Mechanisms of Meaning

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Raquel Fernández

Institute for Logic, Language & Computation
University of Amsterdam

Plan for Today

- Dialogue and language acquisition.
- Presentation by Irma Cornelisse:
  - E. Clark (2007) Young children's uptake of new words in conversation, Language in Society, 36:157-182.

Dialogue & Language Acquisition

Last week we saw that:

- dialogue is not only about information transfer: participants need to coordinate informational content to achieve *grounding*.
- these *meta-linguistic coordination processes* have a great impact on the shape of conversation:
  - ∗ contributions come with presentation and acceptance phases
    ⇝ join projects between speaker and addressee
  - ∗ speakers need to provide evidence of their level of grounding;
  - ∗ they synchronise their lexical choices (conceptual pacts);
  - ∗ strong tendency to align at all linguistic levels (alignment model).

Today:

- Most work on *language acquisition* doesn't consider interaction
- Language however is acquired through dialogue (not by watching TV!)
- First language acquisition can be seen as the process of *coordinating child language with adult language*: how is this achieved?

Input vs. Interaction

- Since the 1970s, two main approaches to language acquisition:
  - *Nativist:* the core of the language faculty is innate; children tune this core by being exposed to particular languages.
  - *Empiricist:* the child makes use of general learning capabilities to acquire language; emphasis on input frequency.

  Both approaches focus on linguistic input and dismiss interaction.

- We'll look into these aspects of interaction related to acquisition:
  - *Child Directed Speech:* what kind of input does the child receive?
  - Forms of child-adult interaction: *imitation/repetition*.
  - *Contrastive discourse* as a form of *negative evidence*.

  Two psycholinguists that take interaction seriously are:
  Eve Clark and Matthew Saxton (see MoM website for references)

Child Directed Speech

CDS is a special register used by adults when talking to young children. Adults simplify and clarify their speech at every level:

- *Phonology:* phonological adaptations are most prominent during the child's first year (to grab attention and covey positive affect)
  - tendency to exaggerated intonation; higher overall pitch;
  - slower pace, with syllable-lengthening, and fewer disfluencies.
- *Vocabulary:* adult's lexical choices respond to the needs and interests of the child
  - here-and-now rather than topics distant in time or space;
  - emphasis on concrete concepts; object words tend to appear at the end of sentence.
- *Morphology & Syntax:* simplified but grammatically well-formed
  - simplified morphology and use of diminutives;
  - lower mean length of utterance; few subordinate and relative clauses
  - strong preference for agentive subjects.

Dynamics of CDS

There is a continuous process of *alignment* between adult and child: Adult speech changes in line with the child's developing language.

- Tuning process to adapt to the child's communicative needs with subtle and difficult to detect changes.
  - the complexity of CDS is largely determined by clues from the children
- Not much is known about this adaptive process.
- CDS is a facilitating mode of speech, but - is it necessary for acquisition?
  - Saxton (2009) argues that CDS falls out naturally from the adults' motivation to communicate with the child.
  - Can it be explained within the framework of the Interactive Alignment Model?

Saxton (2009) The Inevitability of Child Directed Speech, In *Advances in Language Acquisition*, pp. 62–86.

Forms of Adult-Child Interaction: imitation/repetition

Imitation is a critical form of interaction between adult and child:

```
(1) Adult:  A Dutch house.
    Child:  Nathaniel Dutch house.
(2) Adult:  What's this?
    Child:  What's this a boat.
(3) Adult:  The pigs are taking a bath
    Child:  Taking a bath and making juice.
```

Imitations of various kinds are very frequent in adult-child dialogue:

Rates of repetition per minute by mother and child from Clark & Bernicot (2008):

mean age	by mother	by child
2;3	1.21	0.51
3;6	1.45	0.43

Clark & Bernicot (2008) Repetition as ratification: How parents and children place information in common ground, *J. of Child language*, 35(2):349-371.

Imitation and Cognitive Development

Imitation, the reproduction of another person's behaviour, is a complex act. It requires:

- identifying abstract properties common to the model and the response (not everything need to or can be identical)
- cross-modal coordination to bridge the gap between perception and performance.

The brain may possess a dedicated capacity for imitation via so-called *mirror neurons*: they fire when an action is observed and also when it is performed ($\rightsquigarrow$ *recall Barsalou's simulation theory*)

- they have been found in monkeys and humans, including in Broca's area.
- imitation may be a very basic aspect of our linguistic capacity.

Corrective input and negative evidence

Children make plenty of errors during acquisition. How do they manage to get rid of them?

"No Negative Evidence" assumption: adults do not correct the linguistic errors made by children.

- nativist answer: linguistic knowledge must be innate and come from the child to help her correct errors during development.
- empiricist answer: the child's general learning mechanisms must explain how children retreat from error.

Recently, several researchers have argued that the NNE assumption is unfounded:

- it all depends on how *correction* or *negative evidence* is defined
- while explicit corrections are indeed rare, adults do produce *potentially corrective responses* in their interaction with children.

