Language: A Uniquely Human Instinct
Supplementary Readings

The following readings have been posted to the Moodle course site:

- Language Instinct: Chapter 2 (pp. 12-43)
- Language Files: Chapter 8 (pp. 311-315)
Why Study Human Languages?

Question from last class: Why study human languages?

Answer from last class: Our ability to use and learn language is actually a profound biological mystery:

▶ What is the system of rules and expressions (mental representations) that underlies our ability to speak and understand a human language?
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Why study human languages?

Answer from last class:
Our ability to use and learn language is actually a profound biological mystery:

- What is the system of rules and expressions (mental representations) that underlies our ability to speak and understand a human language?

Another, Related Answer:
Our ability to use and learn (our first) language is a uniquely human instinct.

- Studying language is studying something special...
- Studying language is studying something intimately genetically human...
Language, an *Instinct*?!

A Natural, Skeptical Reaction:

- How could language be an *instinct*?...
- I wasn’t *born* speaking a language; *I had to learn it from my parents*...
Background Analogy: Birdsong

- Birds are not born with the ability to sing the song of their species.
- However, they are born with a very special, *species specific* ability:
  - the ability (and drive) to **learn** the song of their species
- Since this is an ability of specific bird species, it’s an *instinct*
The Real Proposal:
An Instinct to *Learn* Language

The Proposed Analogy:

- People aren’t born with the ability to speak a language.
- However, they are born with a very special, *species specific* ability:
  - the ability (and drive) to *learn* a language
The Real Proposal: An Instinct to *Learn* Language

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- People aren’t born with the ability to speak a language.
- However, they are born with a very special, *species specific* ability:
  - the ability (and drive) to *learn* a language

The Proposal (In a Nutshell):

- What’s written into our genes is *not* the ability to speak a *particular* language (e.g. English).
- Rather, it’s the ability (and drive) to *learn any human language* (as a first language).
But Why Think This?

It’s a cute idea, but why should we think it’s true?
But Why Think This?

It’s a cute idea, *but why should we think it’s true?*

Terminology: Language Acquisition
Going from a state of not speaking a language to a state of speaking a language.

▶ Linguists don’t call this ‘language learning’, because it’s not clear that it is ‘learning’ (in the same sense that you ‘learn’ general facts about the world).
Well, It’s *Plausible*

Humans are *physically* adapted for speech:
- Voice box placement
- Specific brain areas for language

Other kinds of learning is genetically driven (instinctive):
- Walking
- Eating
A More Interesting Argument:
It seems that language exhibits many of the characteristics of instinctive behaviors.
Characteristic 1: Uniformity Across Species

First Characteristic: Instincts are shared by all (healthy) members of the species.

▶ All (healthy) humans walk (no matter what their culture).
▶ All (healthy) cardinals sing.
Characteristic 1: Uniformity Across Species

Language is a behavior that is uniform across all human cultures (LING 101)

- No known human culture has ever lacked language.
  - Societies which are unable to speak/hear spontaneously invent sign languages.
- All human languages are equally expressive
  - There is no language that is unable to express everything that is expressible in English.
Characteristic 2: Emergence Before Necessity

Second Characteristic: Instinctive behaviors emerge before they are really needed

- Children begin learning to walk when they could still be carried.
- Birds (Zebra Finches) learn to sing before sexual maturity.
Characteristic 2: Emergence Before Necessity

Children begin learning language \textit{long} before they ‘need’ it to communicate.

- Children begin learning language \textit{in the womb}.
- Children acquire full fluency by \textit{age four}.
Characteristic 3:
Automatic Appearance

Third Characteristic:
The emergence of instinctive behaviors is ‘automatic’ (unrelated to external events or conscious decision.)

- Birds don’t need any special encouragement to learn to sing.
- Children don’t ‘decide’ they want to learn to walk, *they just start doing it.*
Characteristic 3:
Automatic Appearance

Acquisition of a first language is similarly 'automatic'.

- Children begin language learning *in the womb*.
- Continued language acquisition is not something kids can 'give up'.
  - (Unlike, say, tying their shoes or playing an instrument.)
Characteristic 4: Uniform Sequence of Milestones

Fourth Characteristic: The emergence of an instinct follows a predictable sequence of ‘milestones’, correlated with age and other aspects of development.

- All children learn to walk in the same way
  - rolling > rocking > crawling backwards > crawling forwards > creeping > walking
Characteristic 4: Uniform Sequence of Milestones

Acquisition of a first language follows just such a sequence of ‘milestones’.

▶ Just ask any pediatrician or parent (or anyone who’s read *What to Expect...*)
Fifth Characteristic:
Development of instinctive behaviors cannot be affected by ‘direct teaching’.

