

PROSODIC DE-EMPHASIS UNDER NON-IDENTITY: IN SUPPORT OF A PRAGMATIC ACCOUNT

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Meaning in Flux
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ANAPHORIC DEACCENTING - IDENTITY

I don't like the viola.

ANAPHORIC DEACCENTING - IDENTITY

She thought I played the viola, but
I don't **like** the viola.

ANAPHORIC DEACCENTING - NONIDENTITY

I don't like string instruments.

ANAPHORIC DEACCENTING - NONIDENTITY

She thought I played the viola, but
I don't **like** string instruments.

ANAPHORIC DEACCENTING - NONIDENTITY

First John called Mary a Republican, and then
she insulted **him**.

(Tancredi 1992, Rooth 1992, i.a.)

ONE-MECHANISM ACCOUNT

(Rochemont 1986, Rooth 1992, Selkirk 1995, Schwarzschild 1999, Sauerland 2005, Büring 2016)

Unified grammatical constraint:

Deaccent if $\exists \text{Clo}(\text{Antecedent})$ entails $\exists \text{Clo}(\text{Target})$

She thought I
played the viola.



I don't **like** the
viola.

$\exists x.\text{viola}(x)$ entails $\exists x.\text{viola}(x)$

She thought I
played the viola.



I don't **like** string
instruments.

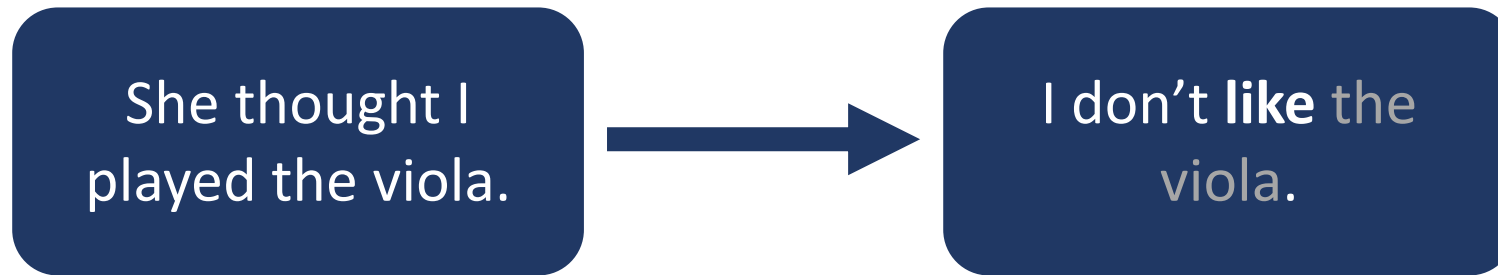
$\exists x.\text{viola}(x)$ entails $\exists x.\text{string}(x)$

TWO-MECHANISM ACCOUNT

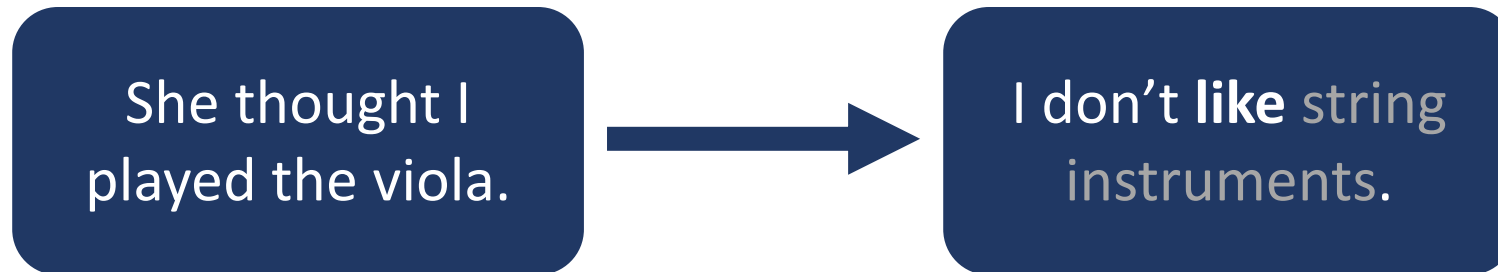
(Tancredi 1992, Fox 2000, Wagner 2012)

