Symbolic Systems 100
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First Language Acquisition, Nativism, and Learning

Nativist view: Language is innate

'Language learning is not really something that the child does; it is something that happens to the child placed in an appropriate environment, much as the child's body grows and matures in a predetermined way when provided with appropriate nutrition and environmental stimulation' [Chomsky 1993, p. 519]

Note: by 'language' Chomsky means syntax + morphology

Four assumptions long associated with the innatist position

1) Acquisition is rapid

2) Acquisition is instantaneous

3) Acquisition happens without direct instruction

4) Acquisition happens in spite of inadequate input

1. Acquisition is rapid ?

Well,
It takes children 5 years
That's 1825 days
Or 18250 hours
to sound adult-like enough (by around age 6) to be readily understood by people who don't know them

Compare L2 learning in adults

Adult learners spending 5 hours a week
would need 3650 weeks
that is 70 years
to match the amount of time children spend on their first language up to age 6….
(So you'd probably be dead before you could manage to sound like a 6-year old…)

Four assumptions of the innatist position

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2. Acquisition is instantaneous ?

This seems to assume it is effortless, happens without passing through developmental stages, and without errors….

But children do go through stages, they do make (systematic) errors, so development involves many changes, over several years, before children begin to approach adult-like skills in understanding and producing a first language

Consider what they have to do:

a) Break into the speech stream
whentheyhearwordsthesearenotneatlyseparatedbyspaces

b) Associate 'chunks' with meanings
decide what *dog* means, what *go out* means,
what *on* means, what *hot* means…..

c) Learn to combine such chunks in specific ways
the+dog, hot+stove, on+the+floor, he's+going+out

[but not **dog+the, *floor+the+on, *he's+out+going*, etc.]

And there's more:

d) Latch on to "small words" and morphology
the, a, that; *in, on, under*; *–s, –ing, –ed, –'s*

while figuring out where to put these elements,

which words to attach them to, which words they

precede or follow…

e) Learn more complex syntactic combinations
relative clauses (the quarter that I found on the step..),
adverbial clauses (the house where he grew up..),
complements (They wanted to go home,
She hoped that they wouldn't get lost)

And some of the kinds of errors they make:

a) Over-extensions of meaning
dog applied to dogs, cats, squirrels, sheep……
ball applied to balls, the moon, round door knobs, cakes, spherical candles, marbles…..

open applied to doors, box lids, pulling a chair out from the table, getting shoes off, peeling an orange, turning on a light, turning on a tap….

b) Over-regularization in word-forms
—nouns: *foot > foots, man > mans, sheep > sheeps*
—verbs: *come > comed, go > goed, bring > bringed*
went > wenting, wented; broke > broked

c) Pronoun form choice and pronoun shifting

+/–Control of the action:
—*My throw ball* vs. *I throw ball*
—*My jump* vs. *I like peas*

Adult/child vs. speaker/addressee contrast:
—*You dropped the ball; can I pick it up?*
—*Your car broken. Can I mend it?* (holding up toy car)

d) Word order
—*No Timmy go.* (= T isn't going)
—*Why not me run?* (= why can't I run)
—*'nother one spoonful* (= another spoonful)

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aka 'No negative evidence' (NNE)

One strong assumption that would support the Nativist position is that children do not have any of their errors corrected, i.e., they receive no negative evidence. This is an argument against learning since negative evidence (not necessarily a lot of it) appears to be necessary for learning. So if children acquire language without any negative evidence, this would be further evidence for language (syntax) being innate

What would count as negative evidence?

"information about which strings of words are not grammatical sentences"

"information about which sentences do not belong to [a] language"

"a parental behavior that provides information about when sentences are not in the language [Marcus 1993:53, 54, 58]

Although parents *don't* typically go around saying to their children 'that sentence doesn't belong in English'
(think about how disruptive that would be of any conversation),

they continually check up on what their children mean

and this checking up, especially after children have made errors of some kind, turns out to provide important evidence for how to express the specific intention the child is trying to convey….

Four sources of evidence on adult feedback

- Adult / child conversation — what feedback *do* children get?
- Over time — are there any *changes* in feedback with age?
- Different error-types — do adults offer *different* kinds of feedback for different error-types?
- Patterns in exchanges containing child errors — is there consistency in how adults offer feedback (if they do)?

