GRS LX 700  
Language Acquisition and Linguistic Theory  

Week 1. Introduction

Language is complex

1) Tony threw out the chair.
2) Tony threw the chair out.

Prepositions can go on either side of the object.

3) Tony walked out the door.
4) * Tony walked the door out.

And yet people know this stuff…

5) What did Mary say John bought?
6) What did Mary say that John bought?

Ok, that is optional.

7) Who did Mary say bought coffee?
8) *Who did Mary say that bought coffee?

Speakers of English know…

9) His mother thinks John is a genius.
10) He thinks John is a genius, too.

11) I told Mary to buy coffee.
12) What did you tell Mary to buy?
13) I saw the book about grapes on the table.
14) *What did you see the book about on the table?

How do people know this?

• Everyone who speaks English knows this.
• Nobody who speaks English as a first language was taught (growing up) “You can’t question a subject in a complement embedded with that” or “You can’t use a proper name if it’s c-commanded by something coindexed with it.”

Notice also…

• What people eventually end up with is a system with which they can produce (and rate) sentences. A grammar. Even if you’ve never heard these before, you know which one is “English” and which one isn’t:

15) Eight very lazy elephants drank brandy.
16) Eight elephants very lazy brandy drank.
Do kids learn the grammar by listening to their parents?

- *What did you see the book about on the table?
- *Who did Mary say that bought coffee?
- Eight very lazy elephants drank brandy?
- Linguists’ theories: built by considering both grammatical and ungrammatical sentences.
- Kids: Don’t hear ungrammatical sentences, nor even all of the grammatical sentences.

People have language

- A linguistic capacity is part of being human.
- Like having two arms, ten fingers, a vision system, humans have a language faculty.
- The language faculty (tightly) constrains what kinds of languages a child can learn.
- ≈ “Universal Grammar” (UG).

Positive and negative evidence

- Adults know if sentence A is grammatical or ungrammatical. This is part of the knowledge kids gain through language acquisition.
- Kids hear grammatical sentences (positive evidence)
- Kids are not told which sentences are ungrammatical (no negative evidence)

Marcus 1993: Do kids get negative evidence via feedback?

- Do kids get “implicit” negative evidence?
- For example: Do adults understand grammatical sentences and not understand ungrammatical ones?
- Do adults respond positively to grammatical sentences and negatively to ungrammatical ones?

Kids resist instruction…

McNeill (1966)
- Nobody don’t like me.
- No, say ‘nobody likes me.’
- Nobody don’t like me.

[repeats eight times]
- No, now listen carefully; say ‘nobody likes me.’
- Oh! Nobody don’t likes me.

Kids resist instruction…

Braime (1971)
- Want other one spoon, daddy.
- You mean, you want the other spoon.
- Yes, I want other one spoon, please Daddy.
- Can you say ‘the other spoon’?
- Other…one…spoon
- Say ‘other’
- Other
- ‘Spoon’
- Spoon
- ‘Other spoon’
- Other…spoon. Now give me other one spoon?
Kids resist instruction…

Cazden (1972) (observation attributed to Jean Berko Gleason)

– My teacher holded the baby rabbits and we patted them.
– Did you say your teacher held the baby rabbits?
– Yes.
– What did you say she did?
– She holded the baby rabbits and we patted them.
– Did you say she held them tightly?
– No, she holded them loosely.

Feedback by approval or comprehension?


– Adults understood 42% of the grammatical sentences.
– Adults understood 47% of the ungrammatical ones.
– Adults expressed approval after 45% of the grammatical sentences.
– Adults expressed approval after 45% of the ungrammatical sentences.

This doesn’t bode well for comprehension or approval as a source of negative evidence for kids.

Three types of feedback

• **Complete**: consistent response, indicates unambiguously “grammatical” or “ungrammatical.”

• **Partial**: if there is a response, it indicates “grammatical” or “ungrammatical”

• **Noisy**: response given to both grammatical and ungrammatical sentences, but with different/detectible frequency.

Noisy feedback

• Possible candidates for feedback
  – Recasting
  – Comprehension
  – Approval

Statistics (from Marcus 1993)

Suppose response R occurs 20% of the time for ungrammatical sentences, 12% of the time for grammatical sentences.

Kid gets response R to utterance U, there’s a 63% chance that U is ungrammatical. (Guess: ungrammatical, but 38% chance of being wrong)

Kid doesn’t get response R, 52% chance it’s grammatical (Guess: grammatical, but 48% chance of being wrong).

Lacking confidence

• Adults make (generously) around 1% speech errors (actually probably far less)
• So, kids are shooting for 99% confidence.
• Based on R, they’d have to repeat U 446 times to reach that level.
• Based on various studies on noisy feedback, the range might be from 85 times (for a 35%-14% differential) to 679 times (for a 11.3%-6.3% differential).
Kids’ experience differs

- Parents respond differently
  - Eve & Sarah’s parents ask clarification questions after ill-formed wh-questions.
  - Adam’s parents ask clarification after well-formed wh-questions…and after past tense errors.
- How can kids figure out what correlates with grammaticality in their situation?

