



Overview of language chapter

- What is language?
- Perception
 - Perceiving sounds, words
- Comprehension
 - Word level (word frequency, lexical ambiguity)
 - Sentence level (parsing)
 - Text/story level (inferences)
- Production
 - Conversation (semantic & syntactic coordination)
- Culture, language & cognition
 - Sapir-Whorf hypothesis



Language research

- Psycholinguistics
- General structure and rules of language
- Acquisition
- Comprehension
 - Spoken or written
 - Words to sentences
- Production
 - Physical and mental
- Representation of info
- Neuroscience
 - Broca's and Wernicke's areas



Language

- Definition: shared symbolic system for communication
 - Human speech vs Sign language vs Animal communication
- Linguistic universals
 - Semanticity: meaningful
 - Arbitrariness: random connection between sound and meaning
 - Flexibility of symbols: can change
 - Naming: everything can be named
 - Displacement: future or past tense
 - Productivity or generativity: can create new

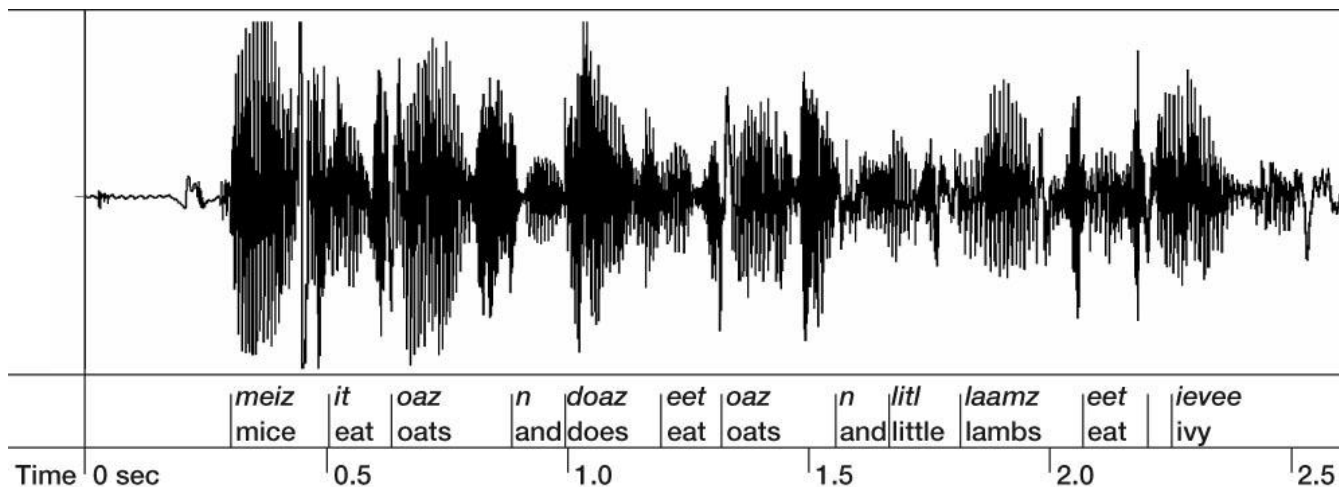


Structure of language

- Structure RULES
 - Grammar: complete set of rules to produce sentence
 - Phonology: sounds into words
 - Syntax: word order into sentences
 - Semantics: communicate meaning (word or sentence)
- Word level
 - Phonemes: smallest units of sound (/b/)
 - Morphemes: smallest unit with meaning
 - Lexicon: knowledge of word meaning, sounds, etc.
- Sentence level
 - Hierarchy: words - phrases - sentences
- Pragmatics: social rules

Perceiving sounds & words

- Phonemic restoration effect
 - Warren (1970): cough replaces phoneme
- Speech segmentation
 - Pronunciation of words in sentence different than alone
 - Coarticulation – sounds mush together
 - Pollack & Pickett (1964): only 50% acc for recognizing individual words Ss previously said within a conversation





Understanding words

- Question: What factors influence ability to understand words?
- Word frequency effect
 - Lexical decision method; eye tracker method
 - Faster RT for high frequency vs low frequency words
- Context effects
 - Identify words alone or in conversational speech
 - Faster RT if words fit expected schema for sentence
- Lexical ambiguity
 - Lexical priming method
 - Words can have multiple meanings – need context of sentence to clarify
- Semantic ambiguity
 - Garden path sentences

