Is language innate or learned?

- **Nativist (Chomsky)**
  - Innate language acquisition device (LAD)
  - Localization of language in brain

- **Behaviorist (Skinner)**
  - Reinforcement and imitation
  - Gradual mastery

- **Interactionist**
  - Combine innate capacity and social environment
Chomsky: Universal grammar

- Chomsky’s theory
  - Proposed innate language skills
- Phase structure grammar
  - Allows for generativity
  - “Visiting relatives can be a nuisance.”
- Transformational rules:
  - Surface: actual words
  - Deep: meaning of sentence
  - Transformational rules:
    Conversion of deep to surface structure
Deep vs surface structure

- “Change the towels in the green bathroom”
- “Dust the furniture”
- “Draw the drapes when the sun comes in”
- “Trim the fat before you put the steak in the icebox”
- “And please dress the chicken”
- “Lexical ambiguity”
Grammar development

- Do kids learn language by:
  - Memorizing what they hear (learned) OR
  - By learning the rules (innate)

- Steven Pinker’s research
  - $1 \text{ Wug} + 1 \text{ Wug} = 2 \text{ Wugs}$

- Innate device to learn the rules:
  - Syntax: learn how to arrange words
  - Morphology errors: overgeneralize rules
When a person pauses in mid-sentence to choose a word, that's the best time to jump in and change the subject.

It's like an interception in football! You grab the other guy's idea and run the opposite way with it.

The more sentences you complete, the higher your score! The idea is to block the other guy's thoughts and express your own. That's how you win!

Conversations aren't contests! OK, a point for you, but I'm still ahead.
Characteristics of conversation: Pragmatics

- Conversational rules
  - Grice’s (1975) rules: Cooperative principles
    - Quantity; Quality; Manner; Relevance; Partner’s level
  - Turn taking rules
- Gestures and other body language
- Social roles
  - Formal vs. informal conversation
- Topic maintenance vs. topic shift
  - Rules to provide evidence of comprehension
- Other rules:
  - Tailor speech to audience
  - Second-order theory: what does person think about you
Speech production: Errors

- Memory process
  - Words
  - Grammatical rules

- Method
  - Examine speech errors
  - Freudian slips

- Baars et al (1975)
  - Non-word slips 3x less likely

- Phoneme exchange
- Word exchange
- Word substitution

- Shift
  - She decide to hits it (she decides to hit it)

- Exchange
  - Your model renosed (your nose remodeled)

- Perseveration
  - He pulled a pantrum (he pulled a tantrum)

- Blend
  - To explain clarefully (to explain clearly/carefully)
Do these speakers think differently b/c of how they talk?

- English: “the elephant ate the peanuts”
- Mandarin: when event occurred is optional separate word
- Russian: need tense and gender on verb, and if ate all or portion of the peanuts
- Turkish: must specify if event was witnessed or hearsay

- US English: “making money”
- English: front/back terms for time
- Mandarin: also up/down metaphors for time
Sapir-Worf hypothesis or Linguistic relativity hypothesis

- Language shapes how we think and perceive
  - Strong version: controls thoughts
  - Weak version: influences thoughts
  - Another alternative: Changes what we pay attention to

- Cross-cultural tests
    - Color identification for British and Berinmo (New Guinea)
    - Result: British 8 color names; Berinmo 5
    - Categorical perception: harder to discriminate stimuli in same category
Boroditsky’s et al. (2002)

- Spanish and German speakers tested in English
  - Examine objects with opposite grammatical gender assignments in 2 languages
- Experiment 1: Proper names assigned to objects
  - Apple = Patrick or Patricia
  - Results: Consistent object-name was remembered better
- Experiment 2: Name 3 adjectives for objects
  - Results: adjectives consistent with grammatical gender
    - German “key”: hard, heavy, jagged, metal, useful
    - Spanish “key”: golden, intricate, little, lovely, shiny
- Experiment 3: Rated similarity of pictures of objects and people
  - Results: Similarity ratings consistent with grammatical gender
Neuroimaging of language

- PET: measure blood flow
- Procedure:
  - Present increasingly complex language task
  - Subtract baseline procedure
- Findings:
  - Visual process: occipital cortex
  - Auditory process: temporal cortex
  - Speaking: parietal cortex
  - Generate meaning: frontal and temporal cortex
- Language mapping:
- Bilinguals:
  - [http://home.allgaeu.org/ndoell/work/neurobiling.htm](http://home.allgaeu.org/ndoell/work/neurobiling.htm)
Syntax vs semantics

- Osterhout et al. (1997)
- ERPs

(b) How semantics affects N400
(c) How syntax affects P600