Language acquisition in crosslinguistic perspective

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OVERVIEW

- Day 1: Background, questions, data, methods
- Day 2: Approaches to comparative language acquisition
- Day 3: Naturalistic, experimental and modelling studies across languages
- Day 4: The role of input and cultural context

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QUESTIONS

- How do children learn language? How much is innate?
- Are there universals in language acquisition or at least universal strategies?
- Which factors are relevant for the order and time of acquisition (cognitive factors, language specific factors)?
Crosslinguistic language acquisition: study of the acquisition of individual languages other than English.

Comparative language acquisition: study of how the acquisition of specific variables compares in different languages.

Ultimate goal --> typological language acquisition

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Linguistics

- Corpus linguistics
- Psycholinguistics
- Developmental Psychology

Psychology

- Typology
- Ethnolinguistics

- Comparative Language Acquisition Research

Ethnography

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**LANGUAGE ACQUISITION THEORIES**

**NATIVIST THEORIES**
- characteristics of grammar are due to innate principles
- universal grammar is innate, language specific principles are innate
- deductive theories
- criterion for theory: descriptive adequacy, simplicity

**USAGE-BASED THEORIES**
- characteristics of grammar are due to communicative principles
- only general cognitive abilities are innate no language specific structures
- inductive theories
- criterion: learnability

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PRELINGUISTIC DEVELOPMENT

Birth - 6 months:

- Recognition of mother's voice (de Casper & Fifer 1980)
- Distinguish native language from other languages (Mehler et al. 1988, Moon et al. 1993)
- Categorical perception of speech sounds (Eimas et al. 1971)
- Recognition of identity of sounds across contexts (Kuhl 1980)
HIGH-AMPLITUDE SUCKING  
(BIRTH - 4 MONTHS)

1. [ba], [ba] acquisition phase (child learns that she can alter the sounds).

2. Habituation phase

control group: no change in stimulus

test group: change in stimulus

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6 - 12 months:

- Discrimination of phonetic contrasts. Up to approx. 10 months discrimination of all contrasts. Then, only contrasts of native language/s are discriminated. (Werker & Tees 1984)

- By 7 1/2 months children listen longer to familiarized words (Jusczyk & Aslin 1995) within longer sentences.
PRELINGUISTIC DEVELOPMENT

Around 9 months (e.g. Tomasello 2003)

- recognition of symbols
- pointing
- imitation
- joint attention
- intention reading
DEVELOPMENT OF LANGUAGE

- 9 months to 1 year of age children start to use their first words
- strong variation when children start speaking and how they progress.

Table 4.3. Age of acquisition for 10- and 50-word vocabularies in six children

<table>
<thead>
<tr>
<th>Child</th>
<th>Sex</th>
<th>Lexicon size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10 words</td>
<td>50 words</td>
</tr>
<tr>
<td>S1</td>
<td>M</td>
<td>1;0</td>
</tr>
<tr>
<td>S2</td>
<td>F</td>
<td>1;1</td>
</tr>
<tr>
<td>S3</td>
<td>M</td>
<td>1;2</td>
</tr>
<tr>
<td>S4</td>
<td>F</td>
<td>1;2</td>
</tr>
<tr>
<td>S5</td>
<td>M</td>
<td>1;4</td>
</tr>
<tr>
<td>S6</td>
<td>F</td>
<td>1;3</td>
</tr>
</tbody>
</table>

Source: Robb, Bauer, & Tyler 1994:40. Used with permission from Alpha Academic.
LEARNING WORDS

Very different task in different languages, e.g. polysynthetic languages vs. isolating languages

Example (Yup’ik Inuit)

- tuntussuqatarniksaitengqiggtuq
- tuntu - ssur - qatar - ni - ksaite - ngqiggte - uq
- reindeer - hunt - FUT - say - NEG - again - 3SG:IND
- 'He had not yet said again that he was going to hunt reindeer.'

