

To Introspect or not:
Invitation to Experimental Syntax

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Introduction

Grammatical judgment in syntax: Lasnik & Saito (1984: 266-270)

* Why_i do you believe the claim that John left t_i?

?* What_i do you believe the claim the John bought t_i?

?? Who_i thinks that who_j won the election?

? Who_i t_i thinks that for that reason_j John left t_j?

Who_i do you believe t_i to be intelligent?

A bit of self-introduction

- I got interested in generative linguistics during my undergraduate time at ICU (around 1999).
- I was first interested in syntax, thanks to Prof. Tomo Yoshida.
- I converted to a phonologist during my exchange study at UCSC.
- The reason, partly, was because I couldn't follow the judgment patterns in English...or, in all honesty, some of those in Japanese.
- I wrote a senior thesis on phonological theory, which is, with hindsight, surprisingly good (which I even came back to in 2014).

Continued

- But that BA thesis used any kind of “sound-related pattern” as phonological.
- In 2001, when I presented the theory at a conference, Prof. Haraguchi warned me against that attitude, although I did not take it very well.
- During my graduate time at UMass, I converted again to an experimentalist. I started appreciating that advice.
- During my professorial time at Rutgers, I was interacting with Julien Musolino and Kristen Syrett, who were concerned about the quality of syntactic and semantic judgments on scopal interactions.
- I now think that examining the quality of evidence for generative studies in general is crucial (Kawahara 2015, *Linguistic Vanguard*).

Grammatical judgment in syntax: Lasnik and Saito (1984: 266-270)

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Who_i do you believe t_i to be intelligent?

Cited and discussed in Pullum 2013

A Japanese example

Taroo-wa[[Hanako-ga **nani-o** katta]**ka**] kikimashita **ka** ?

- Did Taro ask Hanako what she bought? (**embedded scope**)

-?? What is x, such that Taro asked Hanako whether she bought x? (**matrix scope**)

-There has been a huge debate about whether the embedded wh-element can take a matrix scope (i.e. whether Japanese has a wh-island effect or not).

My position

- To be clear, I am not an anti-generative linguist. It is probably safe to say that I (sometimes/often/usually) study languages from the generative perspective.
- But I do think that the methodology—or attitude, if I may—of the generative linguistics should be better justified and defended.
- I am not even claiming that the generative methodology is wrong. We need quantitative justification of our methodology (even if that is for a sociological reason).

Some criticisms 1 (from the assigned reading: Phillips 2009)

“Generative theories appear to rest on a weak empirical foundation, due to the reliance on informally gathered grammaticality judgments.” (Ferreira 2005, p. 365)

“Judgments are inherently unreliable because of their unavoidable meta-cognitive overtones, because grammaticality is better described as a graded quantity, and for a host of other reasons.” (Edelman & Christianson 2003, p. 60)

Some criticisms 2

“One might in fact conclude that we have not yet developed a means to evaluate empirical bases for hypotheses in generative grammar that is compelling enough to the majority of the practitioners. An evaluation of a given hypothesis thus tends to have an arbitrary aspect to it, influenced by such factors as whether or not the terms and concepts utilized are taken from a theory currently in fashion ..” (Hoji & Ueyama 2007, p. 2)

Some criticisms 3

“Unfortunately, the findings of the experimentalists in linguistics very rarely play a role in the work of generative grammarians. Rather, theory development tends to follow its own course, tested only by the unreliable and sometimes malleable intuitions of the theorists themselves. The theories are consequently of questionable relevance to the facts of language.” (Wasow & Arnold 2005, p. 495)

Some criticisms 4

- “Chomsky’s policy that the subject matter of linguistics is psychological in nature does not provide any reason for assuming that the purported facts that linguists have hitherto adduced as evidence for or against particular analyses are psychological in nature, nor even that they are strictly speaking facts (McCawley 1986: 28).”

Box 1. Cognitive biases and linguistic judgments.

There are at least three types of unconscious cognitive biases [8,9] that can adversely affect the results of intuitive judgments, given the way that they are currently typically gathered in the syntax/semantics literature:

1. Confirmation bias on the part of the researcher: researchers will often have a bias favoring the success of the predicted result, with the consequence that they will tend to treat data that do not support the hypothesis as flawed in some way (e.g. from a not quite native speaker, or from a speaker of a different dialect).
2. Confirmation bias on the part of the participants: individuals that the researcher asks to provide a judgment on a linguistic example – including the researcher him/herself – might be biased because they understand the hypotheses. When faced with complex materials, they could then use these hypotheses to arrive at the judgment.
3. Observer–expectancy effects (the “clever Hans” effect): individuals that the researcher asks to provide a judgment could be biased because they subconsciously want to please the researcher and are consequently affected by the researcher’s subtle positive/negative reactions.

Summary of the issues

- Generative grammarians generally rely on introspection-based data.
- This methodology is often frowned upon by psychologists and cognitive scientists (and phoneticians).
- Not quantitative (statistically supported?); unreliable; cherry-picking; biased...
- Again, I am not saying that these criticisms are valid outright. I am saying that there's not enough constructive conversation.

Part I: Some
examples of
experimental syntax

Superiority condition

- Superiority condition:
- I'd like to know **who_i t_i** hid where.
- *I'd like to know **where_i who** hid it **t_i**.
- Superiority condition ameliorated with an additional wh-element (Kayne 1983)?
- ?I'd like to know **where_i who** hid it **when t_i**.

Clifton et al. (2006)

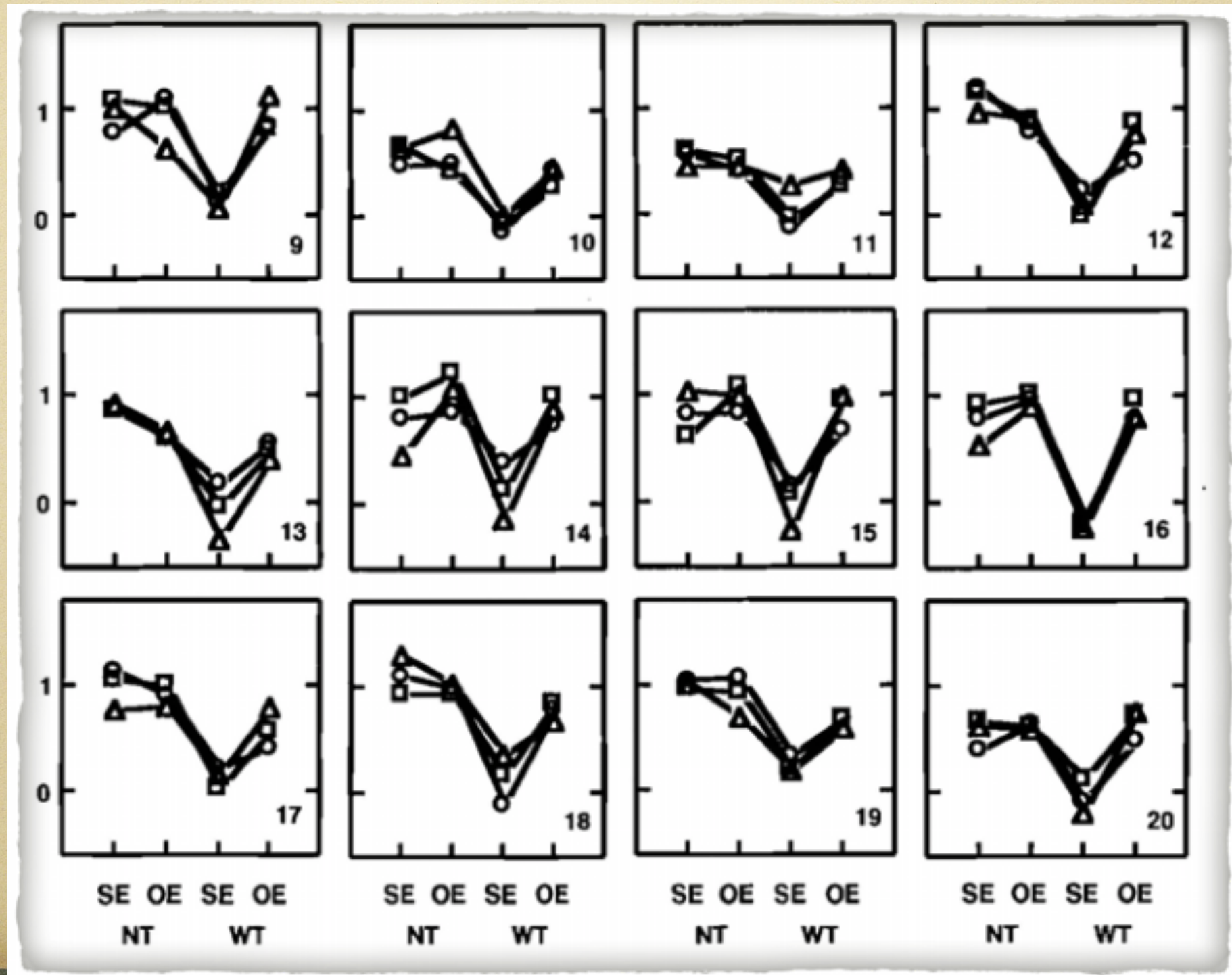
- | | | |
|---|---|--|
| a. I'd like to know who hid it where. | 86% | |
| |  | |
| b. (*)I'd like to know where who hid it. | 14% | 76% |
| | |  |
| c. (?)I'd like to know where who hid it when. | | 24% |

A grammatical judgment experiment shows that the extra wh-element does not really “rescue” the superiority violation, contra Kayne (1983).