Four questions

a. Do adults notice and correct their children's errors?

b. Do they correct syntactic and morphological errors as well as phonological and lexical ones?

c. How do adults do this, and how often?

d. Do children attend to corrections when they hear them?

a. Do adults notice and correct their children's errors and if so, how often?

- Yes, they notice errors and offer 'corrections' up to 60-70% of the time for children under 3 to 3;6

Note: classic studies of learning in psychology have observed that people need feedback on errors (corrections of errors) only around 12-14% of the time in order to learn ….

b. Do adults correct errors of syntax and morphology as well as errors of phonology and the lexicon?

– Yes, the rate of correction is statistically the same over error-types, so errors of syntax and morphology are not treated in any special way by adults who are checking up on what their children meant

c. How do adults do this?

– They rely on the pragmatics of conversation, and children's ability to recognize that adults are either checking on what the child had intended to say — via **side-sequences** — or offering a next-turn repair to what the child had intended say – – via **embedded corrections**

◆ **A side sequence:**

D (2;8.14, with a toothbrush in his hand):
An' I going to tease.

|| Mother [puzzled]: Oh. Oh, you mean you're going <u>to pretend</u> to do your teeth?

|| D: *Yes*.
<then, as father came by a minute later>
Father: Are you going to do your teeth?
D: *No, I was **pretending**.*

◆ **An embedded correction:**

D (2;4.29, as his father picked him up and swung him in his arms near the top of the stairs): *Don't fall me downstairs!*
Father: Oh, I wouldn't <u>drop</u> you downstairs.
D: *Don't **drop** me downstairs*.

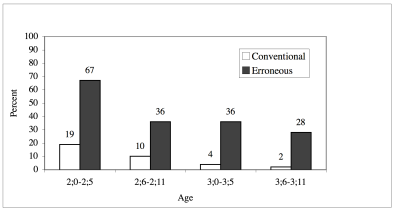
[Clark, diary data]

Data analyzed from 3 English & 2 French longitudinal corpora:

	Abe	Sarah	Naomi	Philippe	Grégoire
# lines coded	6276	5029	2242	2421	511
# erron. utts.	**2911**	**2194**	**1095**	**1363**	**229**

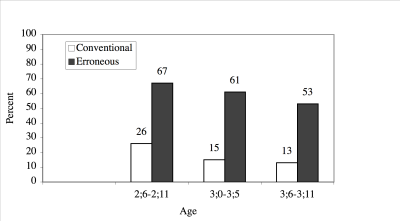
[Chouinard & Clark 2003]

Abe – % conventional utterances replayed (repeated verbatim, nearly always grammatical to begin with) vs. % erroneous ones reformulated into conventional form (English)



Philippe – % conventional utterances replayed vs.

% erroneous ones reformulated



• Same findings for English and French parents in middle-class/upper middle-class families, for children up to about 3;6, when incidence of errors and of reformulations drops

• Same amounts of checking up regardless of the error-type produced –

errors of pronunciation (phonology),
errors in word-form (morphology),
errors in word choice (lexicon),
and errors in constructing utterances (syntax)

4. Do children attend to such corrections? — Yes

(a) Overt uptake of the corrected form – child repeats correction

(b) Rejection of the corrected form – child rejects interpretation and tries again

(c) Acknowledgement of the corrected form (e.g., *yeah, uh-huh, yes*; head nod)

(d) Repeat of corrected form plus some *new information*

(e) Bare continuation (on the same topic, semantically relevant)

Repeat of an adult form

Abe (2;5.10): *I want butter mine.*

Father: ok give it here and I'll put butter on it.

Abe: *I need butter* ***on it.*** [correction taken up]

[Kuczaj, Abe 4:66]

Rejection of an adult interpretation

Abe (2;5.7): *the plant didn't cried*.

Father: the plant cried?

Abe: ***no.*** [rejection of adult interpretation]

Father: oh. the plant didn't cry.

[Kuczaj, Abe 3:163]

(And subsequent acknowledgement by Abe – *uh-huh* – of the adult's amended interpretation)

Acknowledgement

Abe (2;6.4): *milk*. *milk*.

||Father: you want milk?

||Abe: ***uh-huh***. [acknowledgement]

Father: ok. just a second and I'll get you some.

