Psychological background to linguistic theories

LING611 Spring 2021

Brian Dillon
Shota Momma

University of Massachusetts, Amherst
Department of Linguistics

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Course information

Instructors:

- Brian Dillon (bwdillon@umass.edu)
- Shota Momma (snegishi@umass.edu)

Time & Location:

- MW 4:00-5:15pm, Zoom: 913 1915 2984, Pass: 409902

Course website:

- https://blogs.umass.edu/snegishi/teaching/ling611-psychological-background-to-linguistic-theories/
- All the papers can be downloaded from the website

Course requirements

Assignments:

- Lab assignments x 3
  - ▶ Lab 1: Categorical perception
  - ▶ Lab 2: Syntactic priming
  - ▶ Lab 3: Experimental design
- Discussion on readings using "Hypothesis" (https://web.hypothes.is/)
- Final project
  - ▶ Final project presentation
  - ▶ Final project paper

Two major topics

We want to understand:

- The relationship between grammatical knowledge (competence) and the use of language (performance).
- The properties of information processing systems used in language comprehension and production.

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Competence & Performance

Chomsky (1965): *"Linguistic theory is concerned primarily with an ideal speaker-listener, in a completely homogeneous speech community, who knows its language perfectly and is unaffected by such grammatically irrelevant conditions as memory limitations, distractors, shifts of attention and interest, and errors (random or characteristic) in applying [their] knowledge of the language in actual performance."*

- Competence: "The speaker-hearer's knowledge of [their] language."
- Performance: "The actual use of language in concrete situations."

A celebrated example: Center embedding

Poll: Which sentence do you think is more acceptable?

- The cat that the dog that the man fed chased meowed.
- The man fed the dog that chased the cat that meowed.

Example: Center embedding

If you modify the NP inside a relative clause using a relative clause, the sentence sounds awful.

- *The cat meowed.*
- *The cat that the dog chased meowed.*
- ** The cat that the dog that the man fed chased meowed.*

But should you encode this constraint to grammar?

What are alternative explanations?

Example: Center embedding

* *The cat that the dog that the man fed chased meowed.*

One proposal: the unacceptability ($\neq$ ungrammaticality) of center embedding is due to memory limitations.

- Benefit: You don't need a stipulated grammatical constraint. -> simpler theory of grammar.
- Burden: You need theories of (a) memory, (b) how memory is used in processing, and (c) how that affects acceptability judgement.

Competence & Performance

But what exactly do we mean by 'competence-performance distinction?' (Phillips, 1996: Chapter 5)

a. *Competence–Performance I*
   The distinction between the mechanisms implicated in linguistic behavior and linguistic behavior itself.

b. *Competence–Performance II*
   The distinction between specialized mechanisms for comprehension and production of language and a central repository of linguistic knowledge.

c. *Competence–Performance III*
   The distinction between the capacities of a grammar with bounded and unbounded resources respectively.

d. *Comptentence–Performance IV*
   The distinction between what is computed and how it is computed, borrowed from formal theories of computation.

Competence & Performance

Poll: Which 'competence-performance distinction?' is center-embedding relevant?

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Competence & Performance

Lewis & Phillips (2015):

- **The two-system hypothesis:** *"Under the two-system hypothesis, the cognitive system responsible for the grammar is separate from the system(s) responsible for language processing. Under this view, the grammar system is often thought of as a static body of knowledge, whereas the language processing system is a set of procedures for comprehension and production. It is assumed that the properties of the grammar system are more clearly revealed in offline data, and the properties of the language processing system are more clearly revealed in online data."*

- **The one-system hypothesis:** *"Under the one-system hypothesis, there is only one cognitive system for language, and it is suitable for real-time comprehension and production. Under this view, the grammar is an abstract description of the representations that this cognitive system builds,"*

Example: Sensitivity to islands

Filled-gap effect (Stowe, 1986)

- My brother wanted to know who Ruth will bring <u>us</u> home to t at Christmas.
- My brother wanted to know if Ruth will bring <u>us</u> home to Mom at Christmas.

Example: Sensitivity to islands

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Self-paced reading data from Stowe (1986)

	Reading time at 'us'
If	755ms
Who	970ms

Example: Sensitivity to islands

Subject island (Ross, 1967)
- * Who does the story about t impress John?
- Who does the story about John impress?

No filled-gap effect inside subject islands (Stowe, 1986)
- The teacher asked if [$_{SUBJ}$ the silly story about Greg's older brother] was supposed to mean anything.
- The teacher asked what [$_{SUBJ}$ the silly story about Greg's older brother] was supposed to mean t.

	Reading time at 'Greg's'
What	800ms
If	798ms

Grammar-processing relations

The issues relevant to the relation between grammar and processing:

- Misalignment (e.g., unacceptability of center-embedding sentences, speech errors, etc.)
- Alignment (e.g., sensitivity to islands and other constraints, immediate use of binding principle in anaphora resolution, etc.)

We need theories of processing to understand these issues.

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Example: Garden path sentences

Garden-path sentence (Bever, 1970)

- The horse raced past the barn fell.

What dose this sentence tell us about cognition?

Example: Garden path sentences

Garden-path sentence (Bever, 1970)

- The horse raced past the barn fell.

Various issues about the properties of processing system in this single sentence:

- Incrementality
- Modularity
- Parallelism
- Probability

This course is not just about syntax

The same questions about the properties of information processing system recur across domains.

- Speech perception
- Lexical access
- Syntactic processes
- Semantic/pragmatic processes