Gradient Acceptability and Linguistic Theory

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CHAPTER 1

THE PROBLEM OF MARGINAL AND VARIABLE ACCEPTABILITY

What is grammar?

According to the *American Heritage Dictionary:*

1. The study of how words and their component parts can combine to form sentences. (Descriptive Grammar)

2. A normative or prescriptive set of rules setting forth the current standard of usage for pedagogical or reference purposes. (Prescriptive Grammar)

Where is grammar to be found?

Ferdinand de Saussure, 1857-1913
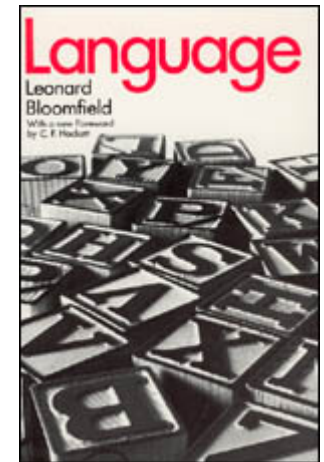University of Geneva

Leonard Bloomfield, 1887-1949
Ohio State University, University of Chicago, and Yale University
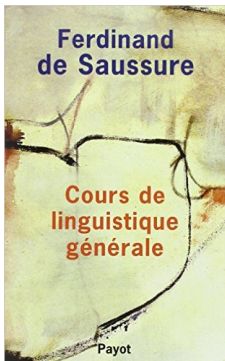
According to the Structuralists of the early 20th Century: the speech community

- ◦ Saussure (1916): "The language is never complete in any single individual, but exists perfectly only in the collectivity."

- ◦ Bloomfield (1933: 37): "Large groups of people make up all their utterances out of the same stock of lexical forms and grammatical constructions. A linguistic observer therefore can describe the speech-habits of a community…."

- ◦ Bloomfield (1933: 37): "The danger here lies in mentalistic views of psychology, which may tempt the observer to appeal to purely spiritual standards instead of reporting the facts. …we have no way of determining what speakers may 'feel'…" (Leonard Bloomfield 1933, *Language,* p. 37).

Where is grammar to be found?

According to Noam Chomsky, founder of modern generative linguistics: the mind of each individual

- **Competence** = implicit knowledge underlying linguistic behavior
- **Performance** = actual language use -- speaking, writing, signing

- Chomsky (1965: 4):
  - "Linguistic theory is mentalistic, since it is concerned with discovering a mental reality underlying actual behavior."

  - "A grammar of a language purports to be a description of the ideal speaker-hearer's intrinsic competence."

  - Grammar is "a system of generative processes" with infinite creative potential. "...A fully adequate grammar must assign to each of an infinite range of sentences a structural description..." Hence the term Generative Grammar.
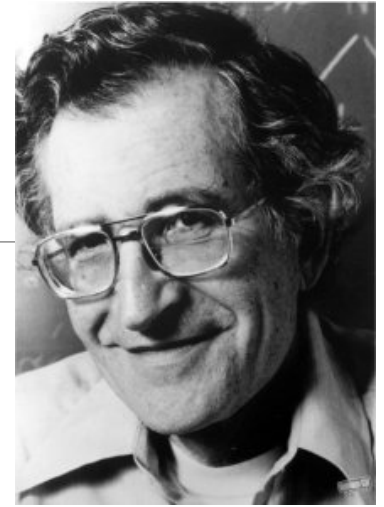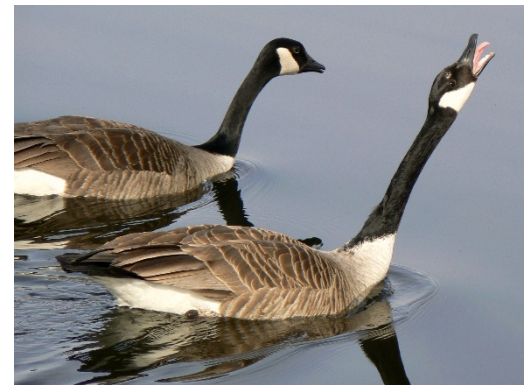
Noam Chomsky, Massachusetts Institute of Technology
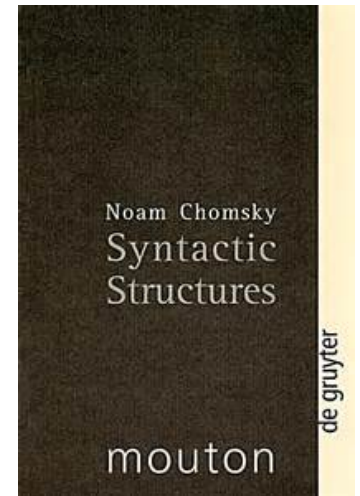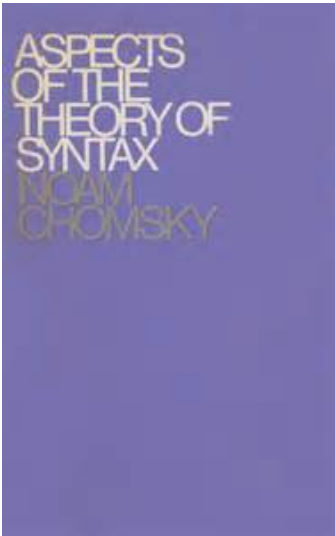
Implicit knowledge of grammar

