LSci 51/Psych 56L: Acquisition of Language

Lecture 10
Phonological development III
Announcements

Be working on the phonological development review questions

Be working on HW3 (due 10/28/19)
Phonological development once speech begins
Sample speech

15-month-old talking about the vegetables she’s eating
First words: simple syllable structure, often single syllables or reduplicated syllables (baba, dada). Usually involve the sounds that appear in the noncanonical babbling stage.

**Phonological idioms:** words the child produces in a very adultlike way while still incorrectly producing other words that use the very same sounds. This demonstrates that children don’t really understand that words are broken down into sounds (phonemes). Instead they’re just producing some words as unanalyzed chunks (like idioms).

Ex: “ball” [correct: ball, [bɔl]] vs. “widdle” [correct: little, [ɪrəl]]
“Babies find it easier to learn words with repetitive syllables rather than mixed sounds, a study suggests. Assessments of language learning in 18-month-olds suggest that children are better at grasping the names of objects with repeated syllables, over words with non-identical syllables. Researchers say the study may help explain why some words or phrases, such as 'train' and 'good night', have given rise to versions with repeated syllables, such as choo-choo and night-night.”

https://www.sciencedaily.com/releases/2016/05/160527112647.htm
18 months: children have developed systematic ways to alter the target language so it fits the sounds they’re able to produce (baby accent). These systematic transformations are called **phonological processes**. Most often children either drop the tough sounds (**deletion**) or replace them with sounds they can produce (**substitution**).

This happens a lot! More than 90% of words produced by some children show deletion or substitution processes.
Example of altered pronunciation

http://www.youtube.com/watch?v=4azD_gNz0rw&feature=player_embedded

Pronouncing “popsicle”
Example of altered pronunciation
- even younger

https://www.youtube.com/watch?v=ZeAEemZuqmE&index=5&list=PL22AF4C6D41EBA20B

1-year-old trying to imitate specific words
Example of phonological development

The evolution of “water”

http://www.ted.com/talks/deb_roy_the_birth_of_a_word.html
(4:19 - 5:40 of 19:52)
Why pronunciation is hard

https://www.youtube.com/watch?v=EDymvzP0uac&feature=youtu.be
Pronunciation is hard: 1:23-2:06
Deletion processes
Deletion processes

Deletion happens a lot to word-final consonants.

Final consonant deletion examples:

“dog” /dæg/  “bus” /bʌs/

“boot” /bʊt/  “because” /bɪkʌz/
Deletion processes

Deletion happens a lot to word-final consonants.

Final consonant deletion examples:

“dog” /dæɡ/ → “dah” /də/   “bus” /bʌs/ → “buh” /bʌ/

“boot” /bʌt/ → “boo” /bu/   “because” /biˈkʌz/ → “becah” /biˈkʌ/
Deletion processes

Deletion can also happen when more than one consonant appears together (consonant clusters).

Consonant cluster deletion examples:

“blanket” /blejŋkət/
“bring” /bɹɪŋ/
“bump” /bʌmp/
“stop” /stɑp/
“desk” /dɛsk/
“school” /skul/
Deletion processes

Deletion can also happen when more than one consonant appears together (consonant clusters).

Consonant cluster deletion examples:

“blanket” /bleŋkət/ → “banket” /bəŋkət/
“bring” /bɪŋ/ → “bing” /bɪŋ/
“bump” /bʌmp/ → “bup” /bʌp/
“stop” /stɑp/ → “top” /tæp/ 
“desk” /dɛsk/ → “dek” /dɛk/ 
“school” /skul/ → “kool” /kul/
Deletion of unstressed syllables:
Delete a syllable (usually more than one sound, and must include a vowel-like sound) if it is unstressed. (Unstressed syllables in English usually have the ə as their vowel.)

Unstressed syllable deletion process examples:
“giRAFFE” /dʒəɹæf/
“aWAY” /əwe/
“AlliGAtor” /æləgetər/
“baNAna” /bənænænə/
“BUtterFLY” /bʌtərflaj/
Deletion processes

Deletion of unstressed syllables:
Delete a syllable (usually more than one sound, and must include a vowel-like sound) if it is unstressed. (Unstressed syllables in English usually have the ə as their vowel.)

Unstressed syllable deletion process examples:
“giRAFFE” /dʒərəf/ —> “raffe” /rəf/
“aWAY” /əwe/ —> “way” /we/
“AlliGAtor” /æləgetər/ —> “agay” /æɡər/
“baNAna” /bənænə/ —> “nana” /nænə/ or just “na” /nə/
“BUtterFLY” /bʌtəflaj/ —> “bufly” /bʌflaj/
Substitution processes
Substitution processes

Substitution: **Stopping** process

https://www.youtube.com/watch?v=EDymvzP0uac&feature=youtu.be

Stopping process: 2:16-3:21
Substitution processes

Substitution: Stopping process
Replace a sound with a different manner of articulation (like a fricative) with a stop (consonant where air flow is completely stopped in the mouth). Note that the place of articulation (lips, alveolar ridge, velum, etc.) and voicing (vocal cords vibrating or not) does not change.