Recasts as Negative Evidence

Recasts: adults very often reformulate children's ungrammatical utterances to check up on the child's intended meaning:

```
(4) Child:  Want lunch
    Adult:  Oh you want lunch then.
(5) Child:  Yeah, so they won't come to apart.
    Adult:  Well, they won't come apart if we put them together.
(6) Child:  Hat.
    Adult:  She has a hat on.
```

- Recasts may act as *tacit corrections* to errors *without disrupting the conversational exchange*.
  - ∗ middle-class adults reformulate up to 60% of errors of children 2-3.5
- Responses that are potential negative evidence are offered, but do children attend to them and use them to correct errors?

Chouinard & Clark (2003) Adult reformulations of child errors as negative evidence, *J. Child Language*, 30:637-669.

Contrastive Discourse

- The formulations found in recasts contain the same linguistic information as simple positive evidence (correct linguistic input).
- What makes them special and effective is the particular *dialogue context* where they appear.
  - recasts contrast with the erroneous forms produced by children.
  - this seems trivial, but recall that for most acquisition theories the dialogue context where input appears is immaterial.
- In his *Contrast Theory*, Saxton makes the following prediction:
  - *Direct Contrast Hypothesis:* negative evidence is more effective than positive input in the child's shift from erroneous to correct output.
- The effects of positive vs. negative input can be difficult to test with uncontrolled naturalistic data.
  - Saxton uses a standard technique in psycholinguistic research: teaching of nonsense words to children in a controlled experiment.
  - By using novel nonsense words the researcher controls exactly how many times the child has been exposed to a word.

Positive vs. Negative Input: Novel Words

Novel irregular verb alternations used by Saxton (1997):

TABLE 1. *Meanings and past tense alternations of six novel verb forms*

Verb type	Novel verb alternations	Novel verb meanings	Real verb counterparts
Group I verbs (vowel change only)	pro/prew	Twisting motion applied with a cross-ended stick.	throw/threw
	neak/noke	Repeated clapping motion in which target is trapped between the palms.	speak/spoke
	jing/jang	Striking a target with a beanbag flipped from a spoon.	sing/sang
Group II verbs (vowel change plus ED suffix)	streep/strept	Ejection of a ping-pong ball from a cone-shaped launcher towards target.	creep/crept
	sty/stought	Prodding action performed with a plastic stick which concertinas on contact to produce a honking noise.	buy/bought
	pell/pold	Striking action achieved by swinging a beanbag on the end of a string towards target.	sell/sold

Saxton (1997) The Contrast Theory of negative input, *J. Child Language*, 24:139–161.

Positive vs. Negative Input: Novel Words

Children are first taught the present tense of the novel verbs by showing them videos and describing the actions shown in them.

- *Negative evidence condition:* Past tense forms are elicited from children, who as expected treat verbs as regular.

(7) **Negative Evidence**
Adult: What happened?
Child: He *pelled* him on the leg.
Adult: Yes, he *pold* him.

- *Positive evidence condition:* the correct irregular form is directly offered by the adult.

(8) **Positive Evidence**
Adult: Look what happened! He *pold* him on the leg.

Positive vs. Negative Input: Novel Words

Results reported by Saxton (1997):

- Children are far more willing to produce a correct form when it is presented in the form of negative, rather than positive, input.

TABLE 2. *Child responses in Positive Input and Negative Evidence conditions*

	Positive input				Negative evidence			
Verb	UC	IV	PE	MO	UC	IV	PE	MO
Group I								
pro	0	0	17	1	6	1	5	6
neak	0	0	16	2	6	4	5	3
jing	0	0	14	4	2	3	8	5
Group II								
streep	0	0	16	2	4	3	5	6
sty	0	0	12	6	7	0	7	4
pell	0	0	17	1	7	3	3	5
Total	0	0	92	16	32	14	33	29
(%)	(0·0)	(0·0)	(85·2)	(14·8)	(29·6)	(13·0)	(30·6)	(26·8)

KEY: UC, Use Correct; IV, Irregular Vowel; PE, Persist-with-Error; MO, Move-On.

- This study reports only on the immediate effect of negative input.
- It remains to determine how short-term gains might feed into the long-term process of recovering from errors of overgeneralisation.

Principle of Contrast

Pragmatic Principle of Contrast: A difference in form indicates a difference in meaning (E. Clark 1987).

- Recasts are attempts to represent the child's intentions: they express the meaning the child had in mind, but change the form.
- Any change in form that does not mark a difference in meaning signals an error (something not conventional in the community)
- The same applies to adult conversation (cf. conceptual pacts/ alignment)

Customer on a hardware store looking for a piece of piping:

(9) Customer: Mm, the *wales* are wider apart than that.
Slaesman: Okay, let me see if I can fins one with wider *threads*. How is this?
Customer: Nope, the *threads* are even wider than that.

Clark (1987) The principle of contrast: A constraint on language acquisition. In *Mechanisms of language acquisition*, pp. 1–33.

Summing Up

- Language is acquired in the context of dialogue interaction.
- Main forms of interaction characterising child-adult dialogue:
  - CDS: adults modify their language to align with the child.
  - Imitation/repetition is a key form of interaction related to grounding.
  - Contrastive discourse can act as negative evidence and help to retreat from error.
- Some resources:
  - CHILDES: Child Language Data Exchange System http://childes.psy.cmu.edu
  - Videos of adult-child interaction (from 2 months to 6 years): https://www.msu.edu/~casby/langdevidcomp/

What's Next?

- 6 Dec: Incrementality in dialogue and turn-taking.
- 13 Dec: Presentations of final papers.