A multimodal analysis of children's gestural reasoning in pair-work context

A case study

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Content

1. Theoretical background

2. Research design

   – Data collection and methods

   – Pilot study and research questions

3. Multimodal analysis and sociometric questionnaire in practice: *a case study of Anna and Dénes*.

4. Findings

5. Further research

Theoretical background

- Socially and bodily embedded, dynamic language (see: Donald, 1991, Cowley 2007, 2014).

  „Like any human behavior, language is considered an open, multi-modal system, deeply embedded in and shaped by continuous functional interactions with the surrounding social, cultural and material environment" (Fusaroli & Tylén, 2013).

- Gesture and speech form a single integrated system (McNeill, 1992, 2011).

- Gestures highlight different aspects of a problem than speech (McNeill 1992, Alibali and Goldin Meadow 2013).

- Gestures helps speakers to organize visuospatial information into units (Kita, 2000).

Data collection and materials

- Elementary school in Hungary, 2014 January, 27 participants

- Sociometric Questionnaire (Mérei 1971/2004)

- Video-recorded pair-work tasks and interviews: the Survival Task

Questions from the sociometric questionnaire

4. Who must be notified by the teacher most often because of misbehaviour?

5. With who would you sit in the same train cabin in a class trip?

7. With who would you share a secret?

8. Who could organise a school Christmas party?

10. Who are the weakest students?

11. Who could substitute the teacher for a lesson?

12. Who would you invite to your birthday party?

13. Who are the most popular ones in the class?

14. Who have the best clothes and accesories?

15. Who are the less popular ones in the class?

16. Who could represent the class in a cultural quiz?

The Survival Task

„Choose 7 things from 14 what you would take to a desert island!"

Individual interviews
&
Pair-works

Pilot study (2014)

- grammatical, content and bodily accommodation

- verbal- and nonverbal semiotic resources were used to manifest social relations and positions

Research questions

1) What kind of verbal and nonverbal, implicit and explicit reasoning strategies are used by the children in pair-work context?

2) How do children use semiotic resources to express social positions and relations in pair-work context?

Social positions and relations

Status of Anna in the class**:** 51 positive and 1 negative opinions

Status of Dénes in the class**:** 5 positive and 27 negative opinions

Anna about Dénes:

Dénes has bad behavior.

Dénes is of the less popular student.

Dénes about Anna:

Anna could organise a Christmas-party.

Anna could represent the class in a cultural quiz.

Interview and pair-work solutions

Anna	Dénes	Together
Rope	Rope	Rope
Betadin	Betadin	Betadin
Gauze	Can	Gauze
Match	Match	Match
Knife	Magnifying glass	Can
Axe	Saw	Axe (Anna)
Herb book	Herb book	Nails (Anna)

Gestural resources in reasoning

Dénes

- gesticulation with objects
- picking up objects
- showing up objects to Anna and to himself
- placing chosen objects
- head nods (agreement and disagreement)
- pulling back objects
- placing palm on the chosen object
- touching
- counting by pointing

Anna

- gesticulation with objects
- picking up objects
- demonstration
- refusive hand movement and head nod
- placing palm on the chosen object
- placing chosen- and unchosen objects
- replacing object chosen by Dénes
- take objects away from Dénes(8x)
- counting by pointing

Multimodal data: a pair-work interaction

Gestures in reasoning

DEFENSIVE ←————————————→ OFFENSIVE

Pulling back

Holding, grasping

beats

Replacing an object (choosen by the partner)

Take away

Cooperativity
e. g. showing up objects to the partner

Findings

- While reasoning, children create social positions and accommodate to each other in order to solve a problem.
- Gestures used to justify ideas and validate wills in reasoning (*e. g. replacing magnifying glass*).
- Defensive and offensive strategies of reasoning are expressed by gestures. (*e. g.: pulling back and grasping an object*)
- Gestures are used with cooperative and involving attempt (*e. g. showing up object to the partner*).

Further reseach

- Multimodal data of 13 pair-work interactions.
- What kind of verbal- and nonverbal, defensive, offensive and cooperative strategies appear in reasoning in pair-work context?
- Verbal and nonverbal semiotic resources of social positioning.

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