Stopping process examples:

“church” /tʃəutʃ/  
“sing” /sɪŋ/  
“zebra” /zibrə/  
“thing” /əɪŋ/  
“this” /ðɪs/  
“shoes” /ʃuəz/
Substitution processes

Substitution: **Stopping** process

Replace a sound with a different manner of articulation (like a fricative) with a stop (consonant where air flow is completely stopped in the mouth). Note that the place of articulation (lips, alveolar ridge, velum, etc.) and voicing (vocal cords vibrating or not) does not change.

**Stopping** process examples:

“church” /tʃərtʃ/ → “turt” /tərt/
“sing” /sɪŋ/ → “ting” /tɪŋ/
“zebra” /zɪbrə/ → “debra” /dɪbrə/
“thing” /θɪŋ/ → “ting” /tɪŋ/
“this” /ðɪs/ → “dis” /dɪs/
“shoes” /ʃuːz/ → “tood” /tʊd/
Substitution processes

Substitution: *Stopping* process

https://www.youtube.com/watch?v=EDymvzP0uac&feature=youtu.be
Stopping examples: 3:21-4:06
Substitution processes

Substitution: **Gliding process**

[https://www.youtube.com/watch?v=EDymvzP0uac&feature=youtu.be](https://www.youtube.com/watch?v=EDymvzP0uac&feature=youtu.be)

Gliding process: 4:06-4:20
Substitution: **Gliding process**
Replace a liquid sound like /l/ or /ɹ/ with a glide sound like /j/ or /w/.

**Gliding process examples:**

“lion” /læʃən/
“rabbit” /ræbət/
“look” /lʊk/
“rock” /ɹək/
“story” /stəɹi/
Substitution processes

Substitution: Gliding process
Replace a liquid sound like /l/ or /ɹ/ with a glide sound like /j/ or /w/.

Gliding process examples:

“lion” /ləˈjn/ —> “yion” /jəˈjn/
“rabbit” /ræˈbɛt/ —> “wabbit” /wæˈbɛt/
“look” /lʊk/ —> “wook” /wʊk/
“rock” /rɑk/ —> “wock” /wɑk/
“story” /ˈstɔrɪ/ —> “stowy” /stɔˈwi/
Substitution processes

Substitution: Gliding examples

https://www.youtube.com/watch?v=EDymvzP0uac&feature=youtu.be
Gliding examples: 4:20-4:58
Substitution processes

Substitution: **Fronting** process

https://www.youtube.com/watch?v=EDymvzP0uac&feature=youtu.be
Fronting process: 4:58-5:35
Substitution processes

Substitution: **Fronting** process
Replace a sound with a sound that is made more towards the front of the mouth. Note that the manner of articulation and the voicing do not change – just the place of articulation does.

**Fronting process examples:**

“thumb” /θʌm/
“ship” /ʃɪp/
“jump” /dʒʌmp/
“chalk” /tʃɔk/
“key” /ki/
“go” /ɡo/
Substitution processes

Substitution: Fronting process
Replace a sound with a sound that is made more towards the front of the mouth. Note that the manner of articulation and the voicing do not change – just the place of articulation does.

Fronting process examples:

“thumb” /θʌm/ —> “fumb” /fʌm/
“ship” /ʃɪp/ —> “sip” /sɪp/ or “thip” /θɪp/ or “fip” /fɪp/
“jump” /dʒʌmp/ —> “dzump” /dʒʌmp/
“chalk” /tʃɔk/ —> “tsalk” /tʃɔk/
“key” /ki/ —> “tey” /ti/ or “pey” /pi/
“go” /ɡo/ —> “doe” /do/ or “boe” /bo/
Substitution processes

Substitution: Fronting examples

https://www.youtube.com/watch?v=EDymvzP0uac&feature=youtu.be
Fronting examples: 5:36-6:36
Substitution processes

Substitution: **Denasalization process**

[https://www.youtube.com/watch?v=EDymvzP0uac&feature=youtu.be](https://www.youtube.com/watch?v=EDymvzP0uac&feature=youtu.be)

Denasalization process: 6:36-7:12

The same kind of thing happens when your nose can’t open up because you have a bad cold!
Substitution processes

Substitution: **Denasalization** process

Replace a nasal sound with a non-nasal sound. Note that the place of articulation (ex: labial), manner of articulation (ex: stop) and the voicing (ex: +voice) do not change. (You can get this effect yourself by holding your nose when you say words.)

**Denasalization** process examples:

“jam” /dʒæm/
“spoon” /spun/
“sing” /sɪŋ/
Substitution processes

Substitution: Denasalization process

Replace a nasal sound with a non-nasal sound. Note that the place of articulation (ex: labial), manner of articulation (ex: stop) and the voicing (ex: +voice) do not change. (You can get this effect yourself by holding your nose when you say words.)