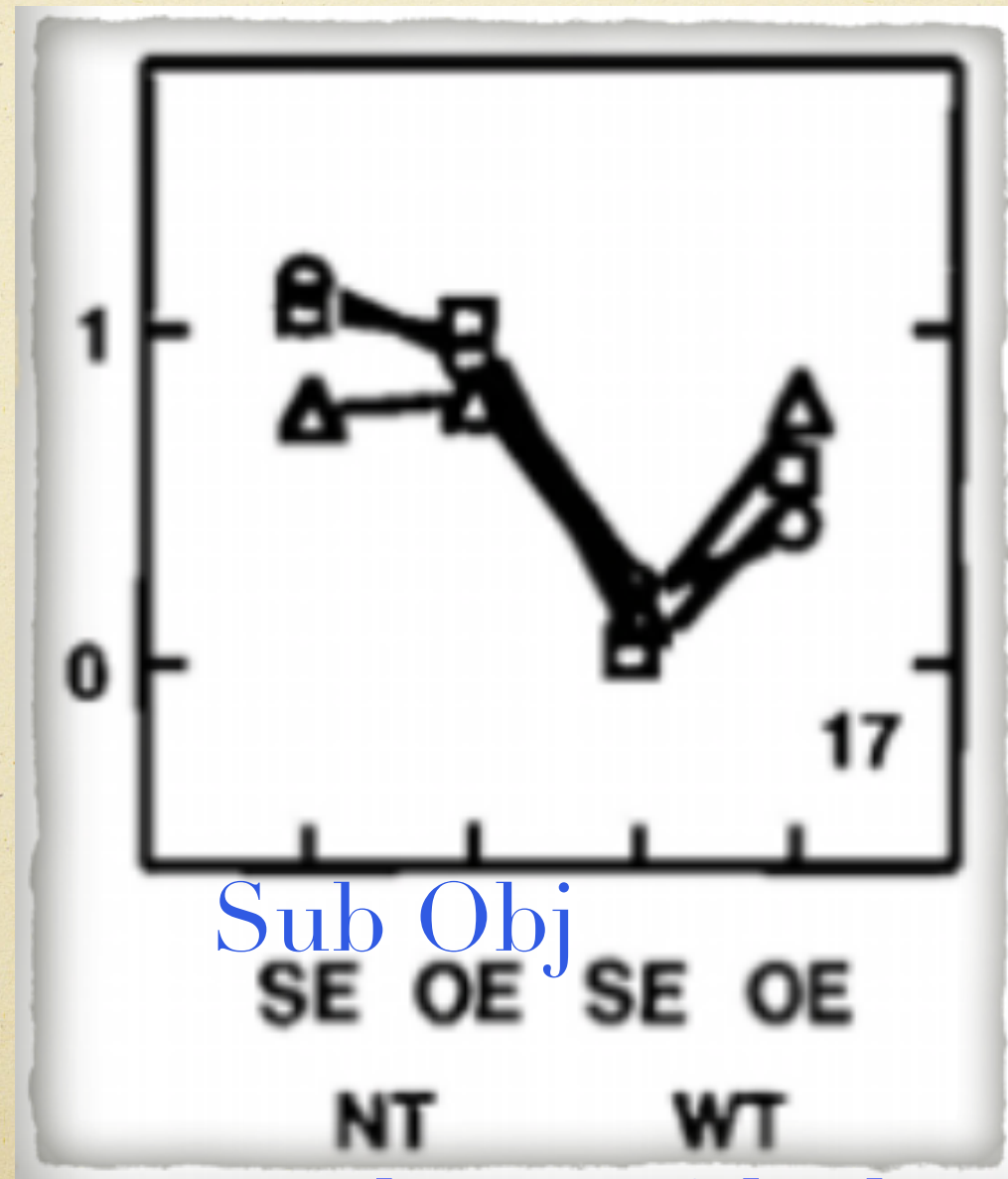
That-trace effect

- Who_i do you think t_i would win?
- *Who_i do you think that t_i would win?
- Who_i do you think John would hit t_i?
- Who_i do you think that John would hit t_i?

Cross-speaker consistency: Cowart (1997)



Zooming in



Sub Obj

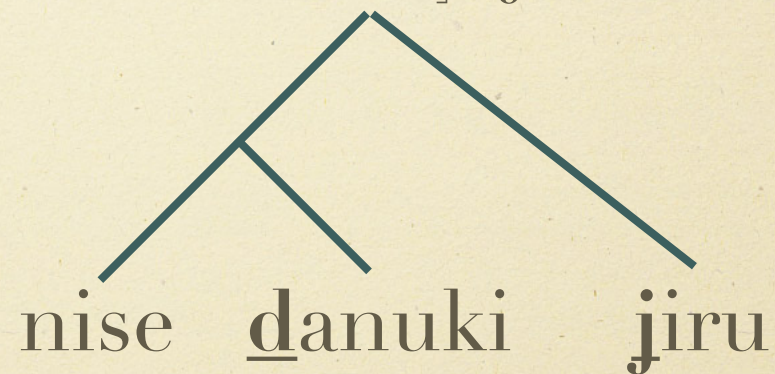
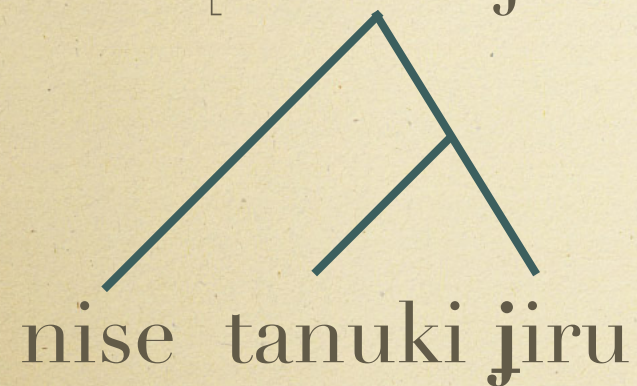
NoThat WithThat

The message

- Some syntactic effects are replicable with experimentation (the that-trace effect).
- Some effects are not (the amelioration of the superiority violation).
- What should we do when intuition-based data and experimental data disagree?

Right Branch Condition and rendaku (Otsu 1980)

nise [tanuki-jiru] vs. [nise danuki] jiru



- Rendaku only applies to elements on the right branch.
- A celebrated example in intro to Japanese linguistics class. The role of c-command in phonology? (and much subsequent work by Ito and Mester)

Kumagai (2014)

- The status of Right Branch Condition (RBC) has been debated (Vance 1980; Kubozono 2005), but it was more or less taken for granted in theoretical phonology.
- In particular, Ito and Mester's theory of rendaku often developed around RBC (1986, 2003, 2007).
- Kumagai's (2014) experiment shows that only a small set of naive native speakers are sensitive to RBC. Many of them could not choose the “right” rendaku forms, given contexts.

