LSci 51/Psych 56L: Acquisition of Language

Lecture 10

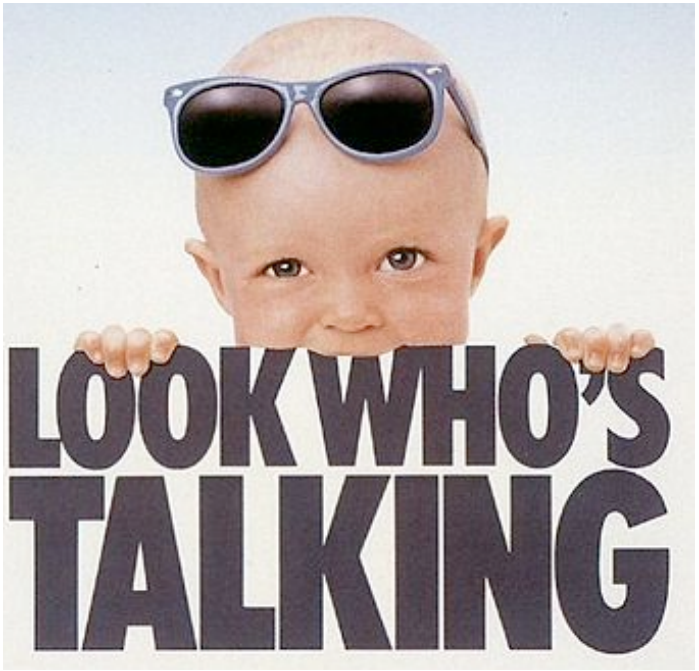
Phonological development III

Announcements

Be working on the phonological development review questions

Be working on HW3 (due 10/25/21)

Phonological development once speech begins



Sample speech

http://www.youtube.com/watch?v=j591kkLwauA&feature=related

15-month-old talking about the vegetables she's eating

Word production

[Extra]

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, [bɑl]] vs. "widdle" [correct: little, [lɪrəl]]

Word memory

“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

Phonological process development

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.

Meylan, Foushee, Bergelson, & Levy 2021: Adults (especially caregivers) engage in "child-directed listening", learning to adapt to the specific child they're trying to communicate with and decode that child's productions.

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” /dɑg/

“bus” /bʌs/

“boot” /but/

“because” /bikʌz/

Deletion processes

Deletion happens a lot to word-final consonants.

Final consonant deletion examples:

“dog” /dɑg/ —> “dah” /dɑ/ “bus” /bʌs/ —> “buh” /bʌ/

“boot” /but/ —> “boo” /bu/ “because” /bikʌz/ —> “becah” /bikʌ/

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/

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Consonant cluster deletion examples:

“blanket” /blejŋkət/ —> “banket” /bejŋkət/

“bring” /bɹɪŋ/ —> “bing” /bɪŋ/

“bump” /bʌmp/ —> “bup” /bʌp/

“stop” /stɑp/ —> “top” /tɑp/

“desk” /dɛsk/ —> “dek” /dɛk/

“school” /skul/ —> “kool” /kul/

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” /dʒəɹæf/

“aWAY” /əwe/

“AlliGAtor” /ælәgetəɹ/

“baNAna” /bənænə/

“BUtterFLY” /bʌtəɹflaj/

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"aWAY" /əwe/ —> "way" /we/

"AlliGAtor" /ælәgetəɹ/ —> "agay" /ægе/

"baNAna" /bənænə/ —> "nana" /nænə/ or just "na" /næ/

"BUtterFLY" /bʌtəɹflaj/ —> "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" /tʃəɹtʃ/

"sing" /sɪŋ/

"zebra" /zibrə/

"thing" /θɪŋ/

"this" /ðɪs/

"shoes" /ʃuz/

Substitution processes

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Stopping process examples:

"church" /tʃəɹtʃ/ —> "turt" /təɹt/

"sing" /sɪŋ/ —> "ting" /tɪŋ/

"zebra" /zibrə/ —> "debra" /dibrə/

"thing" /ɵɪŋ/ —> "ting" /tɪŋ/

"this" /ðɪs/ —> "dis" /dɪs/

"shoes" /ʃuz/ —> "tood" /tud/

[Extra]

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
Gliding process: 4:06-4:20

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" /lajən/

"rabbit" /ɹæbət/

"look" /lʊk/

"rock" /ɹɑk/

"story" /stɔɹi/

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" /lajən/ —> "yion" /jajən/

"rabbit" /ɹæbət/ —> "wabbit" /wæbət/

"look" /lʊk/ —> "wook" /wʊk/

"rock" /ɹɑk/ —> "wock" /wɑk/

"story" /stɔɹi/ —> "stowy" /stɔwi/

[Extra]

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" /ɵʌm/

"ship" /ʃɪp/

"jump" /dʒʌmp/

"chalk" /tʃɔk/

"key" /ki/

"go" /go/

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" /dzʌmp/

"chalk" /tʃɔk/ —> "tsalk" /tsɔk/

"key" /ki/ —> "tey" /ti/ or "pey" /pi/

"go" /go/ —> "doe" /do/ or "boe" /bo/

[Extra]