Grammar:

Deaccent if Antecedent = Target



viola = viola ✓

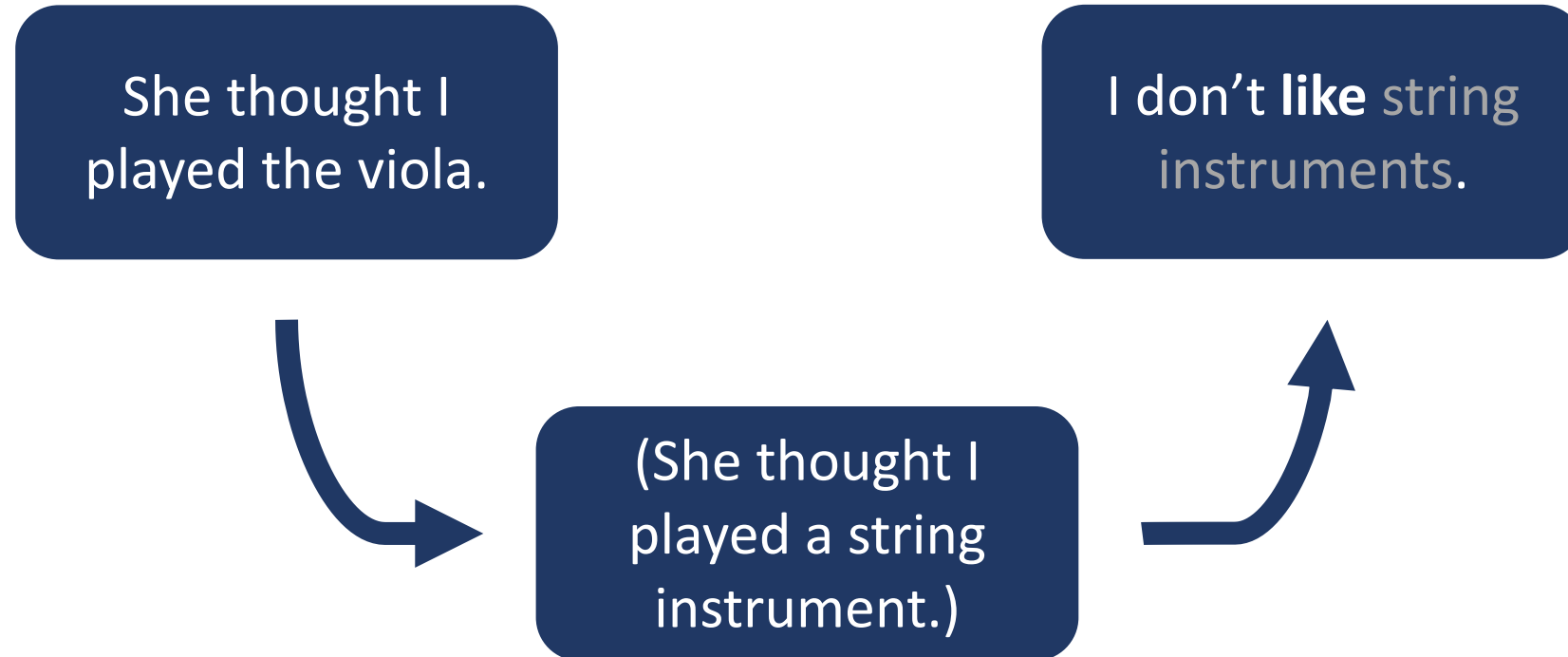


string instrument ≠ viola ✗

TWO-MECHANISM ACCOUNT

(Tancredi 1992, Fox 2000, Wagner 2012)

Accommodate identical antecedents if necessary



string instruments = “accommodation-seeking material”

(Fox 2000)

PREDICTIONS

One-mechanism accounts:

Deaccenting of inferable and repeated material mandatory in production, felicitous in perception

Two-mechanism accounts:

Deaccenting of inferable material optional in production, felicitous in perception

PREDICTIONS

One-mechanism accounts:

No felicitousness difference between deaccented identical and deaccented inferable material

Two-mechanism accounts:

Possible felicitousness difference between deaccented identical and deaccented inferable material

PREVIEW

EXPERIMENTS 1-2:

No deaccenting of inferable constituents in production

EXPERIMENT 3:

Low felicitousness of deaccented inferable constituents in perception

EXPERIMENT 4:

“Supportive” contexts erode participants’ intuitions about the felicitousness of deaccenting

PREVIEW

The results are problematic for both classes of account...