Source: Eliza Orr, cited by Payne, T. 1997a 27–28
Basic Idea

If we want to understand the ability of children to learn any language and not only how a specific language is learned (like English or German) we need to look at the acquisition of a wide range of languages from different families and cultures.
VARIATION

Phoneme Inventories (Maddieson, 2005):

1. Consonant inventories
   6 (Rotokas, Papua New Guinea) - 122 (!Xóõ, Southern Khoisan) out of a sample of 562 languages

2. Vowel inventories
   - 2 (Yimas (Papua New Guinea) -14 (German)
Inflectional synthesis of the verb (Bickel & Nichols, 2005)

- Degree of synthesis as defined by the number of elements that make up a synthetic verb form

- Large variation form 0 categories per verb form (Vietnamese) to 13 (Koasati)
VARIATION IN WORD ORDER

Word order (Subject, Verb, Object) (Dryer, 2005)

- All 6 logically possible orders are attested

- SOV (Japanese)
- SVO (Mandarin)
- VSO (Irish)
- VOS (Nias, Austronesian)
- OVS (Hixkaryana, Carib, Brazil)
- OSV (Nadëb, Brazil)
- No predominant order
LANGUAGES WITH ACQUISITION STUDIES

- Indo-European
- Bantu
- Maya
- Sinitic
- Semitic

99%

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DATA WE WORK WITH

- Diaries
- Experiments
- Longitudinal studies (corpora)
LONGITUDINAL STUDIES

1. Audio or video record the child and her caretakers

   Transcribe the data.

2. (Translate the data).

3. Tagging of the data (morphological glossing, and parts of
   speech glossing).

4. Further annotations, if necessary.

5. (Link to video or audio).

6. Analyze

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Daten

La Kuluke tusande
Look, Kuluke, digged!
CHILD LANGUAGE DATA EXCHANGE SYSTEM

http://childes.psy.cmu.edu/

- 130 corpora of 30 different languages
- Tools include:
  - Methods for linguistic coding
  - Systems for linking transcripts to digitized audio and video
  - Programs for computer analysis of transcripts

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Indo-European Languages today

Legend

- Dark Green: countries with a majority of speakers of IE languages.
- Light Green: countries with an IE minority language with official status.
- Grey: other countries

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AREA WITH MOST RARE FEATURES

Northwest Continental Europe

(Cysouw, 2005)
CORPORA IN CHILDES

Indo-European (16)
Sino-Tibetan (2)
Uralic (2)
Altaic (1)
Afro-Asiatic (1)
Austronesian (1)
Niger-Congo (1)
Dravidian (1)
Tai-Kadai (1)
Japanese (1)
Korean (1)
Basque (1)

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SAMPLING PROBLEMS
*MOT: aa3_2 zeon3zeon3 gong2 bei2_2 ze4ze1_1 teng1 jau5 mou5 lok6 jyu5 ?

%ort: 阿 俊俊 講 比 姐姐 聽 有 冇 落 雨 ？

%mor: adj|aa3_2=the n:prop|zeon3zeon3=propn vt|gong2=say prep|bei2_2=to

n|ze4ze1_1=sister vt|teng1=hear vf|jau5=have neg|mou5=not_have

vdir|lok6=down n|jyu5=rain ?

*CHI: lok6 jyu5 .

%ort: 落 雨 ．

%mor: vdir|lok6=down n|jyu5=rain .
To make general claims about language acquisition and not the acquisition of a particular language we need to diversify sampling. It is not enough to restrict studies of language acquisition to one family (or even subfamily).
German
ge-troff-en
an-ge-troff-en

but:
*ge-an-troff-en
*ge-troff-an-en

Chintang
u-ma-tup-yokt-e-hê
3-NEG-meet-NEG-PST-1
‘He didn’t me’

or:
ma-u-top-yokt-e-hê
ma-top-u-yokt-e-hê

All theories about the word have assumed that there is a fixed order of morphemes in words. (But cf. Bickel et al. 2007)
ESTIMATION OF LANGUAGE DEATH (50% EVERY 50 YEARS)
LANGUAGES AND THEIR NUMBER OF SPEAKERS

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COMPARATIVE LANGUAGE ACQUISITION (SLOBIN)

Crosslinguistic method to reveal developmental universals and language-specific patterns:

H0: Language development is everywhere the same
H1: Hypothesis of specific language effects

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LANGUAGES IN THE SAMPLE

Indo-European:

(a) Germanic: English, German

Romance: French, Italian, Portuguese, Romanian, Spanish

Slavic: Polish

• Semitic: Hebrew

Finno-Ugric: Hungarian

Ural-Altaic: Turkish

Japanese

Trans-New Guinea Non-Austronesian: Kaluli

Polynesian: Samoan
1. Introductory materials about the language

2. Language acquisition data (errors, error-free acquisition, time of acquisition)

3. Data on the setting of language acquisition (cognitive pacesetting, linguistic pacesetting, input and adult-child interaction)
PROBLEMS TO COMPARE ACQUISITION PATTERNS

- Huge variation within a language
- Small sample longitudinal studies
- Variation in sampling and methods across languages
- Different age ranges
- How and what exactly to compare?

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PROBLEMS TO COMPARE ACQUISITION PATTERNS

Criteria to make comparisons:

- Age
- Mean length of utterance (MLU)
Table 3.4 *A summary of Brown's (1973) five stages of grammatical development*

<table>
<thead>
<tr>
<th>Stage</th>
<th>Range of MLU (morphemes)</th>
<th>Upper Bound</th>
<th>Midpoint</th>
<th>Stage name and description</th>
</tr>
</thead>
</table>
| I     | 1.00-1.99                 | 5           | 1.75     | *The period of single-word utterances*  
The use of single words without any grammatical knowledge |
|       | early                     |             |          | *Semantic roles and syntactic relations*  
The onset and acquisition of the basic semantic relations used in language like Agent, Patient. Word order is first syntactic device acquired. |
|       | late                      | 1.50-1.99   |          | *Modulation of meaning*  
The child begins to acquire inflections and grammatical morphemes. Most are actually acquired in subsequent stages. |
| II    | 2.00-2.49                 | 7           | 2.25     | *Modalities of the simple sentence*  
The active acquisition of the English auxiliary as it appears in yes–no questions, *wh*-questions, imperatives, and negative questions. |
| III   | 2.50-2.99                 | 9           | 2.75     | *Embedding of one sentence within another*  
Complex sentences appear with object noun phrase complements, embedded *wh*-questions, and relative clauses. |
| IV    | 3.00-3.99                 | 11          | 3.50     | *Coordination of simple sentences and propositional relations*  
The active development of sentence, noun phrase, and verb phrase coordination with the use of conjunctions. |
| V     | 4.00 and up               | 13          | 4.00     | |

Ingram (1989: 50)
(Gries & Stoll, in press)
PROBLEMS TO COMPARE ACQUISITION PATTERNS

• Relevance problem
• Variability problem
• Data-sparsity problem
• Arbitrariness problem

(Gries & Stoll, in press)
Suggestion: Variability based-neighbor clustering

- all neighboring elements are compared on the basis of some distance measure
- the two neighboring elements that are most similar to each other get merged
- compute the distance measure on the basis of this merger

(Gries & Stoll, in press)
1 compute a distance or a similarity matrix,\textsuperscript{3} which provides the (dis-)similarity of all elements to each other on the basis of some distance measure

2 repeat

3 identify the two elements that are most similar to each other (in the case of ties, choose one pair randomly);

4 merge the two elements that are most similar to each other and compute new distances on the basis of this merger

5 until the number of elements is one

6 draw a dendrogram that summarizes the groupings arrived at in steps 1 to

\textsuperscript{3}Gries & Stoll, in press
MLUs of 123 recordings of Child 3 between 1;03.26 and 4;09.30: step 40

(Gries & Stoll, in press)
MLUs of 123 recordings of Child 3 between 1;03.26 and 4;09.30: step 115

(Gries & Stoll, in press)
(Gries & Stoll, in press)
SUGGESTION HOW TO PROCEED

- Identify pattern in individual children
- Compare each pattern to respective caretaker
- Compare caretakers across sessions
- Compare children across sessions
- Compare across languages.

(Stoll in prep.)
Experiments are used to test a specific question with a clearly stated hypothesis.

Experiments in general:

- large enough number of participants for the variables tested.
- control of variables possible.
- good knowledge about the language/languages.
EXPERIMENTS

- Potential interfering variables
- Participants
- Stimuli
- Procedure
- Practical questions

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Thank you!