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
Denasalization process: 6:36-7:12

Substitution processes

Substitution: Denasalization process

Replace a nasal sound with a non-nasal sound. Note that the place of articulation (ex: labial), approximate 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), approximate 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" /sɪg/

[Extra]

Substitution processes

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" /pɪg/ —> "big" /bɪg/

"push" /pʊʃ/ —> "bush" /bʊʃ/

"duck" /dʌk/ —> "guck" /gʌk/

"doggy" /dɑgi/ —> "goggy" /gɑgi/

"self" /sɛlf/ —> "felf" /fɛlf/

"Kathleen" /kæθlin/ —> "Kakleen" /kæklin/

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" /pɪg/ —> "big" /bɪg/ (/p /takes on +voice of /g/)

"push" /pʊʃ/ —> "bush" /bʊʃ/ (/p/ takes on +voice of vowel)

"duck" /dʌk/ —> "guck" /gʌk/ (/d/ takes on +velar of /k/)

"doggy" /dɑgi/ —> "goggy" /gɑgi/ (/d/ takes on +velar of /g/)

"self" /sɛlf/ —> "felf" /fɛlf/ (/s/ takes on +labiodental of /f/)

"Kathleen" /kæθlin/ —> "Kakleen" /kæklin/ (/θ/ 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/ --->

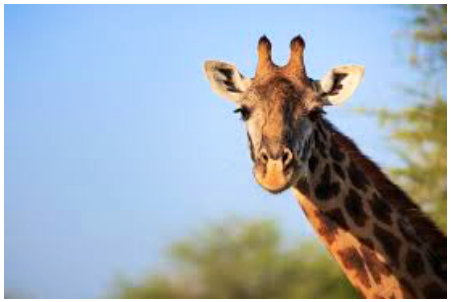
final consonant deletion —> /pu/

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” /dʒəɹæf/ —> “faffe” /fæf/

/dʒəɹæf/ —> /ɹæf/

[unstressed syllable deletion]

/ɹæf/ —> /fæf/

[assimilation: /ɹ/ picks up +labiodental, -voice from /f/]

Multiple process examples

“room” /ɹum/ —> “woob” /wub/

/ɹum/ —> /ɹub/

[stopping or denasalization]

/ɹub/ —> /wub/

[gliding]

Multiple process examples

“tent” /tɛnt/ —> “det” /dɛt/

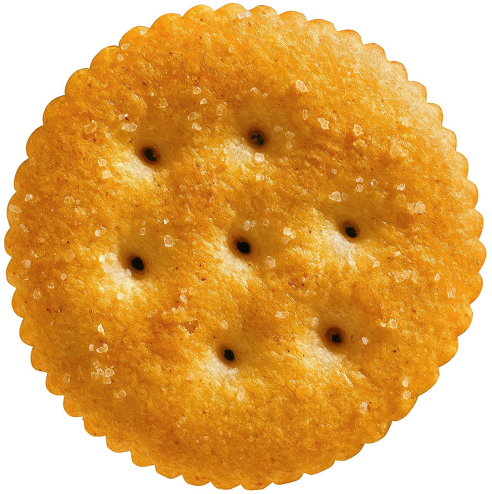
/tɛnt/ —> /dɛnt/

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

/dɛnt/ —> /dɛt/

[consonant cluster deletion]

Multiple process examples



“cracker” /kɹækəɹ/ —> “gwa” /gwæ/

/kɹækəɹ/ —> /gɹækəɹ/

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

/gɹækəɹ/ —> /gwækəɹ/

[gliding]

/gwækəɹ/ —> /gwæ/

[unstressed syllable deletion]

Multiple process examples

“water” /wɑrəɹ/ —> “gaga” /gɑgə/

/wɑrəɹ/ —> /gɑrəɹ/

[stopping: voiced, velar /w/ becomes /g/]

/gɑrəɹ/ —> /gɑgəɹ/

[assimilation: voiced tap /ɾ/ picks up +velar, +stop of /g/]

/gɑgəɹ/ —> /gɑgə/

[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.

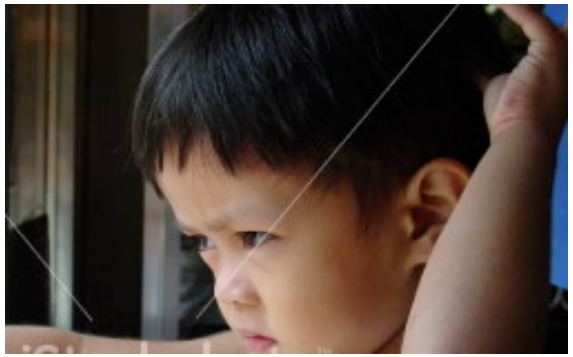
Child: "Gimme my guk!"

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 /ɵ/ from /f/ and /ɻ/ 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.