...but especially for the **one-mechanism accounts**.

Upshot: The best account of deaccenting under nonidentity is a costlier version of the **two-mechanism account**.

EXPERIMENT 1 – PRODUCTION

10 native American English speakers (5 female)

Read aloud critical sentences embedded in three-sentence carrier

Constant number of syllables before critical clause onset

Instructed to read entire paragraph and plan how to say it before speaking

CRITICAL SENTENCES

SVO and SVO

S2: monosyllable, discourse-new

O2: trochee, discourse-old

V2: iamb, variable discourse status

CRITICAL VERB DISCOURSE STATUS

New: Second verb is fully discourse-new

*Andrea **rebuffed** Laura, and Ron **embraced** Laura.*

Inferable: First and second verb linked by inferencing relation

*Veronica **hugged** Laura, and Ron **embraced** Laura.*

Repeated: First and second verb identical

*Christina **embraced** Laura, and Ron **embraced** Laura.*

EXPERIMENT 0 – NORMING INFERRABILITY

Given that you know

Ann rebuffed Brad

1.8 / 7

how likely do you think it is that

Ann embraced Brad?

60 Amazon Mechanical Turk users

EXPERIMENT 0 – NORMING INFERRABILITY

Given that you know

Ann hugged Brad

6.7 / 7

how likely do you think it is that

Ann embraced Brad?

60 Amazon Mechanical Turk users

EXPERIMENT 0 – NORMING INFERRABILITY

Given that you know

(Ann embraced Brad)

7? / 7

how likely do you think it is that

Ann embraced Brad?

60 Amazon Mechanical Turk users

EXPERIMENT 0 – NORMING INFERABILITY

Given that you know

Ann **rebuffed** Brad

1.8 / 7

Ann **hugged** Brad

6.7 / 7

(Ann **embraced** Brad)

7? / 7

how likely do you think it is that

Ann embraced Brad?

60 Amazon Mechanical Turk users

PREDICTIONS AND QUESTION

Canonical **discourse-new** pattern:

*Andrea rebuffed Laura, and Ron **embraced** Laura.*

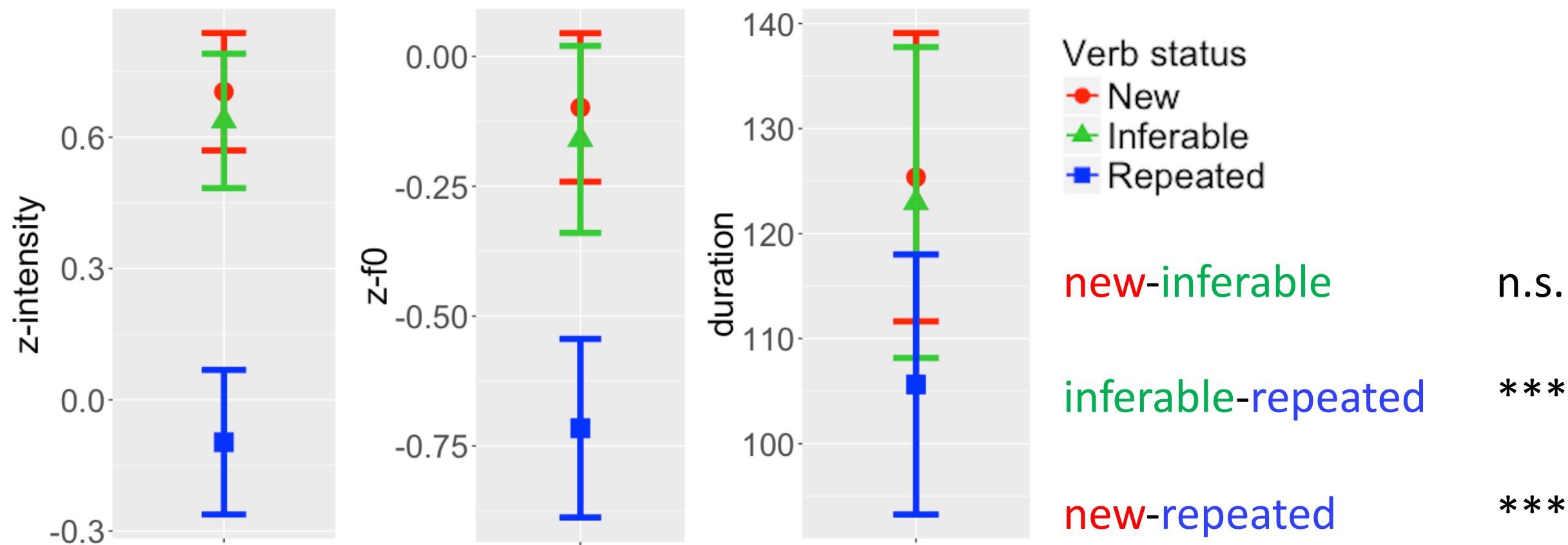
Canonical **discourse-old** pattern:

