Week 3: Language Acquisition & General Features

Study Guide

Last week we discussed language as a biologically determined behavior (an instinct!). We used Lenneberg's criteria and discussed evidence that it **happens to everyone** (no conscious decision required and can emerge in spite of deficits) and follows its own schedule (**critical period**). This week we will talk more about how language is acquired and the features common to all languages.

Language Acquisition

Corresponds to the first acquisition lecture and the reading

Biologically determined behaviors emerge at the same rate and end up with the same result regardless of teaching or intensive practice. So, if language is biologically determined, it shouldn't really be affected by **correction**, and it shouldn't be reduced to simple **imitation**.

- We know **children aren't just imitating adults** because they can say lots of things adults never would (e.g. "my brother hitted me", "when she be's in the kindergarten"). Even when an adult models the correct form, children don't alter they production ("my teacher holded the baby rabbits").
- We know **correction isn't crucial** because caregivers don't often correct grammar — most corrections are about the truth of the child's statement ("that's a turtle, not a frog"), and even when they do, children are pretty impervious to it (e.g. "no, say 'Nobody likes me'").

Why do caregivers bother with **child-directed speech** ("motherse"), then? It's widely known (and easy to observe) that people speak differently to children than to adults. What is the point of this?

- It is true that **child-directed speech isn't needed for acquisition**. Some cultures don't speak directly to children and those children acquire language fine (e.g. Kaluli of Papua, New Guinea).
- But Child-directed speech does serve a purpose. It is likely a way to ensure a child attends to and understand what is being said; it's used to **get and maintain attention**. In child-directed speech, adults **talk about the "here and now"**, and **change they way they say things**:
    - They talk **slower**
    - They use **shorter, simpler sentences**
    - They use a **higher pitched voice**
    - And they **repeat** themselves frequently

Why are correction and imitation so useless in language acquisition, when they are use useful for learning all sorts of other things?

- 'Learning' a language is different from learning math or playing chess; if it were the same, the outcome would be more widely variable.
- **Language is acquired, not learned**
    - Children **figure out the basic units** (sounds, words, categories)
    - And how these basic units are permitted to combine (**rules**)

Rules in language:

- **What are rules in language**?
  - Rules are **generalizations about patterns** (e.g. in English, we add -s to make nouns plural; add -ed to make the past tense of verbs).
  - Children acquire language by **hypothesizing possible rules** and then **trying them out**.
    (1) Hear adult language
    (2) Hypothesize a rule R0 to account for some aspect of adult language
    (3) Speak using rule R0
    (4) Go back to Step 1, but try to improve the rule (replacing it with R1)
- **What evidence do we have that children acquire such rules**?
  - **Productivity**: Many rules in language are productive, meaning we can apply them to novel words (e.g. "googled"). We can ask whether children have acquired rules by asking them to apply rules productively in experiments (Jean Berko-Gleason's famous wug test)
  - **Overgeneralization**: And we can observe children apply these rules to cases where the adult language does not ("I singed the song"). We call this overgeneralization.
- **Can children learn any rules**?
  - There seem to be **constraints on the types of rules** children are willing to posit in acquisition.

Are there **constraints on word learning**? Yes!

- The **whole object assumption**: children assume a word refers to the whole object, not a part (the bunny, not it's fur or ears).
- The **mutual exclusivity principle**: given a new word, children will choose to apply it to an object without a name, rather than an object they already know the name of.
- The **shape bias**: children assume a label applies to the object's shape, not it's color or pattern.
- Research methods: These experiments are often conducted by asking children to make a choice between two or more objects.

When do children learn grammar?

- When you are really small, you might say a word here and there "dog, "baby", etc. Eventually, though, you need to move beyond single words and combine them into sentences according to the rules of your language.
- By the time they are two, many children can show us they know which things are subjects and which things are objects in their language (**word order**).
- Researchers often use the **preferential looking paradigm** to ask what toddlers know about grammar. Children see two videos side-by-side and hear a sentence. For example, the child might hear "big bird is *gorping* cookie monster" and see a video of cookie monster tickling big bird and another of big bird tickling cookie monster. We know children appreciate word order if they look at the correct video (where big bird is doing the tickling).

Language acquisition starts even earlier, at lower levels of representation. One important question we could ask is: **Are we born knowing the sounds of our language? Or do we need to learn them from experience?**

- English has two liquid consonants ('r' and 'l'), Japanese has one. Japanese speakers have difficulty distinguishing the English sounds.
- This is due to **categorical perception**. Because the Japanese language does not distinguish between 'r' and 'l', speakers group them into a single category and perceive them as the same.