Lexical ambiguity

FRANK^{AND} ERNEST[®]

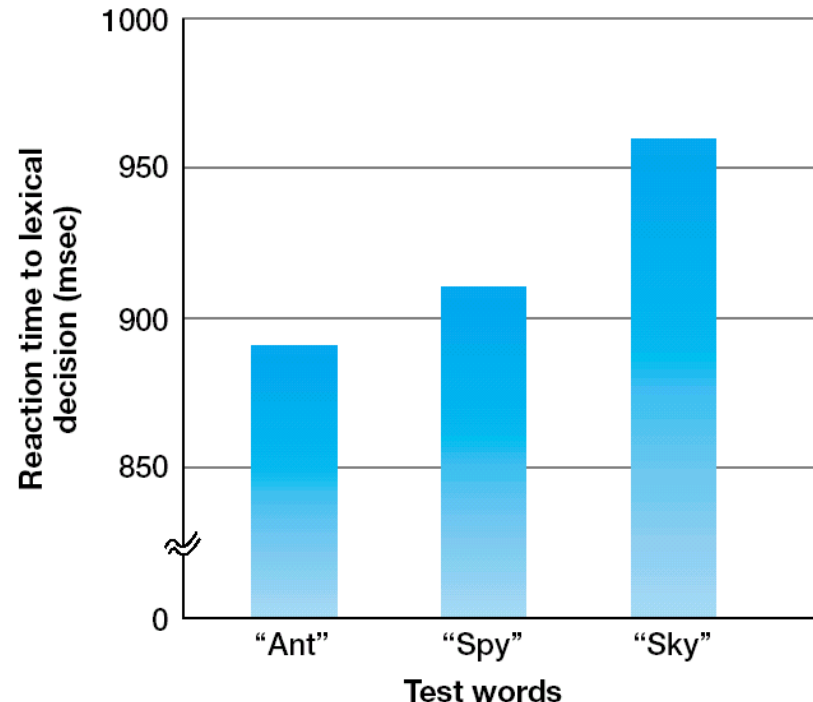


Lexical ambiguity

Swinney (1979)

- Examine access to meaning of ambiguous words
- Method: Listen to sentence & lexical decision
- Results: RT same to “ant” and “spy” when hear “bug”
 - Immediately access both meanings
 - 200ms later: “ant” faster
- Conclusion: Context takes time

“Rumor had it for years, the govmt building had been plagued with problems. The man was not surprised when he found several spiders, roaches, and other bugs in the corner of the room.”

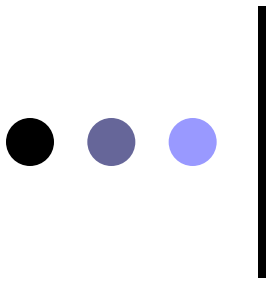




Syntactic ambiguity

“The spy saw the man with the binoculars”

- How do we separate a sentence into smaller phrases
 - Mechanism: Parser
- Method: garden-path sentence
 - “The horse raced past the barn fell.”
 - “The horse (that) raced past the barn fell.”
 - Temporal ambiguity
- Syntax-first approach
 - Use syntax to infer meaning
 - *Late closure*: “B/c he always jogs a mile seems like a short distance to him.”
- Interactionist approach
 - Simultaneous use of semantics and syntax