The plural rule in English, as generalized by young children.

1.   I have **two** foots.

2.   Look at the gooses!

The plural rule in English, as generalized by adults using a new word for the first time.

3.   They use a lot of emoticons.

4.   Some of the guests are flexitarians.

Implicit knowledge of grammar

As educated speakers, most of us are consciously aware of the English plural rule, but there are many more complex and subtle rules that form part of our knowledge but of which we are largely unaware.

1. Here is the dog that was chasing my cat.

2. Here is the dog that my cat was chasing.

There's something wrong here...

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Implicit knowledge of grammar

As educated speakers, most of us are consciously aware of the English plural rule, but there are many more complex and subtle rules that form part of our knowledge but of which we are largely unaware.

1. Here is the dog ~~that~~ was chasing my cat.

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Implicit knowledge of grammar

As educated speakers, most of us are consciously aware of the English plural rule, but there are many more complex and subtle rules that form part of our knowledge but of which we are largely unaware.

1. *Here is the dog was chasing my cat.   *UNACCEPTABLE

2. Here is the dog my cat was chasing.   STILL ACCEPTABLE

There's something wrong here...

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Implicit knowledge of grammar

1. Joe has washed the dishes.

2. Joe hasn't washed the dishes.   ACCEPTABLE

3. *Joe doesn't have washed the dishes.   *UNACCEPTABLE

Implicit knowledge of grammar

1.   Joe has to wash the dishes.

2.   *Joe hasn't to wash the dishes.   *UNACCEPTABLE

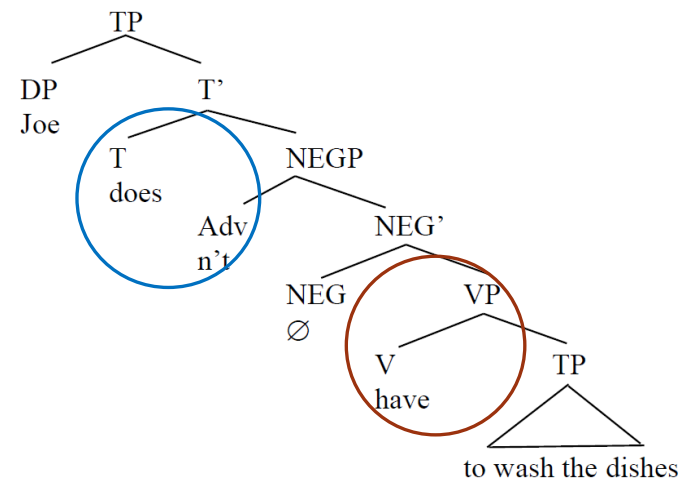3.   Joe doesn't have to wash the dishes.   ACCEPTABLE

How do linguists model implicit grammatical knowledge?