▶ Nothing you can do will make your children learn to walk sooner.
Characteristic 5: Direct Teaching Does Nothing

Although parents do occasionally make efforts to explicitly ‘teach’ things about their language....
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▶ There is no evidence to suggest this actually does anything:
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- This is only occasional and sporadic.
- This is hardly ever *correction* of mistakes (a key part of language learning)
- There is no evidence to suggest this actually *does* anything:
  - Children’s errors are *famously* impervious to explicit correction from parents.
Correcting Children’s Language: Pointless

Here are a couple famous (real-life) dialogs that illustrate how little kids pay attention to explicit correction:

▶ Child: “Want other one spoon, daddy.
▶ Dad: “You mean, you want the other spoon.”
▶ Child: “Yes, I want other one spoon, please Daddy.”
▶ Dad: “Can you say ‘the other spoon’.”
▶ Child: “Other...one...spoon”
▶ Dad: “Say ‘the’.”
▶ Child: “The.”
▶ Dad: “Say ‘other’.”
▶ Child: “Other.”
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▶ Child: “‘The...other...spoon’. Now give me other one spoon?”
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▶ Child: “Nobody don’t like me.”
▶ Mother: “No, say ‘Nobody likes me’.”
▶ Child: “Nobody don’t like me.”
▶ (This repeats eight times)
▶ Mother: (now exhausted) “Now listen carefully! Say ‘Nobody likes me’.”
▶ Child: Oh! Nobody doesn’t likes me.
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► Child: Oh! Nobody doesn’t *likes* me.
Characteristic 6: A ‘Critical Period’ for Learning

Sixth Characteristic: For many instincts, there is a ‘critical period’ for learning the behavior.

▶ If the organism doesn’t acquire the behavior by a certain age, they never will.

▶ Example: If a bird is not exposed to its song by a particular age, it never really learns to sing.
Characteristic 6: A ‘Critical Period’ for Learning

There is evidence to suggest that there is a ‘critical period’ for learning a first language (LING 101).

- Due to horrific circumstances, some children end up spending years isolated from human language.
  - Children discovered before adolescence develop language with normal competency.
  - Children discovered after the onset of adolescence typically never develop full adult competency in language...
    - despite years of subsequent exposure to language
    - despite developing other abilities normally.
Summary

In summary, human language seems to share commonalities with other instinctive behaviors...

Which suggests that language learning might be an instinct (like birdsong)...

But there’s also more evidence...
Independence from General Intelligence

Question:
Why do human children learn language when exposed to it, but not other organisms, like cats?
Independence from General Intelligence

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Why do human children learn language when exposed to it, but not other organisms, like cats?

Commonsense Answer:
Because other organisms are too stupid.
(Other organisms lack the ‘general intelligence’ required to learn language.)
Independence from General Intelligence

Problem for Commonsense Answer:
Language acquisition doesn’t seem to depend on ‘general intelligence’.
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Problem for Commonsense Answer:
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- Remember, language learning begins *in the womb*.
- Specific Language Impairment (SLI)
  - Individuals have great difficulty constructing sentences
  - Pronunciation is otherwise fine
  - Individuals are otherwise psychologically normal
Independence from General Intelligence

Problem for Commonsense Answer:
Language acquisition doesn’t seem to depend on ‘general intelligence’.

▶ Remember, language learning begins in the womb.
▶ Specific Language Impairment (SLI)
  ▶ Individuals have great difficulty constructing sentences
  ▶ Pronunciation is otherwise fine
  ▶ Individuals are otherwise psychologically normal
▶ William’s Syndrome
  ▶ Individuals are generally ‘impaired’ (IQ ≤ 50)
  ▶ Individuals have (super-)normal language competence.
Conclusion:
Language learning does not depend on ‘general intelligence’.

- Rather, it seems tied to a separate, specialized mental sub-system...
- ...which lends support to the idea that it’s in-born in people...
FOXP2, A ‘Grammar Gene’?

A Natural Question:
If (first) language acquisition is instinctive...
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If (first) language acquisition is instinctive...
...then it must be encoded in our genes in some way...
A Natural Question:
If (first) language acquisition is instinctive...
...then it must be encoded in our genes in some way...
...so, is there any evidence for such a ‘language gene’?
FOXP2, A ‘Grammar Gene’?

A Tentative Answer:
This is a very complex and delicate issue, but here’s what is known:

▶ SLI appears to be a genetic condition.
▶ Scientists have thus studied the genetic markers of people with SLI.
▶ They seem to have a defective ‘FOXP2’ gene.
▶ This suggests that ‘FOXP2’ might be involved in encoding our ‘language instinct’.
▶ Interestingly, ‘FOXP2’ also plays a role in the development of birdsong.
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General Summary: Language as a Human Instinct

Question from last class: Why study human languages?

Answer from last class:
Our ability to use and learn language is actually a profound *biological mystery*:

- What is the system of **rules** and **expressions** (**mental representations**) that underlies our ability to speak and understand a human language?

Another, Related Answer:
Our ability to use and learn (our first) language is a uniquely human *instinct*.

- Studying language is studying something *special*...
- Studying language is studying something intimately *genetically* human...
The Proposal (In a Nutshell):

- What’s written into our genes is *not* the ability to speak a *particular* language (e.g. English).
- Rather, it’s the ability (and drive) to *learn any human language* (as a first language).
General Summary:
The Evidence

There are several lines of evidence that support this key proposal:

- Other physiological developments for language
- Language exhibits (six) key characteristics of other instinctive behaviors.
- The ability to learn a (first) language is independent of general intelligence.
- Normal language development appears to be tied to a specific gene (FOXP2)