[Kuczaj, Abe 12:6]

Reformulations offer conventional forms

(a) Child says X

(b) Adult checks on the child's intention by reformulating the content of the child's utterance, X, in conventional form, X-1

(c) Child compares X and X-1 and registers any difference(s) in form between them

(d) Child then accepts X-1 by repeating some or all of X-1, OR rejects X-1 as not what he had intended; acknowledges X-1 explicitly, or assumes it in the continuing utterance

Their responses provide evidence that children *attend to* reformulations of their errors, whether of syntax, phonology, morphology, or lexicon

Generality of such negative evidence?

—Middle class Western families

But negative evidence can probably come in many forms:

- "Say X" prompts in context (Kaluli/Schieffelin, Samoa/Ochs) — You say "X" when you want....
- Elicitation questions + corrections, for 'display' (lower-class US families: Heath, Miller)

Many non-linguistic reactions to non-comprehensible child utterances—

Disapproving or approving facial expressions

Head-shakes

Raised eye-brows

Ignoring what the child says

Also, general prompts for clarification (*Mhh? Eh? What?*)

Empirical point is:

—In many communities, adults DO offer negative evidence

- in the form of side-sequences, designed to check on what the child intended to say, and
- in embedded corrections of what the child said...

—Both these sources present children with negative evidence in the course of conversation, but without disrupting the exchange that's going on

Empirical questions that remain

- What is the nature of (children's) learning mechanisms and their specificity — only for language or for more general learning?
- What is the relation between feedback and practice in attaining expertise (here, in language)? (cf. the parallels with development of expertise in chess, music, and athletics)
- What is the full range of feedback types 'available' to children learning to talk in different societies?

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aka "Poverty of the stimulus" —another corollary to the view that language is innate

If children manage to come up with syntactic structures for which they get inadequate evidence in the language they hear from adults, this would be still further evidence that syntax is innate…

An example:

Consider: The boy who **is** the culprit **is** over there
How do children know which 'is' has to be moved to the front when this is made into a question–

Is the boy [who is the culprit] ___ over there?

vs. *Is the boy [who ___ the culprit] **is** over there?

The Poverty of the Stimulus position claims children don't hear any relevant evidence for this, but a search of child-directed speech reveals

(a) many instances of relative clauses, with a number in questions,
(b) main and relative clauses usually with different verbs
(c) relative clauses where the meaning makes clear which element must be moved to form a canonical question

Again, the poverty of the stimulus raises empirical questions:

Can we identify structures *not* found in child-directed speech? Attempts so far have foundered — the relevant structures *are* represented, but only (typically) once children have learned enough to be able to interpret them and make use of their meanings along with their structures

The No Negative Evidence and Poverty of the Stimulus arguments have traditionally been put forward in relation to the learning of syntax and morphology

But (a) most current approaches to syntactic analysis no longer draw a hard line between the lexicon (vocabulary) and syntax, and we know children have to learn vocabulary word by word…

(b) if children are relying on robust learning mechanisms for the lexicon and phonology (everyone has always agreed these have to be learned), why would they **not** make use of *the same mechanisms* elsewhere, including syntax and morphology?

So perhaps linguistic researchers might wish to retreat from the strong claim that language, in the form of syntactic structure, is *innate*, and propose instead that children come equipped with innate mechanisms specialized for the learning of language (as opposed to general learning mechanisms that could apply in other domains besides language)

Yet even this may be too strong --

It too is an empirical issue –

Are such learning mechanisms specialized for language, or are they actually general learning mechanisms that evolve in interaction with specific domains? That is, when applied to language, they become specialized to deal with that kind of material, just as when applied to categorization, say, they become specialized there too, but in a different way…

Or when applied to learning how to play chess, how to play the violin, how to do back flips….

Expertise takes time, corrections, and practice

That is, there is always an interaction between what the child (the novice) knows right now, what he is trying to do, and how he is understood by the adult (the expert)

The original word game (revisited):

"The tutor names things in accordance with the semantic customs of the community. The player forms hypotheses about the categorical nature of the things named. He tests his hypotheses by trying to name new things correctly. The tutor compares the player's utterances with his own anticipations of such utterances and, in this way, checks the accuracy of fit between his own categories and those of the player. He improves the [player's] fit by correction."

[Brown 1958]

— And the player [aka the child] also checks his own anticipations and tacitly corrects them when they turn out to be wrong; these "corrections" in combination with the overt corrections offered by the tutor [aka the adult speaker] help the child identify the actual conventions of the system being acquired (the target language).