Child Language III

LIGN 170, Lecture 14

Today

- Later stages of normal language development
- Developmental disorders relating to language

Quantifying language stages

- Mean Length of Utterance (MLU)
  - Take 100 of child's utterances
  - Count morphemes per utterance
  - Because children develop language skills at different rates this is a better measure than age

Stage 1

- MLU = 1.75 (around 24 months)
- "Two-word Stage" - putting words together
- First combinations:
  - Negation: "No bed"
  - Recurrence: "more milk"
  - Nonexistence: "All gone cookie"
  - Notice: "Hi, Daddy!"

Stage 1

- Later combinations:
  - Actor + Action: “daddy eat”
  - Modify Noun: “bad doggie”
  - Possession: “David shoe”
  - Location: “kitty table”
  - Action + location: “go store”
  - Action + object: “eat lunch”
  - Actor + object: “mommy lunch”

Stage 2

- MLU = 2.25 (around 2.5 – 3 years old)
  - Grammatical morphemes begin to appear
    - Learning to modulate meaning of utterances with grammatical morphemes

Stage 2

- Average order of acquisition of some grammatical morphemes in English

1. Present Progressive	I playing
2. Prepositions	in , on
3. Plural	balls
4. Irregular past tense	broke, fell, threw
5. Possessive	daddy's chair
6. Articles	a, the
7. Regular past tense	she walked
8. 3rd person pres. tense, regular	she walks

Over-regularization

- U-shaped learning
  - Three stages

(1)	(2)	(3)
uses word in correct form (“went”)	overregularizes regular morpheme (“go-ed”)	uses correct form again (“went”)

Stages 3 & 4

- Stage 3: MLU = 2.75 (3 – 3.5 years)
- Stage 4: MLU = 3.5
- Negatives: "can't" and "don't" are used (but no affirmative "can" or "do")
  - "That not mine"
  - "I no eat it"
  - "I can't see"

Stage 5

- MLU = 4 (3.5 – 4 years)

- Negatives: Place negation on auxiliary
  - "That isn't mine"
  - "I didn't eat it"

And beyond…

- Meta-linguistic knowledge
  - Monitoring own language
  - Playing around with language
  - Making judgments about how good an utterance sounds
  - Deciding how well one has understood something just read or heard

Meta-linguistic knowledge

- Children can't do these kind of things with language right away
  - Even up to 6th grade, children will claim that instructions that are inconsistent make sense to them

Learning from jokes

- Meta-linguistic knowledge of phonological structure in preschool children
  - “watermelon” --> “fatermelon”
  - “rhinoceros” --> “rhinoceropile”
- Can play with the phonological forms of words

Learning from jokes

- Meta-linguistic knowledge of lexical ambiguity in school-aged children
  - Riddles

    Q: Do you believe in clubs for young people?

    A: Only when kindness fails

Learning from jokes

- Meta-linguistic knowledge of morpheme boundaries at around 12 years of age

  Q: Why is the man in the fish market stingy?

  A: Because his job makes him sell fish (selfish)

Summary

- Later language acquisition goes through stages
  - How words are combined
  - When inflections are learned
  - Meta-linguistic knowledge gained

Developmental disorders

Developmental impairments

- Language impairment without cognitive impairment
- Cognitive impairments without language impairments
- Cognitive impairment with language impairments

Developmental impairments

- Language impairment without cognitive impairment
- Cognitive impairments without language impairments
- Cognitive impairment with language impairments

Developmental impairments

- Language impairment without cognitive impairment
- Cognitive impairments without language impairments
- Cognitive impairment with language impairments

Specific Language Impairment (SLI)

- Otherwise normally functioning children:
  - Score at age-appropriate levels on tests of nonverbal intelligence
  - Exhibit normal hearing
  - Show no signs of gross neurological impairment
  - Show no behavioral symptoms indicative of autism

Specific Language Impairment (SLI)

- Delayed onset of grammatical morphemes
- Less use of grammatical morphemes
- Precise grammatical deficits differ depending on language, including:
  - verb inflection
  - word order

Example

- German (V2) verb second rule violations:
  - Nonfinite verbs in German go last,
  - Finite verbs go second in the sentence.