Feedback disappears

- Adam and Sarah showed almost no reply contingencies after age 4
- But they still made errors after age 4
- And they still stopped making those errors as adults (learning didn’t cease).

Yes-no questions

17) The man is here.
18) Is the man here?
19) The man who is here is eating dinner.

**Hypothesis 1:** Move the first is (or modal, auxiliary) to the front.

**Hypothesis 2:** Move the first is after the initial noun phrase to the front.

In a way, it’s moot anyway…

- One of the striking things about child language is how few errors they actually make.
- For negative feedback to work, the kids have to make the errors (so that it can get the negative response).
- But they don’t make the errors.

Yes-no questions

19) The man who is here is eating dinner.
20) *Is the man who here is eating dinner?*
21) Is the man who is here eating dinner?

No kid’s ever said (20) to mean (21). Why?

Kids don’t even entertain Hypothesis 1.
Universal Grammar

• The point about UG is that kids never have to entertain things like Hypothesis 1 because UG strongly constrains the kinds of languages kids can learn.

Starting off…

UG provides the category options for classifying words kids hear

- Noun
- Verb
- Adjective
- Pre/post-position
- Adverb
- Pronoun
- Determiner
- Auxiliary
- Degree word
- Complementizer
- Conjunction
- Modal
- …

Semantic bootstrapping

• Prototypical correspondences can help at the beginning

<table>
<thead>
<tr>
<th>Category</th>
<th>Corresponding semantic notion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noun</td>
<td>Person or thing</td>
</tr>
<tr>
<td>Verb</td>
<td>Action or change of state</td>
</tr>
<tr>
<td>Adjective</td>
<td>Perceptible physical property or attribute</td>
</tr>
<tr>
<td>Preposition</td>
<td>Spatial relation, path, or direction</td>
</tr>
</tbody>
</table>

Morphological cues can help after that

22) The boy sibbed the ball
23) The dog is blicking in the yard.

“The other verbs I know can have these -ed and -ing things tacked onto them, so sib and blick must be verbs too.”

Grammar isn’t just words…

• Adult sentences have syntactic structure (which can be confirmed by studying patterns of intuition)
• Kids grow up to be adults—they grow up to have these intuitions too.
• Syntactic structure must be part of UG (all adult languages have syntactic structure).

One more example…

• Principle C: A pronoun cannot c-command its antecedent.

*He; believes John’s teacher.

• Study of adults shows c-command to be the appropriate abstract notion, defined on structures. But how do kids learn about c-command? You can’t hear c-command.
Argument for innateness from the “poverty of the stimulus”

Suppose that we find a particular language has the property P… Suppose, furthermore, that P is sufficiently abstract and evidence bearing on it sufficiently sparse and contrived so that it is implausible to suppose that all speakers, or perhaps any speakers, might have been trained or taught to observe P or might have constructed grammars satisfying P by induction from experience. Then it is plausible to postulate that P is a property of [the acquisition device] (Chomsky 1977:65)

So, how come we don’t all speak the same language?

• Languages differ.
• But in light of the learnability problem (and from empirical observation) they must differ only in limited ways.
• For example, word order (SVO vs. SOV). Japanese chose SOV, English chose SVO.

Parameters

• X’ theory says structures are all built hierarchically like this—but different languages can choose different orders.

XP
  Specifier X'
  X Complement
  Head

Parameters

The “head parameter” specified the order between the head and complement:

• Japanese: Head-final (X follows complement)
• English: Head-initial (X precedes complement).

Kids can hear evidence for this, they can set this parameter, having X’ theory “built in.”

Principle A

24) Sam believes [that Harry overestimates himself]

25) Sam-wa [Harry-ga zibun-o tunet-ta to] it-ta
  Sam-top Harry-nom self-acc pinch-past-that say-past
  ‘Sam said that Harry pinched (him)self.’

Principle A

• Principle A. A reflexive pronoun must have a higher antecedent in some domain.

• Parameter:
  - Option (a): domain = smallest clause containing the reflexive pronoun
  - Option (b): domain = sentence containing the reflexive pronoun
But how can you set this parameter?
- Every sentence a kid learning English hears is consistent with both values of the parameter!
- If a kid learning English decided to opt for the “sentence” version of the domain parameter, nothing would ever tell the kid s/he had made a mistake.
- S/he would end up with non-English intuitions.

But how can you set this parameter?
- A kid learning Japanese can tell right away that their domain is the sentence, since they’ll hear sentences where zibun refers to an antecedent outside the clause.

But how can you set this parameter?
- The set of sentences allowed in English is a subset of the set of sentences allowed in Japanese. If you started assuming the English value, you could learn the Japanese value, but not vice-versa.