*Christina embraced Laura, and **Ron** embraced Laura.*

Do **inferable verb** sentences act like **new** or **old**?

RESULTS

Phonetic correlates extracted from V2 stressed nucleus using ProsodyPro (Xu 2013)



EXPERIMENT 2 – PERCEPTION OF ACCENT

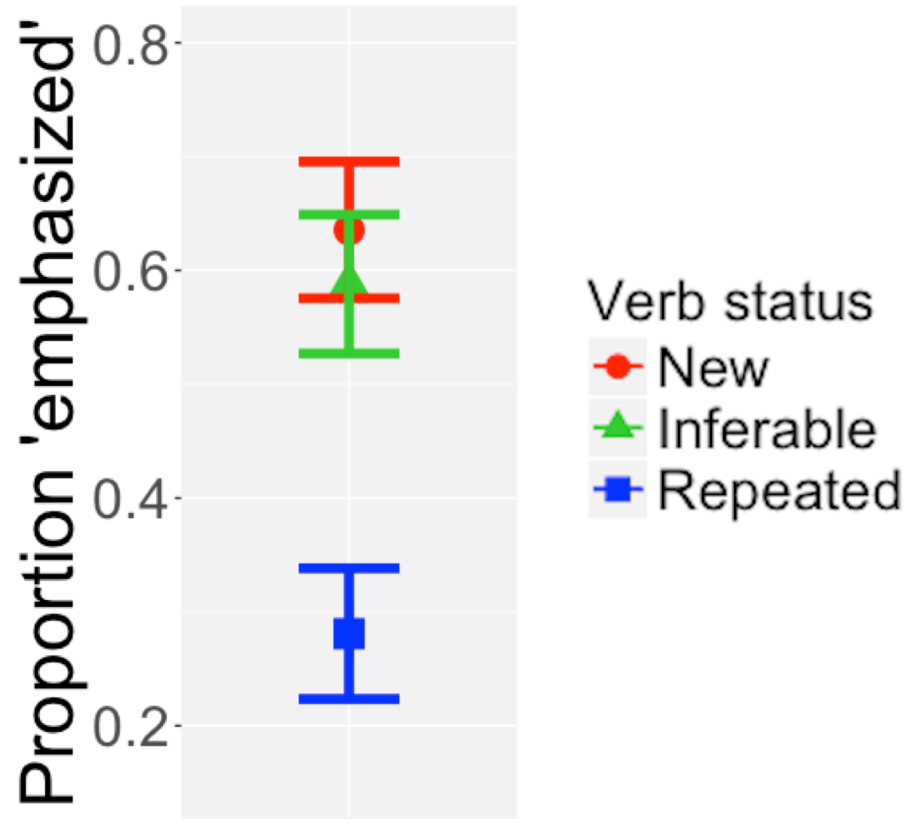
Does listeners' perception of accent correspond to the phonetic measurements?

Andrea rebuffed Laura, and Ron embraced Laura.