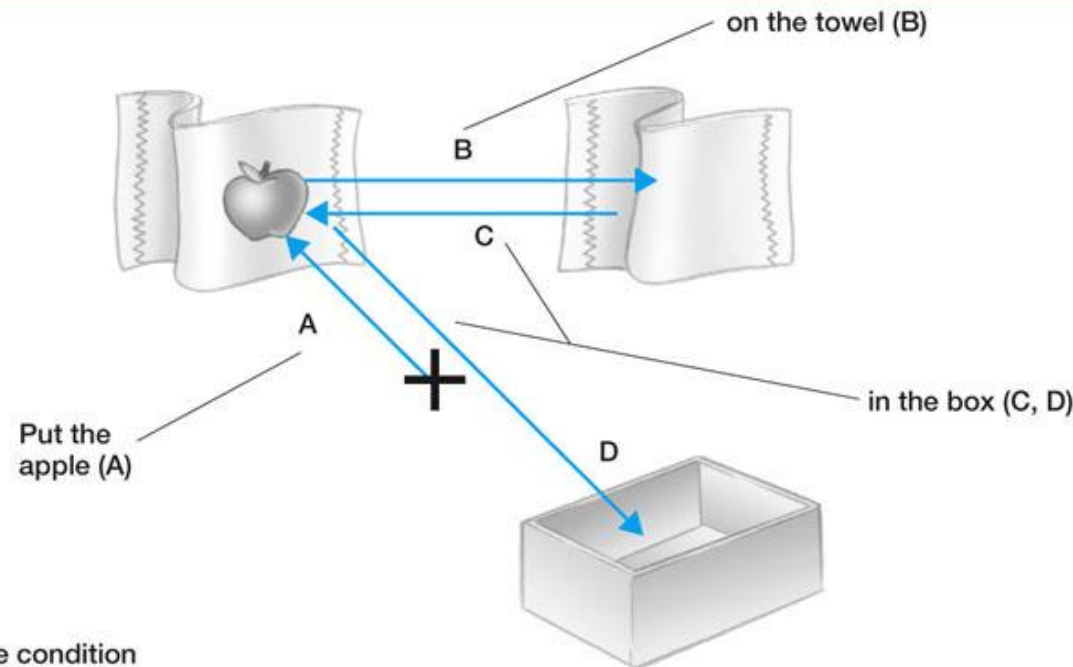
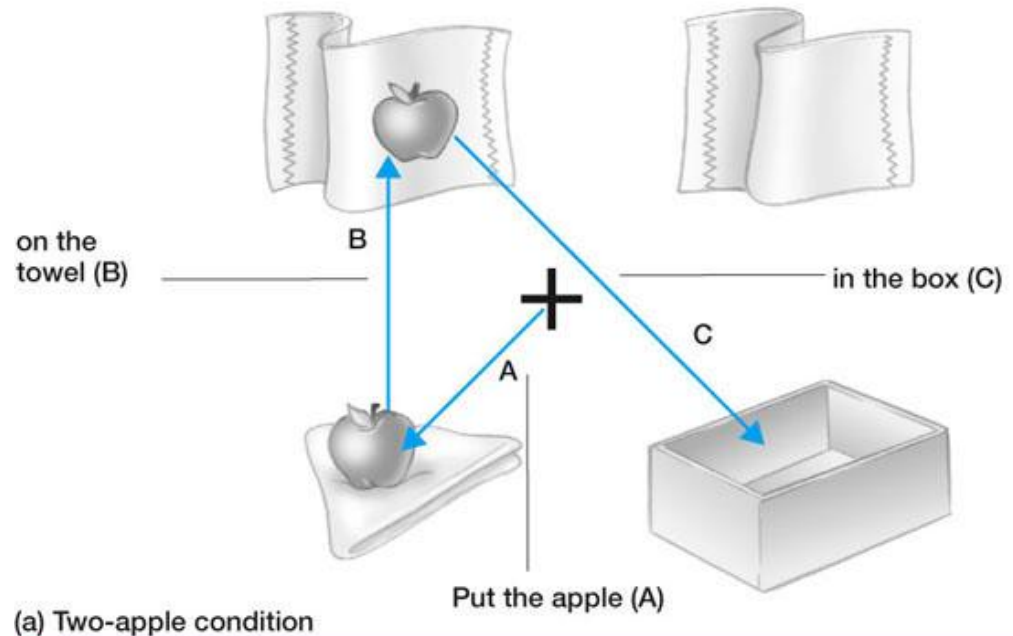


- Tanenhaus et al. (1995)

- Eye-tracker

- “Put the apple on the towel in the box.”

- Interactionist approach support





Factors that affect comprehension of sentences

- Negatives
 - Longer to verify negative sentences
 - “Few people strongly deny that the world is not flat.”
- Passive voice
 - Surface structure: Active vs. passive
 - Ferreira et al (2002): likely sentence?
 - “The man bit the dog.”
 - “The dog was bitten by the man.”
- Nested structure
 - Embedded phrases
 - Requires more memory
- Ambiguity
 - Use of top-down processing to comprehend
 - Newspaper headlines: “stolen painting found by tree” or “kids made nutritious snacks”



Speech production: Conversations

- Semantic coordination
 - Given-new contract
- Syntactic coordination
 - Syntactic priming: use same wording
- Branigan et al. (2000)
 - Method: confederate reads statement
 - Ss find matching card and describe card
 - Result: 78% grammatical match
 - Conclusion