Subset principle/defaults
- The acquisition device selects the most restrictive parametric value consistent with experience.
- That is, for the Principle A domain parameter, you start assuming you’re learning English and switch to Japanese only if presented with evidence.

What it takes to set a parameter
- Subject drop parameter
  - Option (a): Subject drop is permitted.
  - Option (b): Subject drop is not permitted.
- Italian = option a, English = option b.

What it takes to set a parameter
- The Subset principle says that kids should start with the English setting and learn Italian if the evidence appears.
- But English kids are well-known to drop subjects early on in acquisition. Mystery for later discussion: How do they recover from this mistake?
What it takes to set a parameter

• English kids hear looks good and seems ok and stop that right now. Why don’t they end up speaking Italian? If they mis-set the parameter, how could they ever recover?

• Italian kids hear subjectless sentences—why don’t they interpret them as imperatives or fragments (so as not to have to change the parameter from the default)?

Triggers

• Perhaps kids look for specific tell-tale indications of how the parameters are set.
  – Only true subject-drop languages allow null subjects in tensed embedded clauses.

  26) *John knows that [— must go]. (English)
  27) Juan sabe que [— debe ir]. (Spanish)

‘Juan knows that [he] must go.’

Triggers

• A potential problem with the proposed subject-drop trigger is that it requires complex sentences—you need to look at an embedded sentence to check for the trigger.

• Such sentences might be too complicated for kids to process.

• Degree-1 learnability: Triggers need look no lower than 1 level of embedding.

• Degree-0 learnability: Triggers need look only at main clauses.

Triggers

• Can triggers be recast to be degree-0 learnable?

• Subjacency. *[[wh [α … β … t … ]]]

where α and β are bounding nodes.

Bounding node parameter for IP:
  – Option (a): IP is a bounding node (English).
  – Option (b): IP is not a bounding node (French, Italian).

Triggers

• Can a kid learning French choose option (b) by hearing

  28) Viola un liste de gens… ‘there is a list of people…’

  [à qui on n’a pas encore trouvé [quoi envoyer t t ]]
  to whom one has not yet found [what to send]

• Well, that’s a degree-2 trigger.
<table>
<thead>
<tr>
<th>Triggers</th>
<th>Continuity</th>
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<tbody>
<tr>
<td>• Principles are part of UG</td>
<td>• Once kids start putting words together (once they reach the two-word stage), questions are raised about the structure:</td>
</tr>
<tr>
<td>• Parameters are defined by UG</td>
<td>• How are they putting these words together?</td>
</tr>
<tr>
<td>• Triggers for parameter settings are defined by UG.</td>
<td>• Are they using syntactic structure?</td>
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<td></td>
<td>• To what extent is the syntax like an adult’s?</td>
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<tr>
<th>Continuity</th>
<th>Strong continuity</th>
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<tbody>
<tr>
<td>• Syntax is part of UG, it’s basically there from the beginning and it does not really change on the way to adulthood. <strong>Strong continuity.</strong> Kids use full-blown syntactic trees (CP, IP, VP, NegP, the works).</td>
<td>• Sounds crazy doesn’t it? Why might someone believe that?</td>
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<td></td>
<td>– German and French kids seem to know the difference between finite and nonfinite verbs.</td>
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<tr>
<td></td>
<td>• In German finite verbs go second, nonfinite verbs go at the end—even 2-year-olds put them in the right place.</td>
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<tr>
<td></td>
<td>• In French, finite verbs come before pas (negation), nonfinite verbs come after—even 2-year-olds put them in the right place.</td>
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<thead>
<tr>
<th>Weak continuity.</th>
<th>Maturation</th>
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<tbody>
<tr>
<td></td>
<td>• Maturation is an indisputable part of child development.</td>
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<td></td>
<td>– second set of teeth.</td>
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<td></td>
<td>– puberty.</td>
</tr>
<tr>
<td></td>
<td>• A child’s <strong>language</strong> capacity may also undergo maturational changes. (Still part of the genetic program, but on a schedule)</td>
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<tr>
<td></td>
<td>• Some candidates for maturation from the literature:</td>
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<tr>
<td></td>
<td>– Ability to simultaneously realize tense and agreement</td>
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<td></td>
<td>– Ability to form “A-chains” (passive, raising)</td>
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<tr>
<td></td>
<td>– Ability to use functional categories in syntactic structure.</td>
</tr>
<tr>
<td></td>
<td>• The critical period for language acquisition.</td>
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</tbody>
</table>
Long-distance preview: Second language acquisition

- Children learning their native language are starting from scratch, with nothing but UG.

- Adults learning a second language already know a language…
  - Do they need UG?
  - Do they use UG? (Is the second language UG-compatible?)
  - How is L2A affected by (the parameter settings of) the first language?