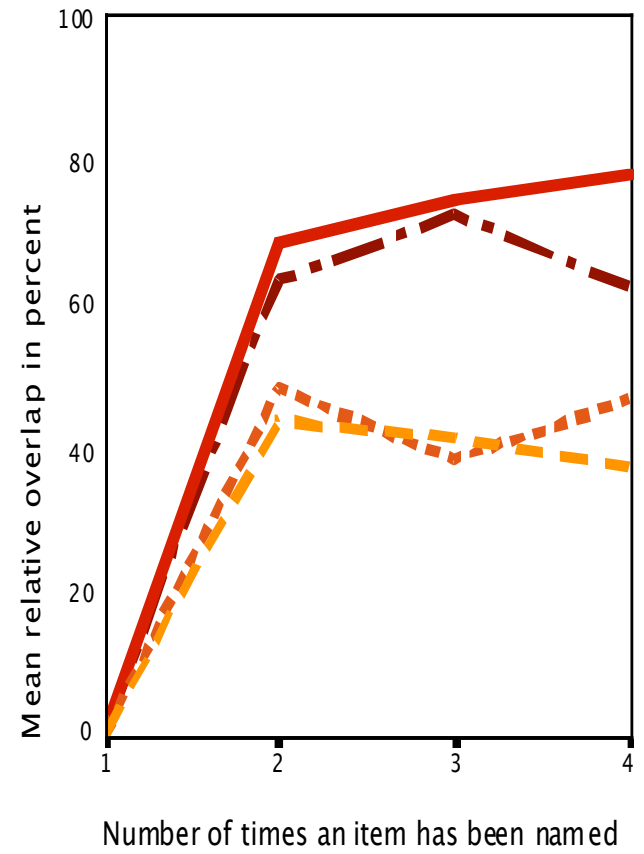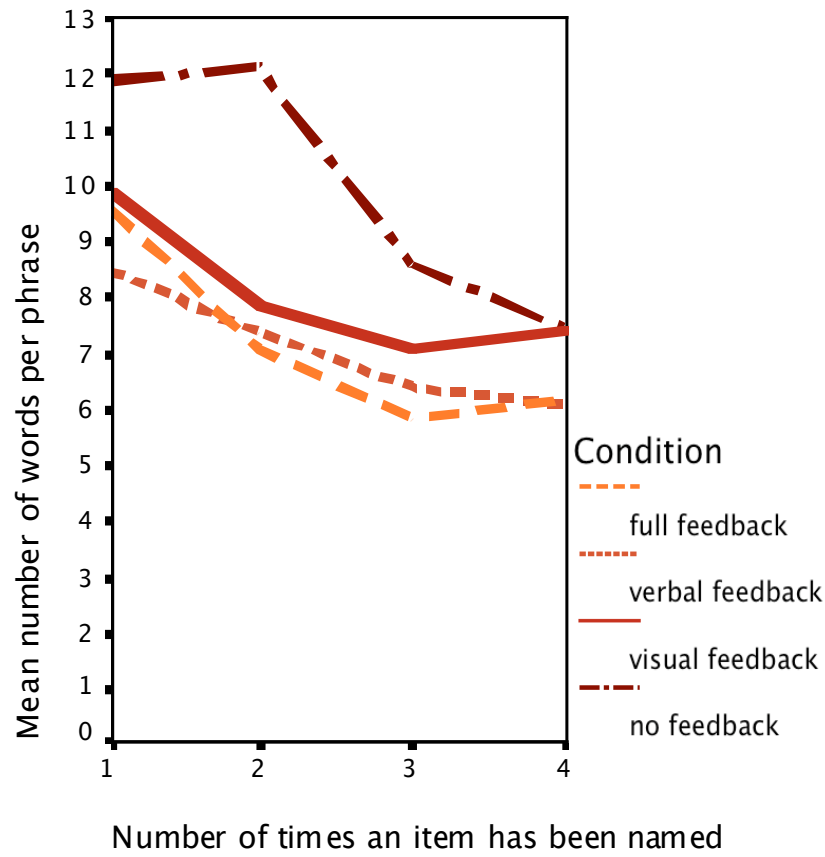
scottish tangrams

- Results, II:

    – Comparison to preceding utterance from either same speaker or other speaker:

    No difference of alignment within and between speakers (so far)

scottish tangrams

- Why more alignment in non-verbal feedback conditions?