Kumagai's results

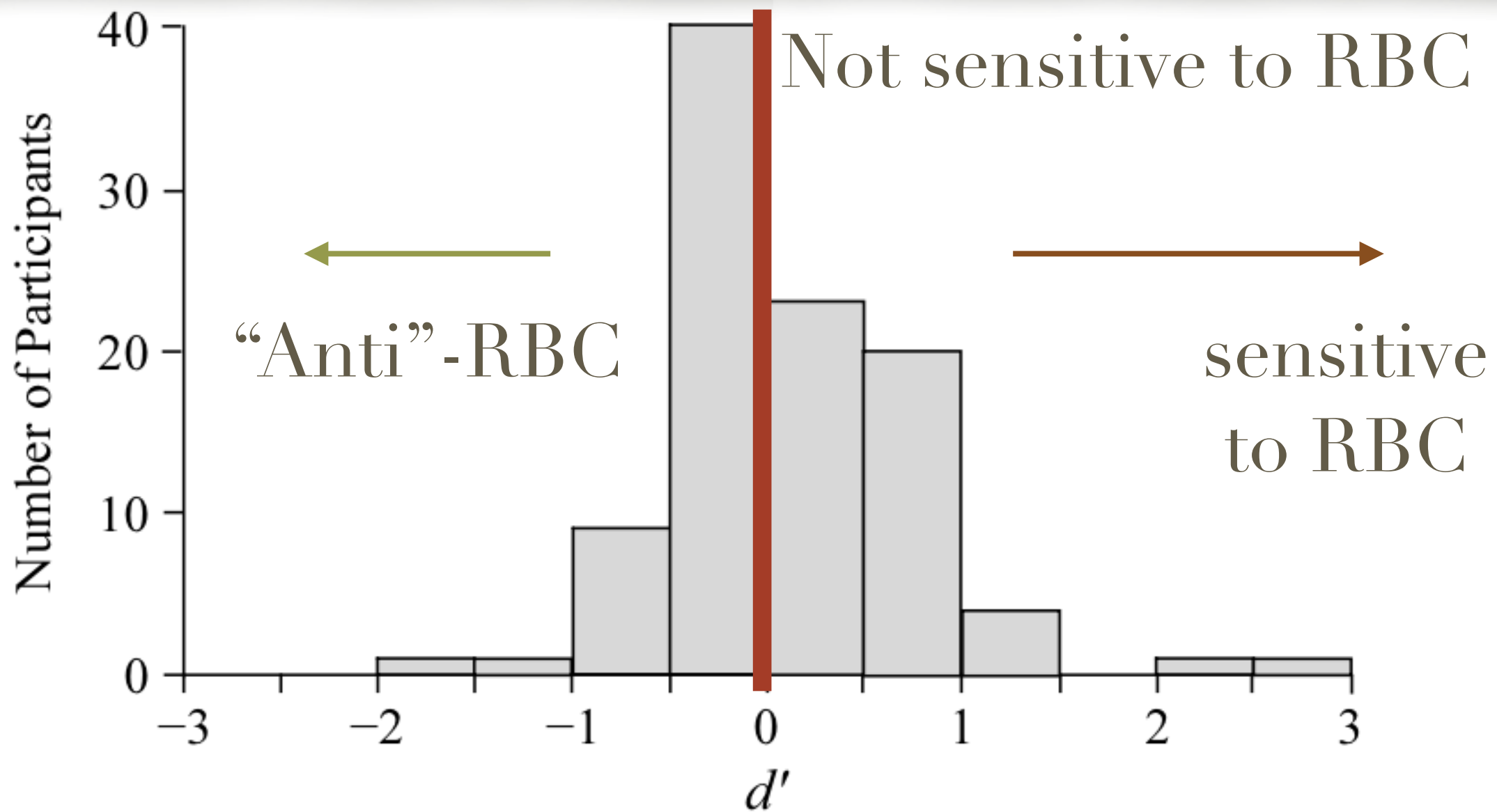


figure 1. Distribution of d' values

From an anti-generative perspective

PROCEEDINGS
OF
THE ROYAL
SOCIETY

B



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Review

How hierarchical is language use?

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It is generally assumed that hierarchical phrase structure plays a central role in human language. However, considerations of simplicity and evolutionary continuity suggest that hierarchical structure should not be invoked too hastily. Indeed, recent neurophysiological, behavioural and computational studies show that sequential sentence structure has considerable explanatory power and that hierarchical processing is often not involved. In this paper, we review evidence from the recent literature supporting the hypothesis that sequential structure may be fundamental to the comprehension, production and acquisition of human language. Moreover, we provide a preliminary sketch outlining a non-hierarchical model of language use and discuss its implications and testable predictions. If linguistic phenomena can be explained by sequential rather than hierarchical structure, this will have considerable impact in a wide range of fields, such as linguistics, ethology, cognitive neuroscience, psychology and computer science.

Keywords: language structure; language evolution; cognitive neuroscience; psycholinguistics; computational linguistics

“A heresy
article” for
generative
linguistics?

GG’s general
concern (cf.
Pesetsky’s LSA
plenary talk)

Against hierarchical structure?

“In this paper, we question this practice [of using hierarchical structures], not so much for language analysis but for the description of language use (p. 2).”

“This is not to say that hierarchical operations are non-existent, and we do not want to exclude their possible role in language comprehension or production. However, we expect that evidence for hierarchical operations will only be found when the language user is particularly attentive, when it is important for the task at hand (e.g. in meta-linguistic tasks) (p. 8)”

- Maybe it is fine that RBC is visible when the language users “are particularly attentive”, as long as RBC exists
- RBC is competence; the null results in the experiments were an issue of performance.

The Japanese wh-island effect (or lack thereof) revisited

Taroo-wa[[Hanako-ga nani-o katta]ka] kikimashita ka ?

- Did Taro ask Hanako what she bought?

-?? What is x, such that Taro asked Hanako whether she bought x?

The availability of the matrix scope reading has been controversial (Nishigauchi 1990 vs. Lasnik & Saito 1984),

Yoshida 1998

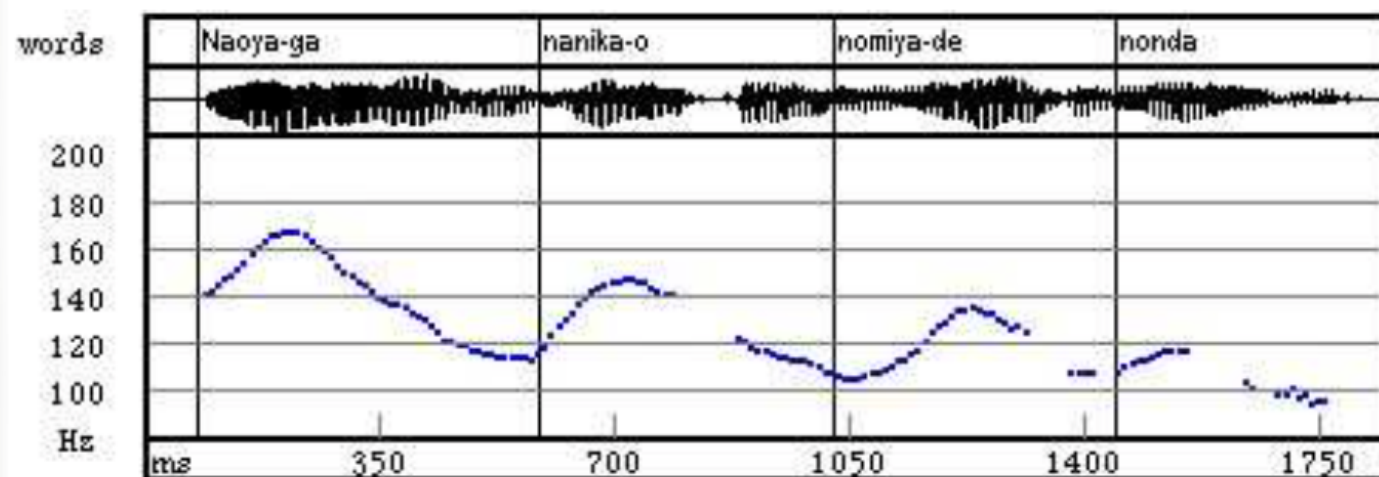
- Dare-ga katta ndai?
- *Taroo-ga katta ndai?
 - “ndai” requires a wh-reading.
- *John-wa [Mary-ga nani-o katta ka] shitteiru ndai?

But wait! Isn't prosody relevant?

- For a long time, there has been an observation that focal accent on the embedded wh-element can yield the matrix reading (also acknowledged in Yoshida 1998; Tomioka 1997).
- John-wa [Mary-ga NANI-o katta ka] kikimashita ka
- Maybe the intonation is crucial? (Deguchi & Kitagawa 2002; Ishihara 2003 *et seq.*)

Ishihara (2003)