Denasalization process examples:

“jam” /dʒæm/ → “jab” /dʒæb/
“spoon” /spun/ → “spood” /spud/
“sing” /sɪŋ/ → “sig” /sɪɡ/
Substitution: Denasalization process

https://www.youtube.com/watch?v=EDymvzP0uac&feature=youtu.be
Denasalization examples: 7:12-7:34
Substitution processes

Substitution: Assimilation process
A sound becomes more similar to another (usually nearby) sound by taking on one or more of that other sound’s features – voicing, place of articulation, manner of articulation. This is sometimes called consonant harmony or vowel harmony.

Assimilation process examples:
“pig” /pɪɡ/ —> “big” /bɪɡ/
“push” /pʊʃ/ —> “bush” /bʊʃ/
“duck” /dʌk/ —> “guck” /ɡʌk/
“doggy” /dɑɡi/ —> “goggy” /ɡɑɡi/
“self” /sɛlf/ —> “felf” /fɛlf/
“Kathleen” /kæeelin/ —> “Kakleen” /kæeklin/
Substitution processes

Substitution: Assimilation process
A sound becomes more similar to another (usually nearby) sound by taking on one or more of that other sound’s features – voicing, place of articulation, manner of articulation. This is sometimes called consonant harmony or vowel harmony.

Assimilation process examples:

“pig” /pɪɡ/ —> “big” /bɪɡ/ (/p/ takes on +voice of /g/)
“push” /pʊʃ/ —> “bush” /bʊʃ/ (/p/ takes on +voice of vowel)
“duck” /dʌk/ —> “guck” /ɡʌk/ (/d/ takes on +velar of /k/)
“doggy” /dəɡi/ —> “goggy” /ɡəɡi/ (/d/ takes on +velar of /ɡ/)
“self” /sɛlf/ —> “felf” /fɛlf/ (/s/ takes on +labiodental of /f/)
“Kathleen” /kæəlin/ —> “Kakleen” /kæklin/ (/ə/ takes on +stop, +velar of /k/)
Multiple processes

Often, more than one process will apply to a word - which makes the original word harder to decipher.

/bu/ = ????? (referent in world = poop)
/pup/ --->
final consonant deletion —> /pu/
assimilation [+voice] with vowel —> /bu/
Multiple processes

https://www.youtube.com/watch?v=EDymvzP0uac&feature=youtu.be
Multiple process examples: 7:34-7:56
Multiple process examples

“giraffe” /dʒəɹəɹ/ → “faffe” /fæɹəɹ/
   /dʒəɹəɹ/ → /ɹəɹəɹ/
   [unstressed syllable deletion]
   /ɹəɹəɹ/ → /fæɹəɹ/
   [assimilation: /ɹ/ picks up +labiodental, -voice from /f/]
Multiple process examples

“room” /rum/ —> “woob” /wub/

/rum/ —> /rub/

[stopping or denasalization]

/rub/ —> /wub/

[gliding]
Multiple process examples

“tent” /tɛnt/ —> “det” /dɛt/
/tɛnt/ —> /dɛnt/

[assimilation: /t/ picks up +voice of vowel (or /n/)]
/dɛnt/ —> /dɛt/

[consonant cluster deletion]
Multiple process examples

“cracker” /kraːkər/ → “gwa” /gwæər/
/kraːkər/ → /ɡrækər/

[assimilation: /k/ picks up +voice of /ɹ/ (or vowel)]

/grækər/ → /gwækər/

[gliding]

/gwækər/ → /gwæə/

[unstressed syllable deletion]
Multiple process examples

“water” /wɑɾəɹ/ → “gaga” /ɡɑɹeɪ/  
/wɑɾəɹ/ → /ɡɑɹeɪ/  
[stopping: voiced, velar /w/ becomes /ɡ/]  
/gɑɹeɪ/ → /ɡɑɹeɪ/  
[assimilation: voiced tap /ɾ/ picks up +velar, +stop of /ɡ/]  
/gɑɹeɪ/ → /ɡɑɹeɪ/  
[final consonant deletion]
Why do they make these errors?

Idea: Just a motor limitation. They can’t physically produce it all fast enough, but they can perceive the differences.

Child: “Gimme my guk!”
Father: “You mean your duck?”
Child: “Yes, my guk!”
Father (hands child the duck): “Okay, here’s your guk.”
Child (annoyed): “No, Daddy - I say it that way, not you.”
Why do they make these errors?

Idea: Just a motor limitation. They can’t physically produce it all fast enough, but they can perceive the differences.

But some contrasts are actually difficult for them to distinguish, such as /e/ from /f/ and /ʌ/ from /w/. Production errors for these may have a basis in perception - their speech sound representation isn’t quite right yet.

The jury is still out on the interaction between speech perception and speech production…
Recap: Phonological development

Given children’s incomplete development and lesser experience with the words of the language, they often make mistakes even producing words they’re familiar with. However, they make systematic mistakes, reflecting the underlying system they have for representing sounds.

Most of children’s errors may stem from motor limitations, since they seem able to perceive incorrect pronunciations but not correct their own. However, there are also some sounds that children have trouble perceiving correctly – which makes errors on those sounds likely due to perception issues.
Questions?

You should be able to do up through 9 on HW3, and up through 15 from the phonological development review sheet.