○ In the way I just showed you: by contrasting pairs or groups of sentences that differ minimally from each other, and inferring grammatical rules based on these contrasts. For example:

  1. Joe hasn't washed the dishes.
  2. *Joe hasn't to wash the dishes.
  3. Joe doesn't have to wash the dishes.

○ In (1), "have" is an auxiliary verb, while in (3), "have" is lexical verb. The auxiliary "have" occurs higher in the structure where it can combine with negation.
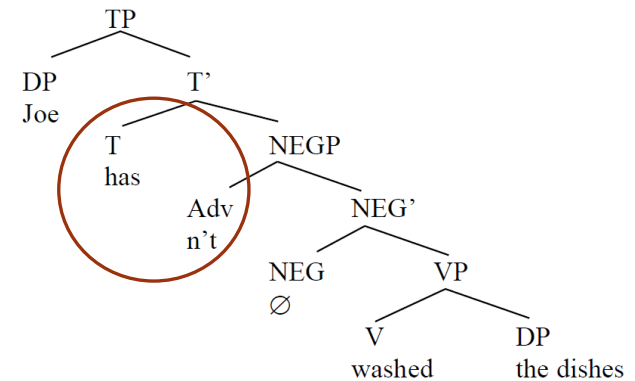
How do linguists model implicit grammatical knowledge?

Problem: Knowledge is not directly observable. Only linguistic behavior is. How can we infer knowledge from behavior?

- According to Chomsky, intuitive judgments of the acceptability of sentences, or acceptability judgments, provide the most useful insight into speakers' implicit knowledge.

    a. *Joe hasn't to wash the dishes.   *UNACCEPTABLE

    b. Joe doesn't have to wash the dishes.   ACCEPTABLE

- Chomsky (1965: 24): "The structural descriptions assigned to sentences by the grammar, the distinctions that it makes between well-formed and deviant, and so on, must, for descriptive adequacy, correspond to the linguistic intuition of the native speaker… in a substantial and significant class of crucial cases."

Why use intuitive judgments to model grammar?

- ◦ to investigate sentence types that occur only rarely in discourse
- ◦ to obtain information about what is NOT possible
- ◦ to distinguish speech errors from possible but rare constructions
- ◦ to control for extraneous factors (such as word choice) and directly compare the acceptability of sentences with only minimal structural differences

The skeptical 1970s: early criticisms of intuitive judgments

William Labov, University of Pennsylvania

Concern about informal and uncontrolled methods, variation within and across speakers, gradient patterns of responses

◦ Labov (1972: 106): "It is unfortunate that this proliferation of the intuitive data has not been accompanied by a methodological concern for the reduction of error, or a search for intersubjective agreement."
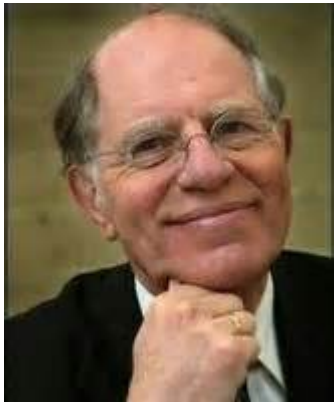
Willem Levelt, Nijmegen University

Concern about the interpretation of meta-linguistic performance in a judgment task, which may be affected by many factors besides competence

◦ Levelt (1972: 22): "It is not at all obvious that intuitions will reveal the underlying competence. …The decision whether a sentence 'could be said' will again be dependent on considerations of memory span, naturalness, etc."

Which sentences are ungrammatical?
(Levelt 1972: 24)

* (1) Your making of reference to the book displeased the author. (FRASER)
  (2) No American, who was wise, remained in the country. (POSTAL)
* (3) They never insulted the men, who were democrats. (POSTAL)
  (4) They never agreed with us planners. (POSTAL)
* (5) The talking about the problem saved her. (FRASER)
* (6) The machine's crushing of the rock was noisy. (FRASER)
  (7) The giving of the lecture by the man who arrived yesterday assisted us. (FRASER)
  (8) Your making of a reference to the book displeased the author. (FRASER)
* (9) Her slicing up of the cake was clever. (FRASER)
  (10) John's cutting up of four cords of wood yesterday and his doing so again to-day was a welcome gesture. (FRASER)

Answer: 1, 2, 3, 5, 6, 9

The hopeful 1990s: a new experimental syntax (Schütze 1996, Cowart 1997)

Schütze (1996) *The Empirical Base of Linguistics* reviews these early criticisms and argues convincingly that judgment data, *when properly controlled*, provide a rich source of information about grammatical knowledge.