(28a): Non-interrogative sentence



(28b): *Wh*-question

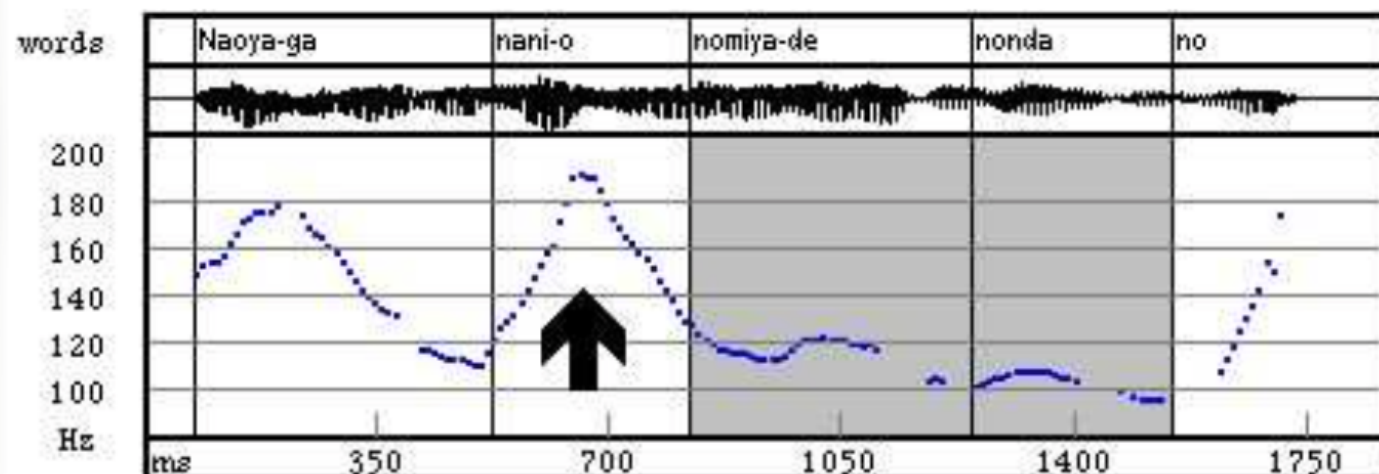


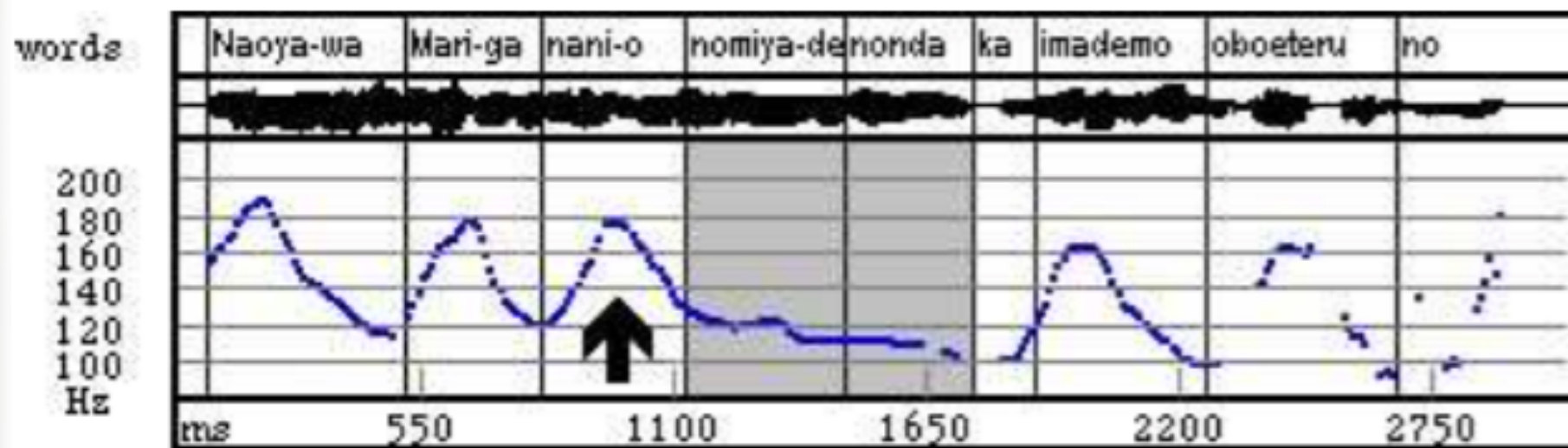
Figure 3-1: Single *wh*-question

Focal boost on *wh*-elements.

Pitch compression effect after *wh*-elements (focused elements in general)

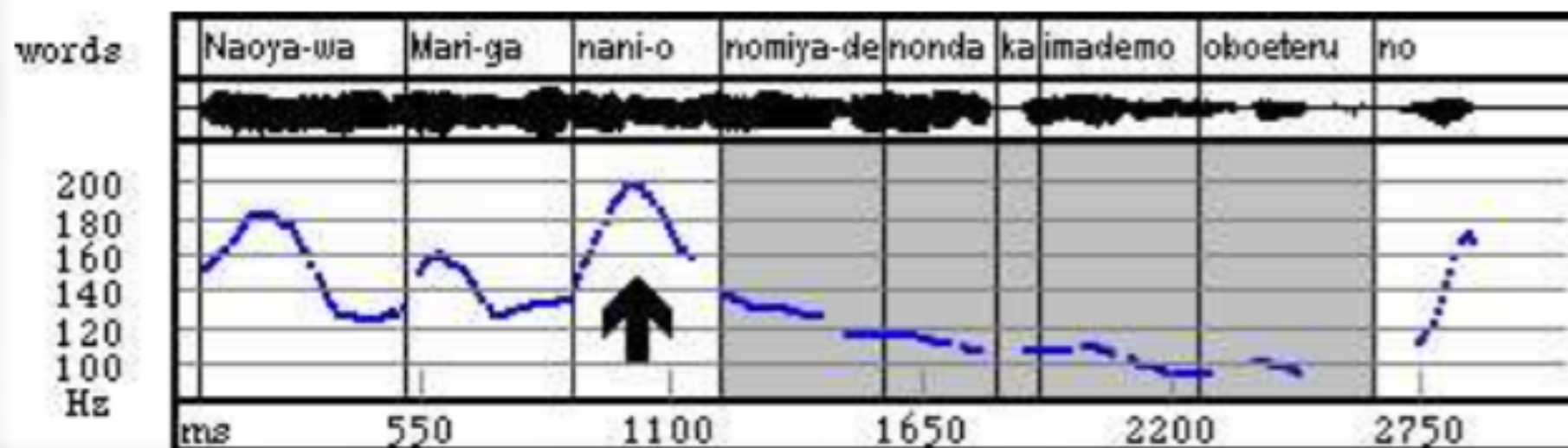
Ishihara (2003)

(34a): 'Does Naoya still remember what_i Mari drank t_i at the bar?'



The pitch compression domain = the scope of the wh-element.

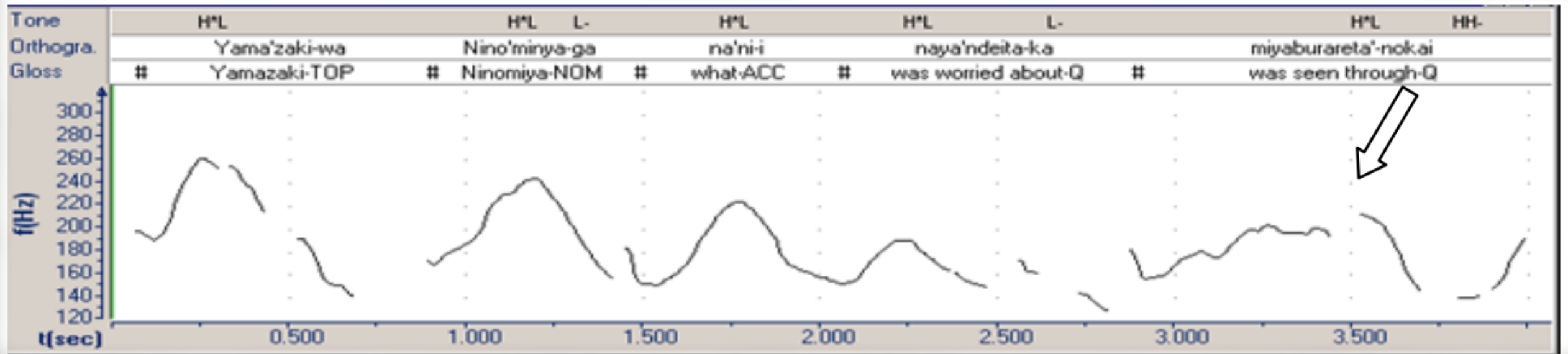
(34b): 'What_i does Naoya still remember whether Mari drank t_i at the bar?'



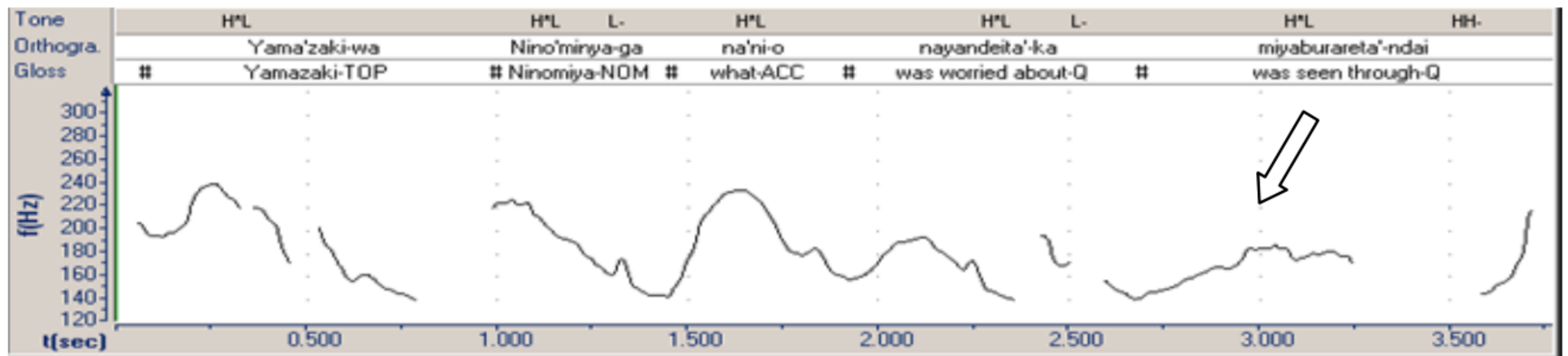
=> further developed by N. Richards as the universal condition on licensing wh-elements.

Hirotsani (2005): Production

山崎は 飲み屋が 何に 悩んでいたか 見破れたのかい？



山崎は 飲み屋が 何を 悩んでいたか 見破れたんだい？



Hirotsani (2005): Comprehension

TABLE 3.1. % choice of embedded (yes/no) question reading and standard deviation for each condition (Experiment 4)

	<i>Embedded Reading Response</i>	
	<i>Frequency (%)</i>	<i>SD</i>
A: <u>Boundary, Unscrambled</u>	84	26
B: <u>No boundary, Unscrambled</u>	43	35
C: Boundary, Scrambled	84	23
D: No boundary, Scrambled	42	36

- It is not (so much) a matter of production, but comprehension? (viz. is it a matter of competence at all?).
- What if the stimuli did not make sense to the participants, and they could only hear focused NANI?

Relegating everything to performance?

- The reductionist approach: attributing “grammatical effects” to non-linguistic, cognitive issues.
- A prominent example is wh-island effects; one could argue that these sentences are considered as “bad”, because they are hard to process (e.g. Kluender 2005).
- Sprouse et al. (2012) show that there are no correlations between each individual’s working-memory capacity and ratings of island-violating sentences.