- To ask whether we are born with these distinctions or learn them, Werker and Tees asked whether English speaking adults and babies could tell the difference between /ki/ and /qi/, a distinction not made in English (but made in other languages, include the Thompson language).
    - Adults were asked to press a button when they hear a sound change. Babies were trained to turn their head to the side (**conditioned head turn procedure**) when they heard a sound change (by having an engaging display of toys beside them light up and move). During the test, they delayed when the toys would turn on (just a bit after the sound changed). If the babies turned their head when the sound changed, before the toys turned on, that would indicate they hear the difference. If they wait until the toys come on, they don't.

General Features

Corresponds to the second acquisition lecture and the reading

All languages are equal. All human languages share fundamental properties. Of course they are not identical, but in a deep way they are all equal. This week, we discussed this equality in:

(1) **Acquisition**: all human languages are acquired by children in the same general way, using their language instinct.
(2) **Complexity**: all human languages have complex rules for phonology, morphology, and syntax.
(3) **Expressiveness**: All human languages are equally capable of expressing complex thoughts.

Equivalence in Acquisition | Acquisition as re-invention. What happens when children are raised in an environment without a fully formed language? We discussed evidence from a family of 'natural' experiments.

(1) **Pidgins vs. Creoles**: Various social contexts lead to groups of people from different backgrounds having to work together. They lack a common language, so a rudimentary language emerges. This is called a **pidgin**.
    - Pidgin languages **don't have a fully fleshed out grammatical system**; rather, they have a **strong dependence on context to infer meaning**.
    - Miraculously, children who are exposed to the pidgin as their native language not only learn the language perfectly fine, they actually change (improve!) it, turning into a **creole**, with a fully fleshed out grammatical system.
        - Miraculous, because they weren't exposed to a full-fledged language with a standard complex grammar; but their mental acquisition device turned what they heard into such a system.
(2) **Nicaraguan Sign Language**: Until 1979, deaf children in Nicaragua were relatively isolated from one another. These children typically communicated with their families with a rudimentary gestural system (**homesign**). During the Sandinista take-over, schools for the deaf were created and Deaf children were brought together for the first time.
    - Initially, a lot of energy was put in to try to teach the children speech and/or to lip read, but this mostly failed.
    - Meanwhile, the community of children quickly evolved a **pidgin** language by bringing together aspects of their home sign systems. Children who were in their early teens when the school started continued using this pidgin: Lenguaje de Signos Nicaraguense (LSN)
    - Younger children who entered the school observed the pidgin language of their older peers and their use of the signing system took on a new life of its own! Soon, they turned

the language into something far more grammatically rich. Today, this is a full-blow sign language of its own, known as Idioma de Signos Nicaraguense (ISN).
    - Again, children were exposed to language without a fully developed grammar and they turned what they saw into such a language.

(3) **Deaf children without native input:** The LSN case is an extreme version of something that happens much more commonly: Deaf children born to hearing parents or deaf parents who only learned to signed late in life.
    - Singleton and Newport studied one such case: **Simon**. Simon's parents learned to sign late in life (so, non-native speakers who made frequent mistakes), but they were Simon's only language input.
    - In spite of this, Simon turned out to be a much better signer than his parents, on par with children who learned to sign from native speakers.

Language acquisition quite generally involves what **essentially amounts to reinvention of the language.** Because all languages are acquired in the same way, they share core features. **The deeper structural commonalities of the world's languages reflect the constraints placed on possible human languages.**

Equivalence in Complexity: All languages exhibit comparable structural complexity based on rules on multiple levels (sounds, words, sentences). Languages simply vary in how much complexity is present in each level.

- An example: English has little morphology, and depends on word order to encode crucial information. Yupik Eskimo encodes most information with suffixes.
- Dialects are another example. It's a common misconception that a particular dialect is the 'right' or 'standard' one. There is no linguistically special status for 'standard' dialects. African American Vernacular English (AAVE) for example has its own intricate grammatical system, which in some ways diverges substantially from standard English (more on this in the week on Variation).

Equivalence in Expressiveness: All human languages are equally capable of expressing complex thought.

- A famous counter-hypothesis by Sapir and Whorf is that language determines thought.
    - Whorf claimed that the Hopi have no tense marking on verbs and no word for time, thus Hopi people have no sense of time.
    - But, a counter example: "then indeed, the following day, quite early in the morning at the hour when people pray to the sun, around the time then he woke up the girl again".
- But, don't some languages have simpler, less complex vocabulary than a language like English?
    - Nope! Vocabulary is closely linked to culture. Complex areas of culture have complex vocabularies. All languages readily add new words when culture changes (texting!). This is much different than the rules of language, which tend to change much more slowly.
    - An example is the popular myth that Eskimo's have 100 words for snow. They actually only have two: **qanik**, for snow in the air and **aput**, for snow on the ground. Of course they can say many more things about the properties of snow, but so can avid skiers, extreme mountain climbers, etc. in English.