○ Carefully chosen speaker populations to control for language background and dialect

○ Carefully constructed sentence materials organized in a factorial design

○ Multiple participants, multiple sentence sets with different lexical content, inclusion of filler sentences, and varied orders of presentation

○ Measurement scales that can be quantified, and statistical techniques to identify systematic variation and factor out random variation

○ Additional sources of data besides acceptability judgments, such as production tasks, comprehension tasks, and analysis of spontaneous discourse
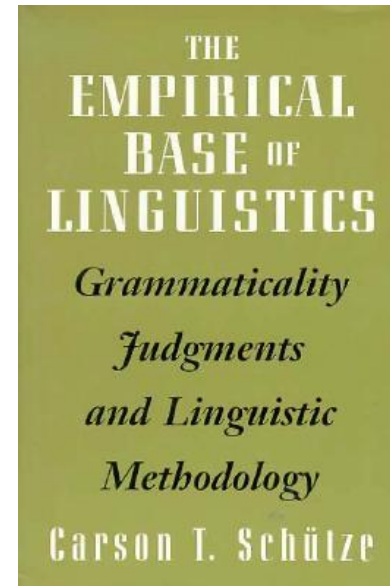
Carson Schütze, UCLA

Ongoing controversies regarding the use of intuitive judgments

(1) To what extent are traditional informal methods of data collection acceptable for modern syntax research?

◦ The majority of syntax researchers still find them acceptable for most purposes. The theories have changed quite a bit over 60 years, but the methods have not.

◦ A vocal minority argue that well-controlled quantitative methods are almost always to be preferred (Edelman & Christiansen 2003; Featherston 2007; Gibson & Fedorenko 2013; Wasow & Arnold 2005).

◦ A small but growing body of research in experimental syntax has been emerging over the last twenty years (Myers 2009).

Ongoing controversies regarding the use of intuitive judgments

(2) Language is multifaceted but rating scales are one-dimensional. How can we tease apart the different factors *in addition to grammatical knowledge* that may affect speakers' judgments of sentences? These factors include:

◦ Knowledge of semantic, discourse-pragmatic, and prosodic constraints

◦ Effects of general cognitive mechanisms, such as working memory capacity

◦ This controversy is the topic of my current book-in-progress, *Gradient Acceptability and Linguistic Theory*

◦ The book is inspired by my own research in experimental syntax over the past 12 years.

Marginal and variable acceptability: the case of selectional restrictions

Chomsky (1965) recognized that speakers' intuitions are not always clear-cut, and judgments may vary for sentences that appear to have the same structure.

- 1. Sincerity may frighten the boy.   ACCEPTABLE
- 2. Sincerity may admire the boy.   ?LESS ACCEPTABLE
- 3. Sincerity may elapse the boy.   ??EVEN LESS ACCEPTABLE
- 4. Sincerity may virtue the boy.   *UNACCEPTABLE

Chomsky considers two possible explanations:

- **Formal syntactic explanation**: sentences (2-4) are all ungrammatical due to incompatible syntactic features. We must recognize different degrees of structural deviance for selectional restrictions (2), subcategorization violations (3), and lexical category errors (4).

- **Semantic explanation**: sentence (2) is fully grammatical, but odd for semantic reasons. Sentences (3-4) are ungrammatical.

Distinguishing syntax from other factors

Effects that may be confusable with syntax:

1. semantic anomaly (e.g. semantically incompatible elements in the sentence)
   ◦ ?Linguistics is asleep. / Linguistics is fun.
   ◦ ?It rained brightly. / It rained constantly.

2. pragmatic anomaly (e.g. sentence requires a particular discourse context)
   ◦ ?Last night, what John lost was his wallet. / Last night, John lost his wallet.
   ◦ Last night, I saw John looking for something. I thought he had lost his jacket, but it turns out that what he lost was his wallet.

Distinguishing syntax from other factors

Effects that may be confusable with syntax:

3. prosodic anomaly (sentence requires a special prosody)
   ◦ ?I did pass the test. / I DID pass the test.
   ◦ ?They didn't not like her. / They didn't NOT like her.

4. processing difficulty (e.g. multiple embeddings, garden paths)
   ◦ ?The cheerleader who the quarterback who was on the team dated snubbed the teammates.
   ◦ ?The raft floated down the river sank.

Distinguishing syntax from other factors

Some common types of evidence used to argue that cause of lower acceptability is non-syntactic:

1. **amelioration**: acceptability improves when lexical content is altered, supportive discourse context is included, and/or special prosody is applied

2. **isomorphism between acceptability and processing ease**, e.g. amelioration in acceptability correlates with faster reading times or faster decision times

3. **occurrence in actual language use--** seems natural in context (not likely a production error)

Syntax vs. prosody: *that*-trace effects

Context: Speaker remembers that the department has implemented a few of the ideas from the proposal already, but is not sure which ones.