What's crucial is not the conclusion *per se*

- There is an actual conversation here, between “reductionists” and “generativists” on the same footing.
- I find this line of research very promising. There's the same kind of tension between phoneticians and phonologists (cf. J. Ohala's work).
- Recommended reading: “Colin Phillips (2013) Some arguments and non-arguments for reductionist accounts of syntactic phenomena. *Language and Cognitive Processes* 28:156-187.”

Some messages

- Experiments may not support “linguistic effects” outright (e.g. RBC). But that does not mean that those linguistic effects are not real.
- Experiments may reveal some complicated issues, such as a difference b/w linguists and non-linguists, b/w production and perception, b.w competence and performance, etc.
- Experiments allow generativists to constructively respond to “reductionism”.

Part II: Addressing
the criticism
empirically

Recent responses to the criticisms against generative methodology

- Some conceptual responses (e.g. Marants 2005; Phillips 2009).
- What I believe is most constructive:
Experimentally testing that “the introspection-based data out there” is in fact reliable.
- Jon Sprouse (UConn) has been developing a notable research program along this line.

Sprouse, Jon, Carson T. Schütze, & Diogo Almeida
(2013) A comparison of informal and formal
acceptability judgments using a random sample
from Linguistic Inquiry 2001-2010. *Lingua* 134:
219-248.

From the abstract

- “We tested 296 data points from the approximately 1743 English data points that were published in Linguistic Inquiry between 2001 and 2010. We tested this sample with 936 naïve participants using three formal judgment tasks (magnitude estimation, 7-point Likert scale, and two-alternative forced-choice) and report five statistical analyses. The results suggest a convergence rate of 95% between informal and formal methods, with a margin of error of 5.3–5.8%.”

Sample pair-wise comparisons

- ?? Thomas tried to have stopped the thief.
- Thomas tried to stop the thief.

(Martin 32.1)

- ??What did the students claim at that time that the teacher said?
- At that time, what did the students claim that the teacher said?

(Boskovic 34.4)

Targets

- 150 such pairs, one member of which was deemed unacceptable. Randomly sampled from LI (2001-2010).
- Only US English data. (A gint for future studies!)
- Tested these 300 pairs of sentences with 8 different lexical compositions ($300 * 8 = 2400$).
- Collected responses (online) from participants who are not linguists.

Directionality analysis

	Predicted dirtion	Opposite direction	Total
ME	146 (99%)	2	148
LS	143 (97%)	5	148
FC	144 (97%)	4	148

Statistical analyses (sample)

Table 3

Categorized results of statistical tests for ME. Significant p -values are defined at $p < .05$ in each direction; marginal p -values are defined at $p \leq .1$ in each direction. Significant Bayes factors are defined at $BF > 3$ in each direction; marginal Bayes factors are defined at $BF > 1$ in each direction.

	One-tailed	Two-tailed	LME	Bayes factor
Significant in the opposite direction	–	2	2	2
Marginal in the opposite direction	–	0	0	0
Non-significant in the opposite direction	–	0	0	0
Non-significant in the predicted direction	10	9	16	13
Marginal in the predicted direction	1	1	3	2
Significant in the predicted direction	137	136	127	131

Sprouse, Jon & Diogo Almeida (2012) Assessing the reliability of textbook data in syntax: Adger's Core Syntax. *Journal of Linguistics* 48: 609-652.

The abstract

- “In this paper we empirically assess this claim by formally testing all 469 (unique, US-English) data points from a popular syntax textbook (Adger 2003) using 440 naive participants, two judgment tasks (magnitude estimation and yes–no), and three different types of statistical analyses (standard frequentist tests, linear mixed effects models, and Bayes factor analyses). The results suggest that the maximum discrepancy between traditional methods and formal experimental methods is 2 %”

A brief look into the content

	Frequentist	Linear mixed effects	Bayes factors
Significant in the opposite direction	0	0	0
Non-significant	2	3	0
Marginal	1	0	2
Significant in the predicted direction	112	112	102
Replication failure rate	2.6%	2.6%	1.9%

Table 5

Counts of the replications and failures for the ME experiments. The failure rate includes marginal results as replication failures to derive a maximum failure rate.

Summary: Sprouse (2015)

