What are you learning when you’re learning a language?

DID YOU SEE THE CLEVERBOT-CLEVERBOT CHAT?

I AM NOT A ROBOT, I'M A UNICORN.

YEAH. IT'S HILARIOUS, BUT IT'S JUST CLUMSILY SAMPLING A HUGE DATABASE OF LINES PEOPLE HAVE TYPED. CHATTERBOTS STILL HAVE A LONG WAY TO GO.

SO... COMPUTERS HAVE MASTERED PLAYING CHESS AND DRIVING CARS ACROSS THE DESERT, BUT CAN'T HOLD FIVE MINUTES OF NORMAL CONVERSATION?

PRETTY MUCH.

IS IT JUST ME, OR HAVE WE CREATED A BURNING MAN ATTENDEE?
Language at age 3

• Good narrative skills
• Gestures
• [Over]generalizes concepts
  – Obi-Wan is a teacher, garage sale for robots
• Phoneme errors
  – Erratic production of final L sound
    • “well” followed by “wew”
  – sh --> s (siny guy, spacesip)
  – th --> f (He tried to do it wifout seeing, Darf Vader)
• Verb forms overregularized (“blowed up”)
• Frozen phrases (Don’t talk back to Darf Vader, he’ll get ya!)
What are you learning?

- Speech sounds
- Finding word boundaries
- Mapping words to meanings
- Syntax (grammar)
- Language in social context

*How do these things go together?*
Possible patterns

• Sequential

• Overlapping
Producing language

<table>
<thead>
<tr>
<th>Speech sounds</th>
<th>Words</th>
<th>Grammar</th>
<th>Social context</th>
</tr>
</thead>
<tbody>
<tr>
<td>~6-8 months: Babbling onset</td>
<td>10-12 months: say first words</td>
<td>18 months: “word spurt”</td>
<td>This takes quite a while…</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“two-word speech”</td>
<td>A caution: Perception precedes production.</td>
</tr>
</tbody>
</table>
Recognizing/comprehending language

<table>
<thead>
<tr>
<th>Speech sounds</th>
<th>Words</th>
<th>Grammar</th>
<th>Social context</th>
</tr>
</thead>
</table>

By 10-12 months: Only sensitive to speech sound changes in your native language (mostly)

Older idea: you need to have a small set of sound “symbols” (kind of like mental letters) to be able to store words in the brain—otherwise, information overload

**BUT...**

Show some word recognition at 6-9 months (Bergelson & Swingley, 2012)

Respond to word order at 17 months, before 2-word stage (Hirsh-Pasek & Golinkoff, 1993)

Show some social (?) responsiveness to language in infancy (Kinzler et al., 2007)

MANY studies showing non-adultlike sensitivity to differences in speech sounds, voices, vocal emotion, word stress patterns in preschool years and beyond
More questions about language development
How do you represent words’ sound patterns, if not as a string of speech sounds?

• Maybe as the whole word’s sound pattern itself

• Later, speech sounds (or something like them) emerge from the whole collection of words you know
  – Probably with a lot of help from speaking an alphabetic language
If learning is so slow, why are kids so good at learning language?

- **Answer 1:** we don’t know because there are a lot of variables at play
  - Social preferences, % time in new language
- **Answer 2:** they aren’t.
  - Slower vocabulary learning than adults in L2 situations
- **Answer 3:** because they’re doing it differently
  - Adults learning an L2 depend on their preexisting knowledge (“kind of like /d/ in English”)
  - Children (under age 6 or 7) are learning sound patterns of L2 from the ground up