Classic *that*-trace effect:

1. Which ideas did you say the department has already implemented __?   ACCEPTABLE

2. Which ideas did you say __ were already implemented by the department?   ACCEPTABLE

3. Which ideas did you say **that** the department has already implemented __?   ACCEPTABLE

4. *Which ideas did you say **that** __ were already implemented by the department?   *UNACCEPTABLE
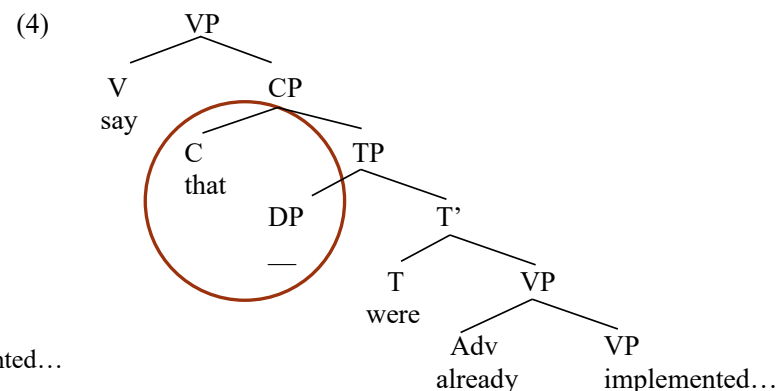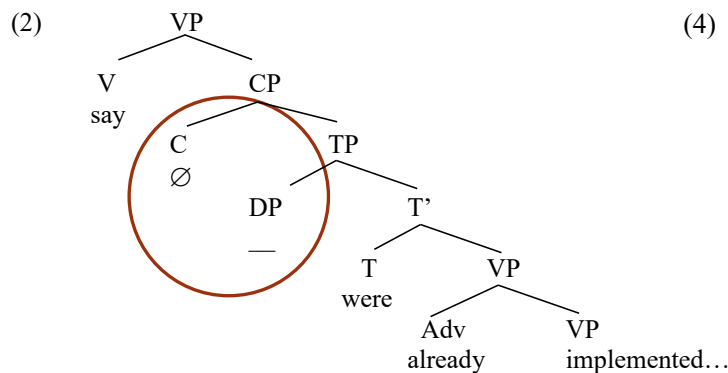
Syntax vs. prosody: *that*-trace effects

4. *Which ideas did you say **that** __ were already implemented by the department?
LESS ACCEPTABLE

5. Which ideas did you say **that,** for the most part, __ were already implemented by the department?
MORE ACCEPTABLE

◦ This difference was verified experimentally by Sobin (2002), using a rating task administered to 23 participants.

Why do these two sentence types contrast in acceptability?

◦ **Formal syntactic explanation:** There is a hidden structural difference related to the position of "that", and only sentence (4) is ungrammatical (Sobin 2002).
◦ **Prosodic explanation:** Both sentences are fully grammatical, but sentence (4) is prosodically ill-formed **(**Kandybowicz 2006).

Syntax vs. pragmatics: outbound anaphora

A morpheme within a compound is unacceptable as the antecedent of a pronoun.

1. Drinkers of *coffee* tend to enjoy *its* taste.
2. **Coffee* drinkers tend to enjoy *its* taste.

(adapted from Postal 1969: 230)

Formal syntactic explanation: According to Postal (1969) this is due to a syntactic rule restricting pronoun-antecedent relations.

Pragmatic explanation: Ward et al (1991) argue that sentences like (2) are fully grammatical but pragmatically anomalous.

Syntax vs. pragmatics: outbound anaphora

Using attested examples, Ward et al (1991) suggest that acceptability of outbound anaphora is improved by a supportive context. They argue that sentences like (1a) and (2a) are fully grammatical but pragmatically anomalous.

1. a. ***Bicycle** thefts deter the use of **them**.

    b. Officials in the Danish capital believe they've found a way to stop **bicycle** thefts-let people use **them** for free. (Ward et al 1991: 452)

2. a. *The **ambulance** siren means **it** is coming.

    b. In the distance, we heard the sound of an **ambulance** siren. Within a minute or so **it** arrived and stretcher bearers took the boy away.