    – Participants suggested new names for shapes instead of reusing the expressions proposed in verbally interactive conditions.

    – Without verbal feedback, however, subjects tried to ensure understanding by reusing the expressions previously used.

scottish tangrams

- Role of feedback in alignment?
    - More feedback doesn't necessarily lead to more alignment
    - Priming mechanisms not (or not supportively) affected by (verbal) feedback
        - Alignment not affected by (verbal) feedback?
    - Interaction of length-optimisation (conciseness) and alignment

tangrams

- Now: Alignment on other levels
  - Other modalities: Can we find visual alignment?

- Eye-movements can also help getting at timing issues
  - How long do expressions have to be? When do listeners identify an item? When do they send of feedback?

german tangrams

- Eye-Tracking version of the dialogue task
- Two subjects playing the edi tangram game
- Record Speech + eye-movements
- 2 conditions:
  - Verbal feedback
  - No feedback

- A: "okay now there's a guy who looks it could wear could be a woman because it looks like she looks like she's got very big pointy boobs she looks like madonna like a virgin and she's sitting down on a triangle like couch doesn't look very comfortable and she's got her feet out and pointy to her foot you can only see one and it's to the left and she's got a diamond for a head could you move her down one okay obviously not okay she's got it's a diamond for a head and her body the diamond is placed like towards the end of her body on the right and her body is kind of sticking out to the left and in a sort of triangular sharp uhm some sharp angle and it's kind of like a diagonal diagonal lines and it looks like boobs and she's sitting down on something and looks like she's got her legs out she's sitting down like on an invisible chair but you can see the back triangle of it so she's got the back to the right and she's got one big foot coming out to the left can you move her down one"
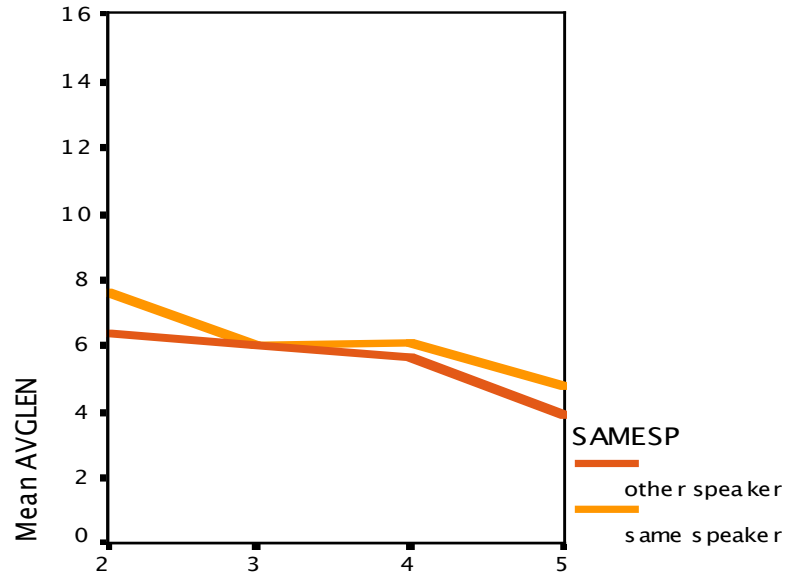
cooperative partners?