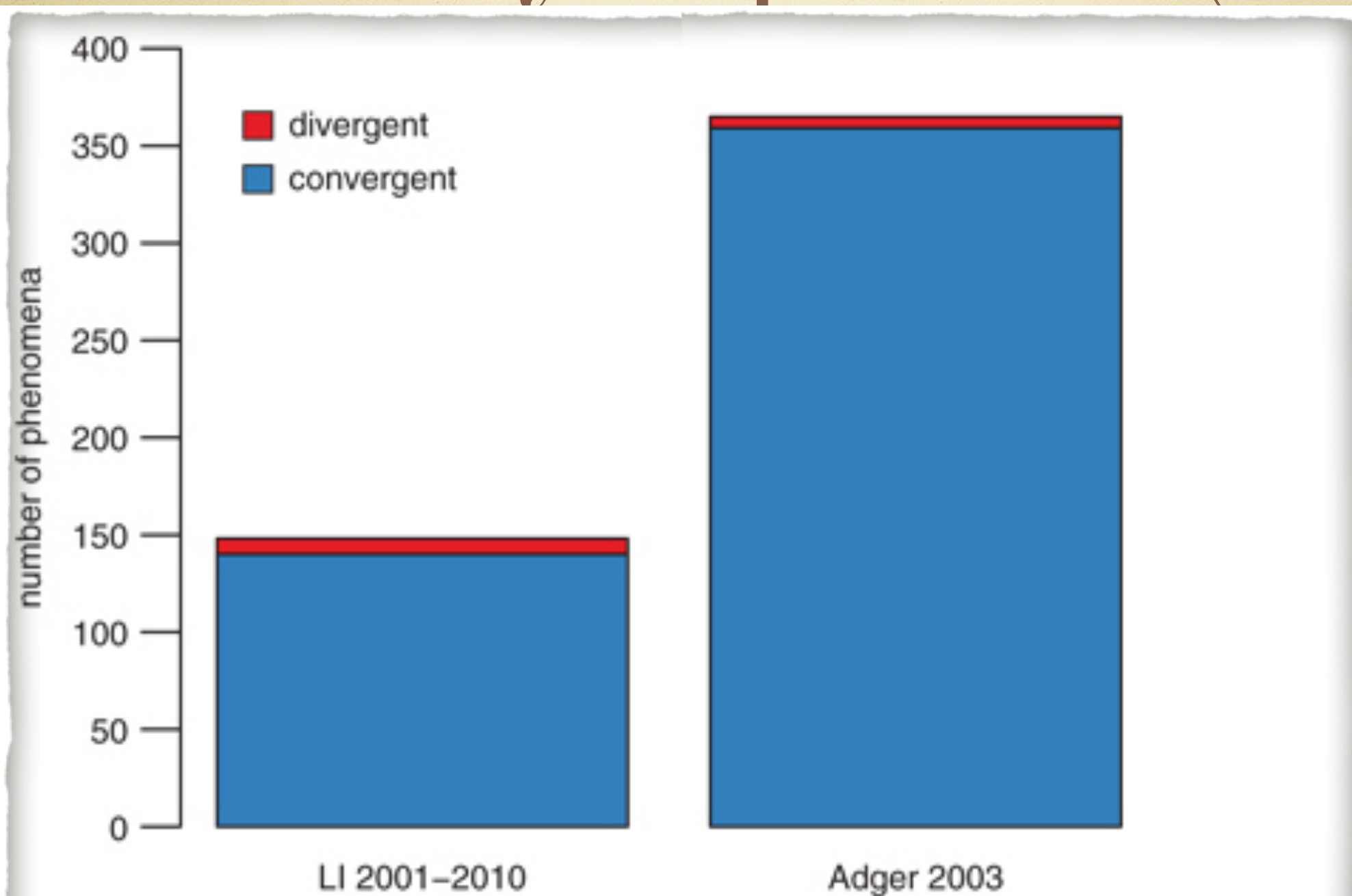


Figure 1

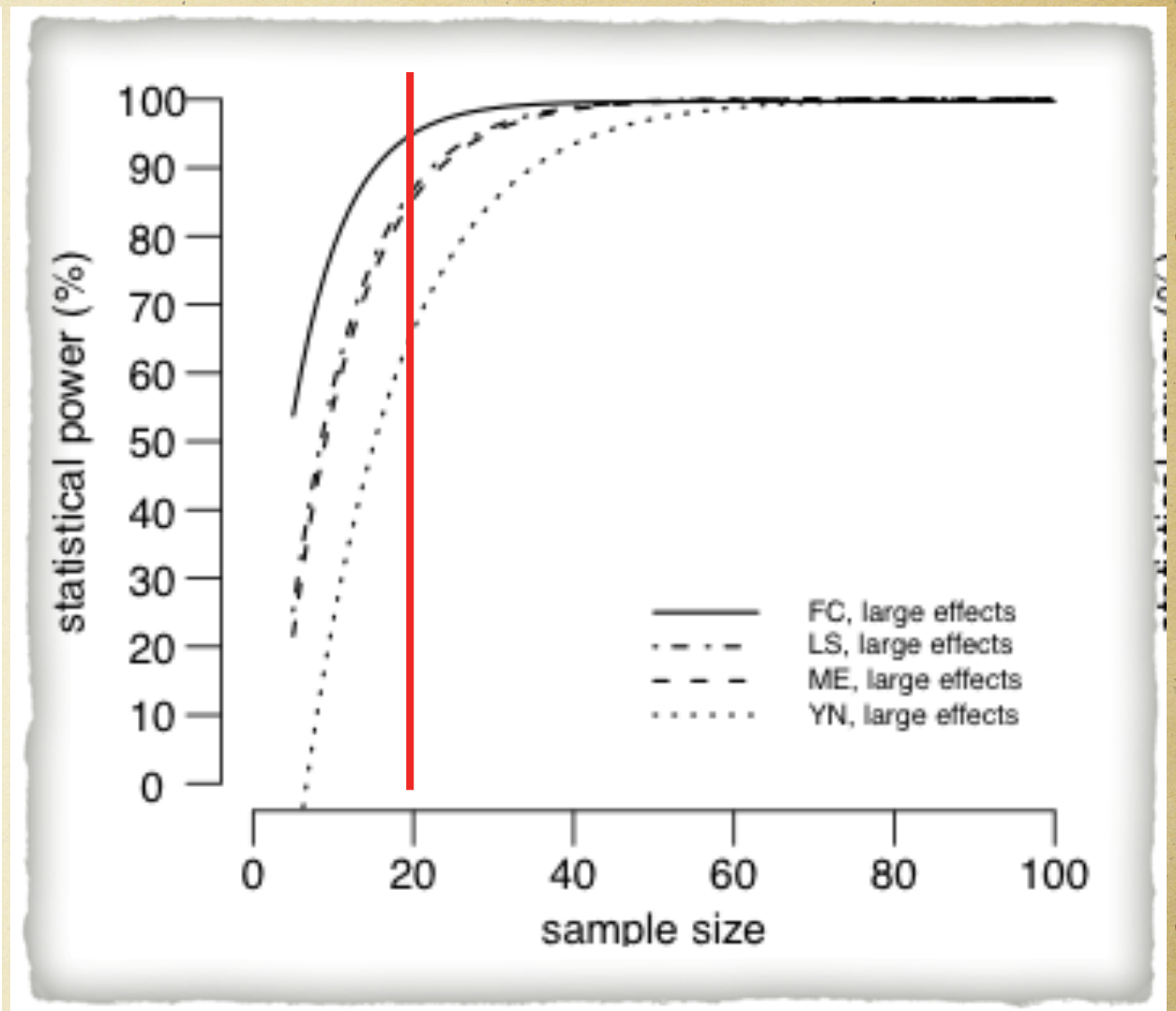
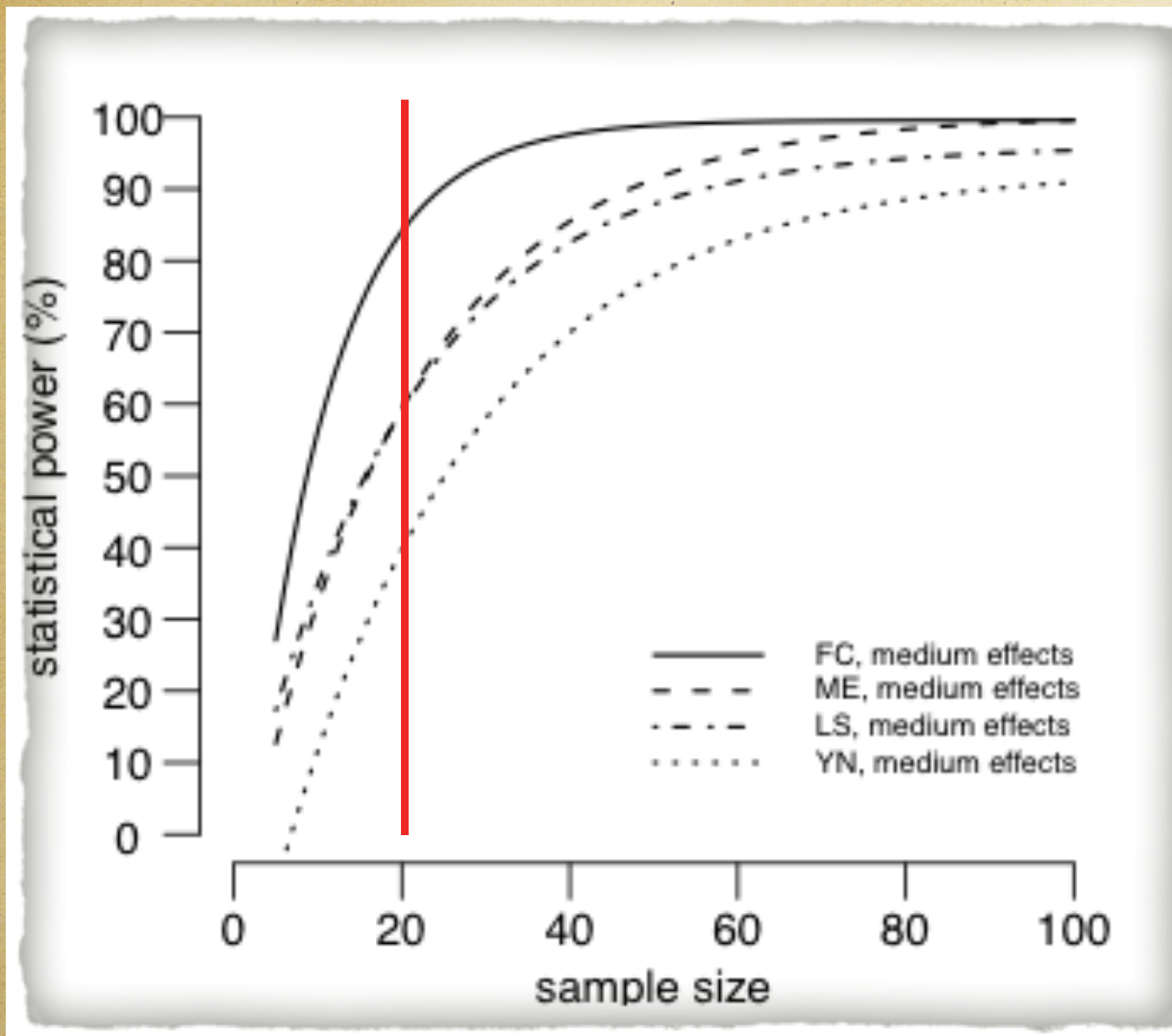
Convergent and divergent phenomena in *Linguistic Inquiry* 2001–2010 and [Adger \(2003\)](#)

- I wonder if we can do a similar kind of assessment for the Japanese data out there.
- A great topic for your research! A similar study (perhaps with a smaller scale) can be a great topic for your BA or MA research.

Some remaining
issues I: Task effects

Several experimental formats

- A Lickert-scale experiment (LS)
- A yes/no judgment (YS)
- Magnitude estimation (ME)
- A head-to-head experiment (a.k.a. 2-alternative forced choice: 2AFC or simply, FC)



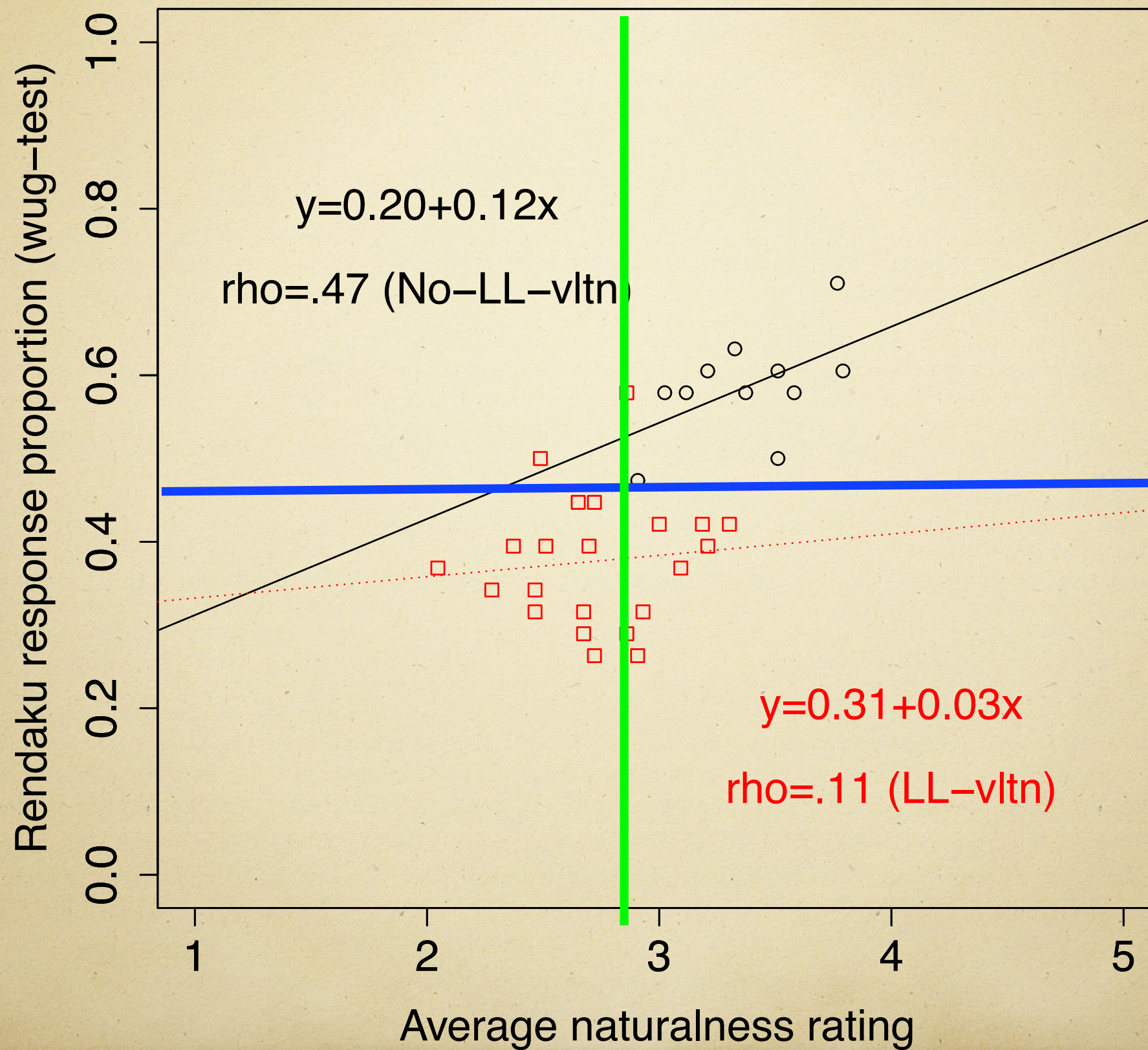
Statistical power: How likely would we find a statistically significant difference.