    (Ward et al 1991: 452)

Syntax vs. pragmatics: outbound anaphora

A reading time study (McKoon et al 1990) tested two factors: anaphora type (outbound, regular) and context (topical, non-topical). They measured the reading time of the final sentence.

Non-Topical Context
Sam has many interests in the outdoors. He's an avid skier, and each winter he takes about a month off from work to ski in Colorado. In the summertime, he visits his parents in Montana, where he has a chance to do some mountain climbing. Lately, he's taken up
[**deer** hunting/ hunting **deer**].

And he thinks that **they** are really exciting to track.

Topical Context
Sam likes the outdoor life. Having grown up in rural Kentucky, he knows a lot about nature and is an expert at fishing and shooting. He goes on hunting trips as often as he can. He used to hunt just small game, like rabbit and quail. However, lately he's taken up
[**deer** hunting/ hunting **deer**].

And he thinks that **they** are really exciting to track.

Syntax vs. pragmatics: outbound anaphora

Results showed that a supportive topical context neutralizes the difference in reading time between outbound anaphora and regular anaphora. The authors take this to support a pragmatic account of outbound anaphora.
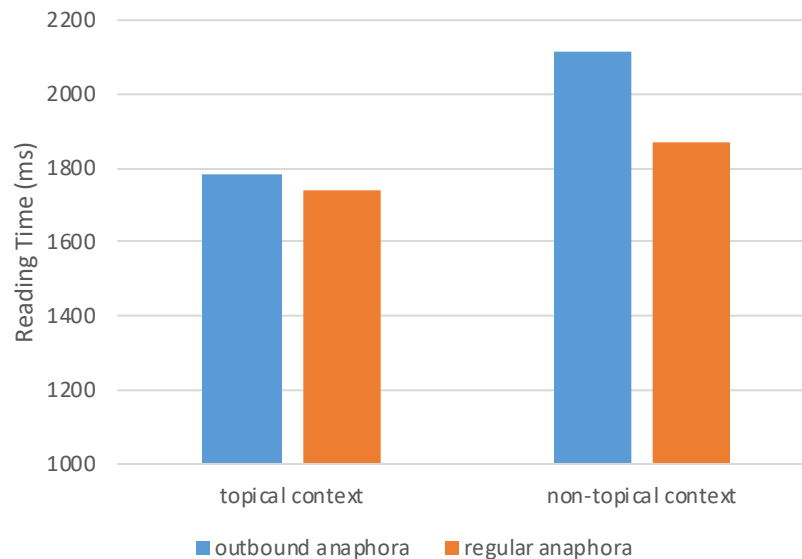
Syntax vs. processing: *whether*-islands

Sentences like (d) violate Chomsky's Subjacency constraint on wh-movement. Sprouse (2007) tested these four sentence types in a judgment task:

- ◦ a. Who __ thinks that John bought a car?   (short, declarative)
- ◦ b. What do you think that John bought __?   (long, declarative)
- ◦ c. Who __ wonders whether John bought a car?   (short, interrogative)
- ◦ d. *What do you wonder whether John bought __?   (long, interrogative)

Although (a) and (b) are both grammatical, participants judged (a) as more acceptable than (b). Sprouse interprets this as a processing-based dependency distance effect.

Although (a) and (c) are both grammatical, participants judged (a) as more acceptable than (c). Sprouse interprets this as a semantic complexity effect.

Syntax vs. processing: *whether*-islands

Sentences like (d) violate Chomsky's Subjacency constraint on wh-movement. Sprouse (2007) tested these four sentence types in a judgment task:

- ◦ a. Who __ thinks that John bought a car?   (short, declarative)
- ◦ b. What do you think that John bought __?   (long, declarative)
- ◦ c. Who __ wonders whether John bought a car?   (short, interrogative)
- ◦ d. *What do you wonder whether John bought __?   (long, interrogative)

Sentence (d) showed a *super-additive* effect: it was less acceptable than the combined effects of dependency distance and semantic complexity would predict. Sprouse interprets this as supporting a syntactic Subjacency constraint.