- German children with SLI will often put verbs last even when they are tensed

SLI

- Lasting impairment
  - Preschoolers with SLI were assessed at 8.5 and 15 years old
    - Performed worse than age-matched controls on tests of:
      - reading, spelling, reading comprehension

SLI

- Lasting impairment
  - Fallen further behind age-matched controls at age 15
  - However, over 35% had reading skills within the normal range

Phonological impairments

- 2.5% of children have been diagnosed with specific phonological impairment
  - Otherwise cognitively normal children
  - Characterized by sound organization problems

Phonological impairments

- Organization of speech sound system is not correct
  - sheep –> [tip]
  - BUT can produce [ʃ]!
    - sleep --> /ʃ ip/

Phonological impairment

- Errors not due to phonetic context:
  - lion --> [la]
  - light --> [da]
- Errors of omission and substitution greatly outnumber errors of within-phoneme distortions

Phonological impairment

- Higher percentage of dramatic errors:
  - [s] for /h/
  - [l] for /w/
  - [l] for /k/, /t/, and /g/
  - [v] for /d/ and /g/
  - [θ] for /f/ and /w/

Phonological impairment

- Example: one child produced [s] in word-final position for all words whose adult forms did not end in /m/, /b/ or /p/
- Example: one child's substitutions served to prevent nasals and stops from appearing in the same word

Phonological impairment

- Some children will produce consonants not found in the target language, or consonant-like sounds not found in any language (snorts)
- Less systematicity in errors than non-phonologically impaired children

Phonological impairment

- Long-term affects:
  - Improvement with age
  - Even into adulthood individuals perform below the level of control groups for a range of speech, reading, spelling, and phoneme awareness tasks

Implications

- Language-specific deficits can be used to argue in favor of a language system that is distinct from other cognitive systems
  - Nativism

Cognition and Language

- Language impairment without cognitive impairment
- Cognitive impairments without language impairments
- Cognitive impairment with language impairments

Down's Syndrome

- Language production:
  - Pre-linguistic communicative signals
  - Give social-communicative signals as often as development-matched controls
    - looking, reaching, touching, pointing, showing, giving, smiling, laughing

Down's Syndrome

- Phonology:
  - Substantial delays in the acquisition of stop consonants
  - Deletion of unstressed syllables
  - Production of initial fricatives and affricates as stops
  - Poorer intelligibility even in adolescents

Down's Syndrome

- Lexicon:
  - First 50 words are similar in content and word-form to normally developing children
  - Average acquisition time is delayed
  - Substantial individual variation

Down's Syndrome

- Syntax:
- Acquisition appears to be delayed
- Complex syntax not attained
  - Some debate about simpler syntax
    - Some studies: Basic syntax may be ultimately acquired
    - Some studies: Performance at chance on reversible passive/active sentences

Down's Syndrome

- Comprehension:
  - On target for mental age
  - Trouble remembering events associated with novel words in stories when meaning of those words had to be inferred from the story

Down's Syndrome

- Early syntax comprehension on target for mental age
  - But, lags in adolescence when compared with MA-matched controls
    - singular/plural, possessives, reflexives, verb inflections, passives
      - rely more on semantic plausibility than MA-matched controls

Down's Syndrome

- Possible direct interactions between language and other cognitive processes
  - Weaknesses in auditory short-term memory tasks could influence language processing/ development

Autism

- Covers a spectrum of impairments
  - Impairment(s) in social interaction
    - Nonverbal behaviors like eye-gaze
    - Sharing enjoyment/interests with others

Autism

- Impairments in communication
  - Delay/lack of development of spoken language
  - Stereotyped/repetitive use of language
  - Idiosyncratic language

Autism

- Stereotyped / Repetitive behavior
  - Preoccupation with interest that is abnormal in intensity or focus
  - Apparently inflexible adherence to specific non-functional routines or rituals
  - Mannerisms
  - Preoccupation with parts of objects