- B: 05:47 uhm okay can you move uhm the man who looks like he's in sort of a wheel chair uhm down one square he's got a *(A moves an item)* B: uhm the other one who looks like he's in a wheel chair down one square *(A moves another item)* B: laughter 06:58 right so there's a THIRD man who looks like he's sitting in a wheel chair can you move him one square down maybe abstract wheel *(A moves third item)* chair laughter can you move him along two squares *(A moves same item)*
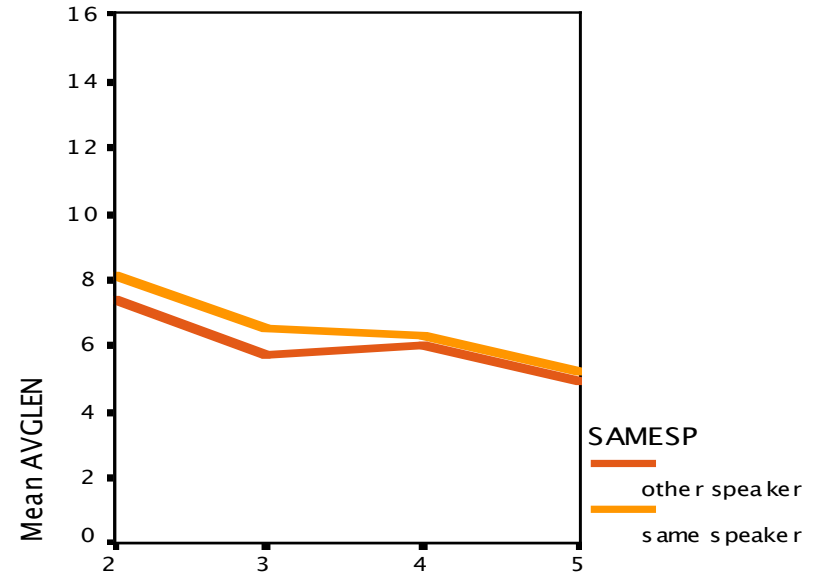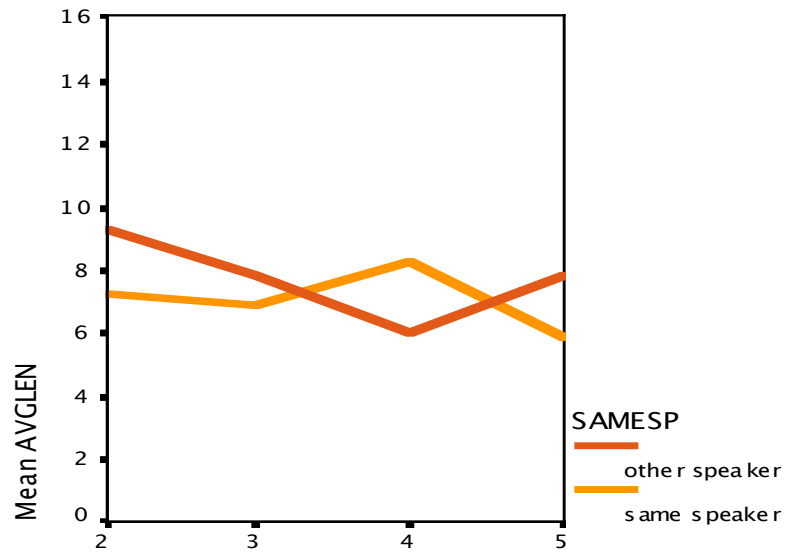
COND: 1 full feedback

Mean AVGLEN

NAMED

SAMESP
other speaker
same speaker

COND: 2 verbal feedback

Mean AVGLEN

NAMED

SAMESP
other speaker
same speaker

COND: 3 visual feedback

Mean AVGLEN

NAMED

SAMESP
other speaker
same speaker

COND: 4 no feedback

Mean AVGLEN

NAMED

SAMESP
other speaker
same speaker

COND: 1 full feedback

mean relative overlap

NAMED

SAMESP

other speaker

same speaker

COND: 2 verbal feedback

mean relative overlap

NAMED

SAMESP

other speaker

same speaker

COND: 3 visual feedback

mean relative overlap

NAMED

SAMESP

other speaker

same speaker

COND: 4 no feedback

mean relative overlap

NAMED

SAMESP

other speaker

same speaker