Based on Sprouse & Almeida 2012

Kawahara (2015) on Lyman's Law

- Rendaku is blocked when there is another voiced obstruent already.
- [takara+kuji], [oo+tokage]
- A LS experiment (Kawahara 2012) vs. a FC experiment (Kawahara and Sano 2014)

Separated by LL-violation

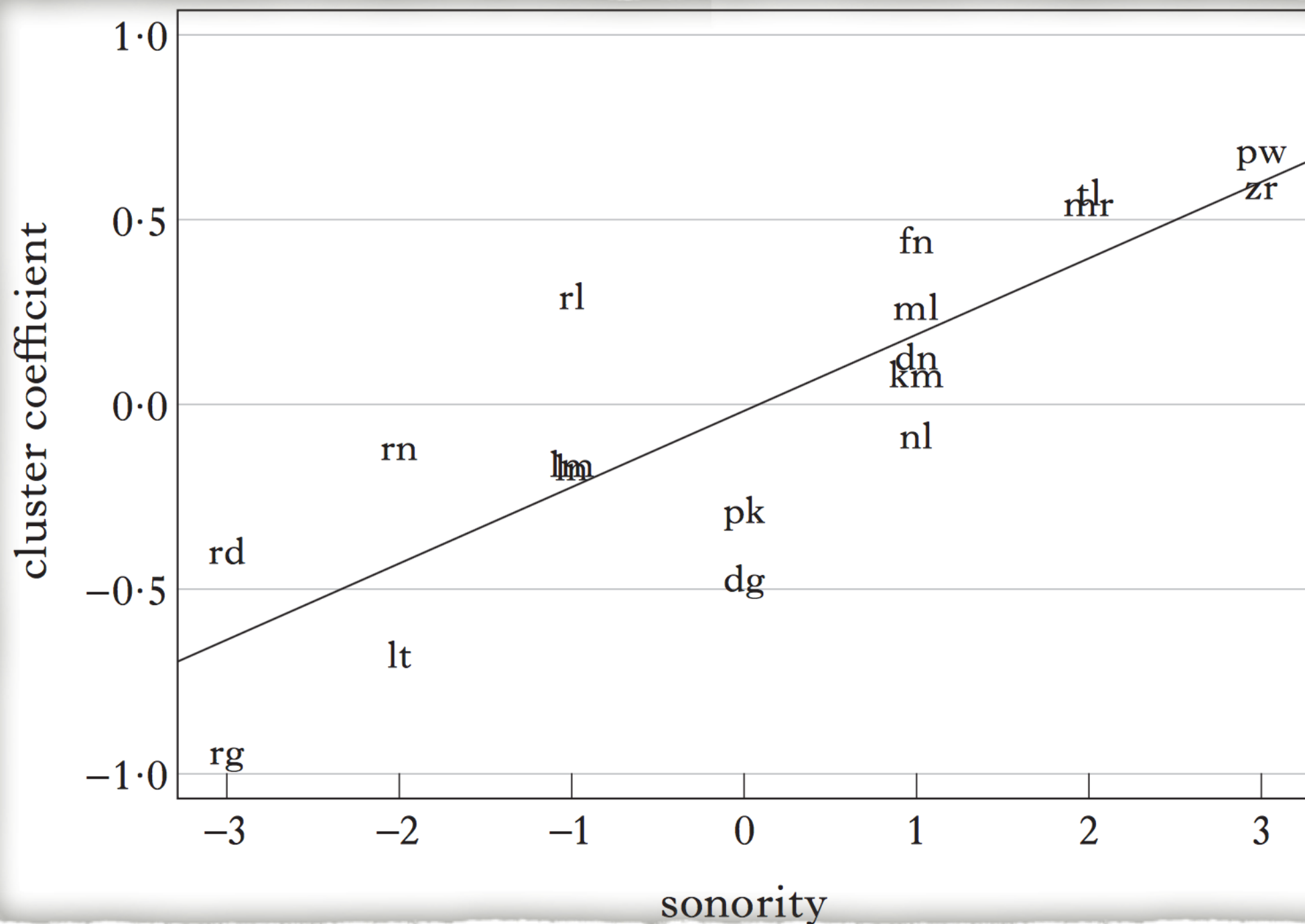


Some remaining
issues II: The issue
of gradience

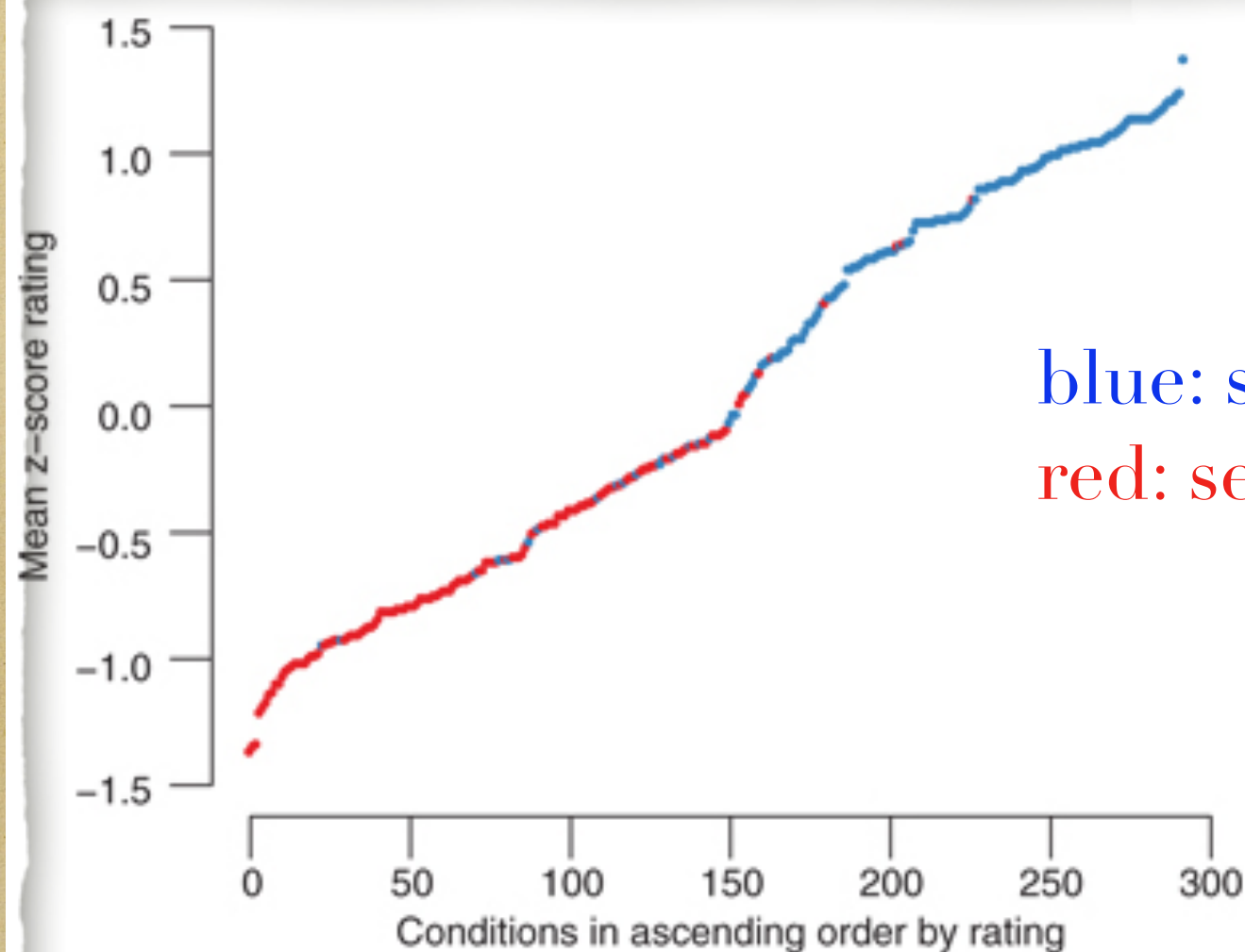
Grammatical- ungrammatical dichotomy

- Every sentence is either generatable or non-generatable by the grammar (Chomsky 1957).
- Every word is either permitted by grammar or not: *blick, brick vs. bnick* (Halle 1973).
- There should be a dichotomy between grammatical structures and ungrammatical structures (both in phonology and syntax).