Autism

- General behaviors:
  - Lower scores on tasks requiring abstract thought, symbolism, or sequential logic
  - Upset by changes in routine/surroundings
  - Stereotypical, repetitive movements
  - Toys are often used in a compulsive and ritualistic manner
  - No functional language by the age of 5
  - Complete absence of joint attention by 18 months

Language impairments

- Some possibly related to difficulties with sharing attention

- Idiosyncratic language
  - Use their own names for objects rather than conventional name

Language impairments

- Mapping errors not found in normal language development
  - One child calls a toy truck a "sausage"
    - Mother recalls asking child to eat his sausage while he was playing with the truck
- Possibly due to the autistic child's inability to use direction of gaze and joint attention as cues for language learning

Language impairments

- Gesture
  - Can point to get a desired object
    - Proto-imperative use
  - Trouble using and understanding the use of pointing to share attention
    - Proto-declarative use

Autism

- Neologisms and echolalia are common
  - Echolalia: repeats what is said verbatim
    - May be used communicatively
      - Do you want a cookie?
- Children may be unaware of what phrase means, may simply associate it with getting a cookie

Autism

- Also, have trouble with pronouns
  - Referring to themselves as “you” or “he” /”she”
- Trouble with assigning meaning for words, breaking down phrases into words

Autism

- Literal language
  - Do not generalize the use of a phrase or word to new contexts
    - "Yes" = "yes, I want to be picked up"
      ≠ general affirmation
    - "Don't drop the cat" = general negation
- Trouble using language symbolically

Language and theory of mind

- Theory of mind:
  - Ability to identify mental states in other creatures and use that knowledge to predict behavior of that creature
    - See mental states as different from behavior
    - Acknowledge that other creatures have mental states different from your own

Language and theory of mind

- Key features of behavior resulting from having a theory of mind:
  - deception
  - imitation
  - self-recognition
  - role-taking
  - perspective-taking

- Open research question:
  - Do other animals have theory of mind?
    - Which ones, if so?

Language, theory of mind & autism

- Evidence for lack of theory of mind
  - Cannot attribute false belief to another individual
  - Don't comprehend that different people have access to different information
  - Cannot lie or engage in deceptive acts
  - Cannot make second order belief attributions
    - "Mary thinks that John thinks that it'll rain tomorrow"

Language, theory of mind & autism

- Logic: If you don't recognize that other people differ from you in terms of their beliefs, knowledge, ideas, motivations, perceptions, then why would you

  (a) share attention with them

  - (your attention is everyone's attention)

  (b) communicate with them

  - (they already know what you know)

Williams Syndrome

- Profile of Cognitive Impairment
  - Mild to moderate retardation according to IQ tests
  - But with complex pattern of spared/impaired skills
    - Profound impairments on spatial cognition and math
    - More mild impairments of facial expression recognition

Details and big picture

- 21 year old woman, IQ of 79
  - Reads books on vampires
    - "A man who climbs into ladies bedrooms at night and sinks his teeth into their necks"
    - "Vampires must have an inordinate fondness for necks"

from Bellugi et al. (2000)

Williams Syndrome

- Socially outgoing
- Oddly spared language:
  - Extremely fluent, syntactically complex language with a rich vocabulary

Williams Syndrome

- But, language skills pattern is complex
  - Excellent production with no understanding of their meaning
    - 4 year old girl: “encyclopedia Britannica”
  - Use words in related, but not quite appropriate ways
    - “evacuating” a glass (while pouring out liquid)

Williams Syndrome

- But, language skills pattern is complex
  - Abnormal semantic organization
    - Dominant and non-dominant meanings of ambiguous words apparently equally dominant

- Syntax is apparently preserved, but semantic/ lexical meaning is abnormal
- Phonological development is also abnormal

Summary

- Possible to have developmental language disorders with out any other cognitive deficits
  - Specific Language Impairment
  - Specific Phonological Impairment

Summary

- Some developmental disorders target several areas of cognition, including language
  - Down's Syndrome
  - Autism
  - Williams Syndrome
- Evidence against language as completely distinct from other cognitive skills