Syntax vs. processing: *whether* islands

Here is what the super-additive effect looked like, as compared with a hypothetical additive effect (Sprouse et al 2012: 86)
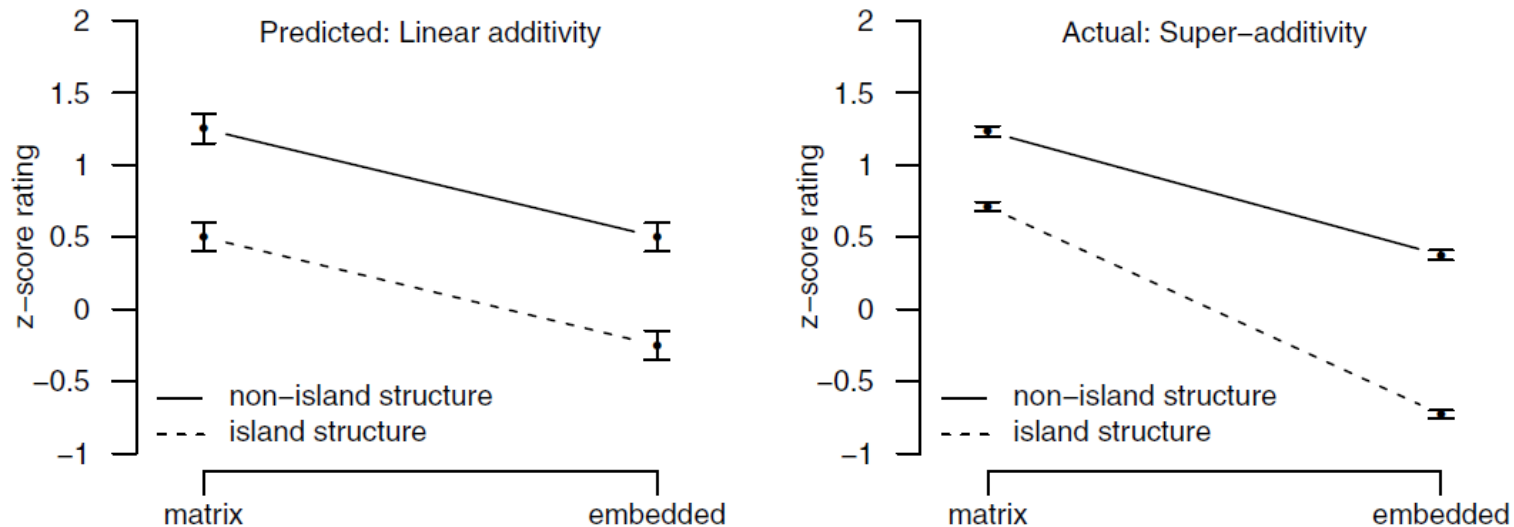

FIGURE 1. The left panel represents the prediction of the simplest reductionist theory. The right panel represents the actual results of using the factorial definition of *whether* islands in 5 in an acceptability-judgment experiment (see §5 for details of the experiment).

Summary: formal syntactic vs. reductionist explanations

Formal syntactic explanations posit a difference in syntactic structure to account for differences in acceptability

- Often abstract theoretical constructs and complex chains of reasoning are required

  - Example: a. *What do you wonder if John bought __?   (Subjacency violation)

                  b. What do you think that John bought __ ?   (No Subjacency violation)

Summary: formal syntactic vs. reductionist explanations

Reductionist explanations posit a difference in semantics, pragmatics, prosody, processing ease, or some other factor to account for differences in acceptability

◦ Example: a. *Coffee drinkers tend to enjoy *its* taste.   (Antecedent less accessible)

                       b. Drinkers of coffee tend to enjoy *its* taste.   (Antecedent more accessible)

How do we decide between formal syntactic and reductionist explanations in any given instance?

- ◦ **Experimental methods and careful controls:** use formal methods and be careful to control for possible confounding factors

- ◦ **Awareness of theoretical assumptions**: different theoretical traditions bring different biases to the process of data interpretation.

- ◦ **Converging evidence**: additional data from corpora of natural speech and texts, comprehension tasks, and elicited production tasks can be used to help decide which acceptability contrasts require a formal syntactic analysis.

Discussion

- Amelioration effects are used to argue for reductionist explanations. Is it possible to have amelioration (improved acceptability) of an ungrammatical sentence?

- Ward et al (1991) combine evidence from amelioration with evidence from reading time in two discourse contexts. Does this strengthen their pragmatic explanation of outbound anaphora?

- Sprouse (2007) finds a super-additive penalty for *whether*-islands, which he takes to support a syntactic Subjacency constraint. Can you think of any alternative explanations?