Gradient phonotactic judgment: Daland et al. (2011)



Gradient sentence judgment: Sprouse (2015)



blue: sentences w/o diacritic
red: sentences w/ diacritic

Figure 5

Acceptability for 300 sentence types randomly sampled from *Linguistic Inquiry* 2001–2010 plotted in ascending order (Sprouse et al. 2013). Red dots indicate sentence types that were given a diacritic (*, ?, or a combination) in LI. Blue dots indicate sentence types that were given no diacritic

A way out?

- Grammar is dichotomous; it is our cognitive system (a.k.a. performance) that “gives a gradience flavor” to any concept.
- In fact, mathematically dichotomous concepts can yield gradient judgments:
 - Odd number vs. even number: 7952 vs. 8
 - Female vs. male: nurse, mum, police woman, cow girl
 - Existing vs. non-existing: unicorn vs. round triangle

Table 1. *Categories, category exemplars, and exemplariness ratings for prototype and well-defined categories*

Prototype categories				Well-defined categories			
fruit				even number			
apple	1.3	orange	1.1	4	1.1	2	1.0
strawberry	2.1	cherry	1.7	8	1.5	6	1.7
plum	2.5	watermelon	2.9	10	1.7	42	2.6
pineapple	2.7	apricot	3.0	18	2.6	1000	2.8
fig	5.2	coconut	4.8	34	3.4	34	3.1
olive	6.4	olive	6.5	106	3.9	806	3.9
sport				odd number			
football	1.4	baseball	1.2	3	1.6	7	1.4
hockey	1.8	soccer	1.6	7	1.9	11	1.7
gymnastics	2.8	fencing	3.5	23	2.4	13	1.8
wrestling	3.1	sailing	3.8	57	2.6	9	1.9
archery	4.8	bowling	4.4	501	3.5	57	3.4
weight-lifting	5.1	hiking	4.6	447	3.7	91	3.7
vegetable				female			
carrot	1.5	peas	1.7	mother	1.7	sister	1.8
celery	2.6	spinach	1.7	housewife	2.4	ballerina	2.0
asparagus	2.7	cabbage	2.7	princess	3.0	actress	2.1
onion	3.6	radish	3.1	waitress	3.2	hostess	2.7
pickle	4.8	peppers	3.2	policewoman	3.9	chairwoman	3.4
parsley	5.0	pumpkin	5.5	comedienne	4.5	cowgirl	4.5
vehicle				plane geometry figure			
car	1.0	bus	1.8	square	1.3	square	1.5
boat	3.3	motorcycle	2.2	triangle	1.5	triangle	1.4
scooter	4.5	tractor	3.7	rectangle	1.9	rectangle	1.6
tricycle	4.7	wagon	4.2	circle	2.1	circle	1.3
horse	5.2	sled	5.2	trapezoid	3.1	trapezoid	2.9
skis	5.6	elevator	6.2	ellipse	3.4	ellipse	3.5

From

Armstrong
et al. (1983)

- Even mathematically dichotomous distinctions can be perceived with gradience.
- But what's the evidence to assume that grammaticality is dichotomous? (Sprouse 2007)
- Or should we admit that grammatical judgments are gradient? How should the grammatical theory look like then?
- Recall that this issue is relevant to phonological theories as well (very much so!).

Standards for Internet-Based Experimenting

Ulf-Dietrich Reips

Experimental and Developmental Psychology, University of Zürich, Switzerland

Abstract. This article summarizes expertise gleaned from the first years of Internet-based experimental research and presents recommendations on: (1) ideal circumstances for conducting a study on the Internet; (2) what precautions have to be undertaken in Web experimental design; (3) which techniques have proven useful in Web experimenting; (4) which frequent errors and misconceptions need to be avoided; and (5) what should be reported. Procedures and solutions for typical challenges in Web experimenting are discussed. Topics covered include randomization, recruitment of samples, generalizability, dropout, experimental control, identity checks, multiple submissions, configuration errors, control of motivational confounding, and pre-testing. Several techniques are explained, including “warm-up,” “high hurdle,” password methods, “multiple site entry,” randomization, and the use of incentives. The article concludes by proposing sixteen standards for Internet-based experimenting.

Key words: Internet-based experimenting, Web experiment, standards, experiment method, psychological experiment, online research, Internet research, Internet science, methodology

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Recently Added Studies

(This list will hold studies added in the past ~30 days)

- In Sexuality: [Virginity and Guilt Differences between Men and Women \(MEN ONLY\)](#) (01/28/15)
- In Social: [Does engaging in extra- curricular and pro-social activities improve your well being?](#) (01/27/15)
- In Forensic: [Offending Behaviour, Attitudes to Crime, and Personality Traits](#) (01/27/15)
- In Forensic: [Philosophy of punishment](#) (01/27/15)
- In Health: [An Examination of Trauma and Mental Health Outcomes](#) (01/26/15)
- In Cognition: [What are people afraid of, and why?](#) (01/26/15)
- In I/O: [Do You Behave Differently? Investigating Workplace Behaviors](#) (01/26/15)
- In Mental Health: [An investigation into the Relationship between Substance Use, Depression & Quality of Life](#) (01/25/15)
- In Personality: [Personality and Romantic Relationship Break-Ups](#) (01/25/15)
- In Cyber: [Psychological attributes relating to social networking use](#) (01/23/15)
- In Personality: [Personality & Attitudes About Bullying](#) (01/23/15)
- In Personality: [Guilt Proneness and Prosocial Behavior](#) (01/23/15)
- In Cognition: [Memory while playing online games](#) (01/23/15)
- In Relationships: [Social network effects on human pair choice](#) (01/19/15)
- In Cognition: [Memory judgments experiment](#) (01/19/15)
- In Social: [Differences in attitudes towards life among perfectionists and non-perfectionists: Looking for the perfectionist experience](#) (01/14/15)
- In Social Cognition: [Perceptions of healthcare professionals](#) (01/14/15)
- In General: [Investigating the relationship between attitudes towards animals and perceived level of mental capacity](#) (01/14/15)
- In Relationships: [Social Functions of Parasocial Relationships with Media Figures](#) (01/14/15)
- In Relationships: [Study for women: Environment and mate choice](#) (01/13/15)
- In Mental Health: [Stressful Life Events and Well-Being](#) (01/13/15)
- In Mental Health: [A study about depression, social relationships and recovery](#) (01/12/15)
- In Personality: [Personality and responses to videos](#) (01/12/15)
- In Mental Health: [Factors underlying the experience of social anxiety](#) (01/09/15)
- In Relationships: [Sex in Relationships](#) (01/08/15)
- In Health: [Exploring the links between 'distressed' personality type and subjective health complaints](#) (01/08/15)
- In Relationships: [Personality and Experiences in Relationships](#) (01/08/15)
- In Relationships: [Perceptions of Relationships](#) (01/07/15)
- In Social: [Experiences of Research Participation](#) (01/07/15)
- In Sexuality: [Labiaplasty: Attitudes and Predictors behind the Female Cosmetic Surgery](#) (01/07/15)
- In Social: [The effect of prior contact and perceived status on perceptions of contact](#) (British UK-nationals)(01/07/15)
- In Relationships: [Success and Personality](#) (1/05/15)
- In Cross-Cultural: [Examination of cross cultural differences in psychosocial functions of autobiographical memory](#) (12/30/14)

Some concluding remarks

- I believe that the most constructive way to respond to the “anti-introspection-data criticism” is to show, quantitatively, that the introspection-data (a.k.a. “our method”) are reliable.
- Maybe more can be done for Japanese?
- Experiments are not that hard these days.

Recommended readings

Criticisms and responses:

- Gibson, E. & E. Fedorenko. 2010. Weak quantitative standards in linguistics research. *Trends in Cognitive Sciences* 14: 233–234.
- Marantz, A. 2005. Generative linguistics within the cognitive neuroscience of language. *The Linguistic Review* 22: 429–445.

Overview papers:

- Myers, J. 2009. Syntactic judgment experiments. *Language and Linguistics Compass* 3. 406–423.
- Sprouse, J. 2015. Three open questions in experimental syntax. *Linguistic Vanguard*.

Two very famous monographs:

- Cowart, W. 1997. *Experimental syntax: Applying objective methods to sentence judgments*. Thousand Oaks, CA: Sage.
- Schütze, C. T. 1996. *The empirical base of linguistics: Grammaticality judgments and linguistic methodology*. Chicago: University of Chicago Press.