The Swedish MINT-project
Modeling infant language acquisition from parent-child interaction

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Structure of talk

- Project description
  - Goals and aims
- Components
  - Practicalities
  - The Sessions
- Coding
  - Coding categories
  - ELAN
- Current work
The Swedish MINT-project

- Marcus and Amalia Wallenberg Foundation (2011.007)
- 5 years (2013-2017)
- One child and one parent
- 83 subjects (Nov 2013) → 72 subjects (June 2016)
  - 40 boys & 32 girls; 2 twin couples; about 15 bi- or multilingual
  - non-probability sample (interested parents among 2000 randomly selected)
  - longitudinal: 3-36 months, every third month
Goals and aims

● To reach a better understanding of the role played by different modalities in language development, and to understand the relation between modalities

● To build a multimodal database for Swedish children in the ages 0;3-3;0

● To use the knowledge gained to model the language acquisition process

● To identify factors beneficial for language outcome
Project Design

Behavioral Data

Test data

Background

Components

Multiple Linear Regression

Statistical Modeling

Structural equation modeling

Experiments

Computational Modeling

Model
Components

- Background (family situation, health situation, languages)

- Test Data
  - SECDI (from 0;9 to 3;0)
  - PPVT at 2;9
  - Nonverbal IQ subtest at 3;0
  - Executive functioning at later stage
  - Parents’ understanding of Communicative Aspects

- Behavioral Data
  - vocal, verbal, gesture, gaze, touch, activity, etc
  - Test of Joint Attention, Turn-taking, Imitation
  - LENA recording at home (10h) at 2;6 for a subset of children
Practicalities
The Sessions

- Free interaction (10-15 min)
  - A few toys
  - Picture book
  - Mo, Na, Li

- Test leader interacts with the child (5-10 min)
  - Prompted and non-prompted imitation; deferred imitation
  - Language comprehension test
  - Working memory test

- PPVT
Coding categories

- Vocal/Verbal
  - Orthographic transcription
  - Controlled Vocabulary (CV) children 0;3-0;9
  - Symbols for specifics: repetitions; adult-directed speech; ingressive speech; formulaic speech; ungrammatical; whispering; ...

- Gaze (CV)
  - Gaze at parent/child/researcher
  - Gaze at object/hand
  - Out of frame/other
● Gesture
  – CV for children 0;3-0;6 (wriggling etc)
  – Categories: deictic; emblem; iconic; emphatic; emotive; action; show; offer; grooming; other

● Touch
  – Specifies body part and manner
  – Differentiates between skin-skin and other
● Facial expression (CV)
  – Excited; neutral; happy; concerned; drama; ...
● Mood (CV)
  – Content-alert; frustrated; excited; ...
● Activity (CV)
  – Picture book; doll play; rhymes; ...
● Context (CV)
  – Instructions; conversing child/adult; ...
● Distance (CV)
  – Within reach; out of reach; body contact
Current work

- Correlations between touch at 0;3 and productive vocabulary at 1;6

\[ R = .824, p < .05 \]

(Gerholm & Pagmar, in preparation)
Current work

- Correlations between touch at 0;3 and productive vocabulary at 1;6
- Other co-occurring elements: the child’s GAZE

(Gerholm & Pagmar, in preparation)
Current work

- Correlations between touch at 0;3 and productive vocabulary at 1;6
- Other co-occurring elements: the parents’ GAZE

(Gerholm & Pagmar, in preparation)
Current work

- Other co-occurring elements: gestural distribution
Current work

- Modeling parent output at 1;0 and 2;0
  - Mapping out interactional units
  - Patterns of overlapping output from parent and child
  - Different behavioral strategies
    - Abrupt stops
    - Small overlaps
    - Large overlaps
Completed and ongoing studies

- **Completed**
  - Andersson, S. (2016). *Verbal contents of repetitions in Swedish child-directed speech*
  - Rask, L. (2015). *Prosodic Features in Child-directed Speech during the Child's First Year*

- **Ongoing**
  - Imitative behavior (gestural and vocal) between 0;3 and 1;0
  - Interactional Units (frequent multimodal clusters) in child-parent interaction between 0;3 and 1;0
  - Gestural development between 0;3 and 1;0
  - Correlations between touch at 0;3 and productive vocabulary at 1;6
  - Parent output modeling at 1;0 and 2;0
Thank you for your attention!

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