Psych 56L/ Ling 51:
Acquisition of Language

Lecture 8
Phonological Development III

Announcements

Be preparing for the midterm on 2/09/12 (review questions, HW1, first part of HW2)
- Given through EEE
- Can be taken either in SSL 270, the computer lab in SBSG G241, or wherever there's an internet connection

Midterm review 2/07/12 in class: Remember to bring questions!

HW2 due 2/23/12

Remember to pick up your graded HW1

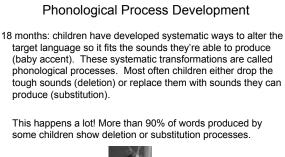## Phonological Development Once Speech Begins

---

Word Production

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), and are just producing some words as unanalyzed chunks (like idioms).

Ex: "ball" [correct: ball, [bɑl]] vs. "wi'w" [correct: little, [lɪɾəl]]

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.

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)

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" /bɪɪŋ/ → [   ]
"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" /blejŋkət/ → "banket" /bejŋkət/
"bring" /bɪɪŋ/ → "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 includes 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" /əwej/ [   ]
"AlliGAtor" /æləgejtəɹ/ [   ]
"baNAna" /bənænə/ [   ]
"BUtterFLY" /bʌtəɹflaj/ [   ]

Deletion Processes

Deletion of unstressed syllables:
Delete a syllable (usually more than one sound, and includes 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/ → "raffe" /ɹæf/
"aWAY" /əwej/ → "way" /wej/
"AlliGAtor" /æləgejtəɹ/ → "agay" /ægej/
"baNAna" /bənænə/ → "nana" /nænə/
"BUtterFLY" /bʌtəɹflaj/ → "bufly" /bʌflaj/

Substitution Processes

Substitution: Stopping process

Replace a fricative (consonant produced with continuous flowing air) with a stop (consonant where air flow is completely stopped). 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" /əɪŋ/ → [ ]
"this" /ðɪs/ → [ ]
"shoes" /ʃuz/ → [ ]

Substitution Processes

Substitution: Stopping process

Replace a fricative (consonant produced with continuous flowing air) with a stop (consonant where air flow is completely stopped). 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/ → "turt" /təɹt/
"sing" /sɪŋ/ → "ting" /tɪŋ/
"zebra" /zibrə/ → "debra" /dibrə/
"thing" /əɪŋ/ → "ting" /tɪŋ/
"this" /ðɪs/ → "dis" /dɪs/
"shoes" /ʃuz/ → "tood" /tud/

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" /ɹæbɪt/ → [ ]
"look" /lʊk/ → [ ]
"rock" /ɹɑk/ → [ ]
"story" /stɔɹij/ → [ ]

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" /ɹæbɪt/ → "wabbit" /wæbɪt/
"look" /lʊk/ → "wook" /wʊk/
"rock" /ɹɑk/ → "wock" /wɑk/
"story" /stɔɹij/ → "stowy" /stɔwij/

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 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" /kij/ →

"go" /gow/ →

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/

"jump" /dʒʌmp/ → "dzump" /dzʌmp/

"chalk" /tʃɔk/ → "tsalk" /tsɔk/

"key" /kij/ → "tey" /tij/

"go" /gow/ → "doe" /dow/

Substitution Processes

Substitution: Assimilation process
A sound becomes more like 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 (consonant harmony) process examples:
"pig" /pɪg/ → "big" /bɪg/ [ ]
"push" /pʊʃ/ → "bush" /bʊʃ/ [ ]
"duck" /dʌk/ → "guck" /gʌk/ [ ]
"doggy" /dɑgij/ → "goggy /gɑgij/ [ ]
"self" /sɛlf/ → "felf" /fɛlf/ [ ]
"Kathleen" /kæəlijn/ → "Kakleen" /kæklijn/ [ ]

Substitution Processes

Substitution: Assimilation process
A sound becomes more like 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 (consonant harmony) 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" /dɑgij/ → "goggy /gɑgij/ (/d/ takes on +velar of /g/)
"self" /sɛlf/ → "felf" /fɛlf/ (/s/ takes on +labiodental of /f/)
"Kathleen" /kæəlijn/ → "Kakleen" /kæklijn/ (/ə/ takes on +stop, +velar of /k/)

Phonological Process Development

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 = /bu/

Multiple process examples

"giraffe" /dʒəɹæf/ → "faffe" /fæf/

[ ]

"room" /ɹuwm/ → "woob" /wuwb/

[ ]

Multiple process examples

"giraffe" /dʒəɹæf/ → "faffe" /fæf/
   /dʒəɹæf/ → /ɹæf/
      [unstressed syllable deletion]
   /ɹæf/ → /fæf/
      [assimilation: /ɹ/ picks up +labiodental, -voice from /f/]

"room" /ɹuwm/ → "woob" /wuwb/
   /ɹuwm/ → /ɹuwb/
      [stopping or denasalization]
   /ɹuwb/ → /wuwb/
      [gliding]

Multiple process examples

"tent" /tɛnt/ → "det" /dɛt/

"cracker" /kɹækəɹ/ → "gwa" /gwæ/

Multiple process examples

"tent" /tɛnt/ → "det" /dɛt/
   /tɛnt/ → /dɛnt/
      [assimilation: /t/ picks up +voice of vowel (or /n/)]
   /dɛnt/ → /dɛt/
      [consonant cluster deletion]

"cracker" /kɹækəɹ/ → "gwa" /gwæ/
   /kɹækəɹ/ → /gɹækəɹ/
      [assimilation: /g/ picks up +voice of /ɹ/ (or vowel)]
   /gɹækəɹ/ → /gwækəɹ/
      [gliding]
   /gwækəɹ/ → /gwæ/
      [unstressed syllable 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 /ɹ/ 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 producing even 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 question 2 on HW2, and all of the questions from the phonological development review sheet