Was “embraced” emphasized or not emphasized?

200 Amazon Mechanical Turk users

RESULTS



new-inferable n.s.

inferable-repeated ***

new-repeated ***

DISCUSSION - PRODUCTION

New verbs were accented:

High phonetic values, perceived as emphasized

Repeated verbs were deaccented:

Low phonetic values, not perceived as emphasized

Inferable verbs:

No reliable differences from new verbs

Inferable verbs were not deaccented.

DISCUSSION - PRODUCTION

This is problematic for both licensing accounts, since both are intended to generate deaccenting of inferable material.

It's particularly bad for the **one-mechanism account**, which can't explain the difference between repeated and inferable material.

The two-mechanism account is still tenable, since deaccenting of inferable material is not mandatory.

DOES PRODUCTION TELL US ANYTHING?

Experiment 1 speakers did not plan their utterances.

- They might not have been aware of the inference relation.
- They might have inferred novelty from the choice of a non-identical verb.
- They might have performed the task at a shallow level.

What happens when listeners encounter an utterance where the speaker chose to deaccent inferable material?

EXPERIMENT 3 – OUT-OF-THE-BLUE PERCEPTION

Andrea *rebuffed* Laura, and Ron *embraced* Laura.

Veronica *hugged* Laura, and Ron *embraced* Laura.

Christina *embraced* Laura, and Ron *embraced* Laura.

EXPERIMENT 3 – OUT-OF-THE-BLUE PERCEPTION

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Andrea *rebuffed* Laura, and Ron *embraced* Laura. ←
Veronica *hugged* Laura, and Ron *embraced* Laura. ←
Christina *embraced* Laura, and Ron *embraced* Laura. ←

EXPERIMENT 3 – OUT-OF-THE-BLUE PERCEPTION

ACCENTED V2

*Andrea **rebuffed** Laura, and Ron **embraced** Laura.
Veronica **hugged** Laura, and Ron **embraced** Laura.
Christina **embraced** Laura, and Ron **embraced** Laura.*

DEACCENTED V2

*Andrea **rebuffed** Laura, and Ron **embraced** Laura.
Veronica **hugged** Laura, and Ron **embraced** Laura.
Christina **embraced** Laura, and Ron **embraced** Laura.*

1 female voice, 1 male voice

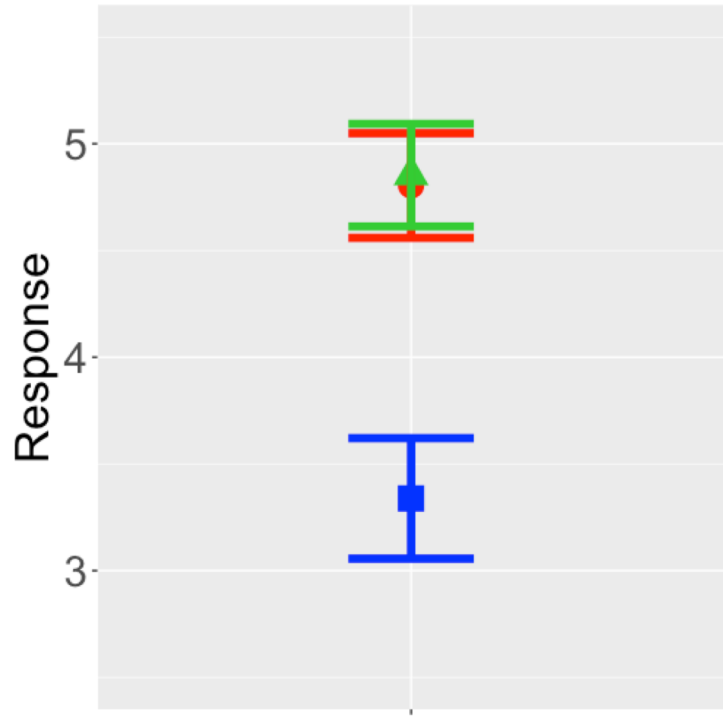
EXPERIMENT 3 – OUT-OF-THE-BLUE PERCEPTION

144 MTurk users:

How natural does the “melody” or “tune” of the sentence sound?

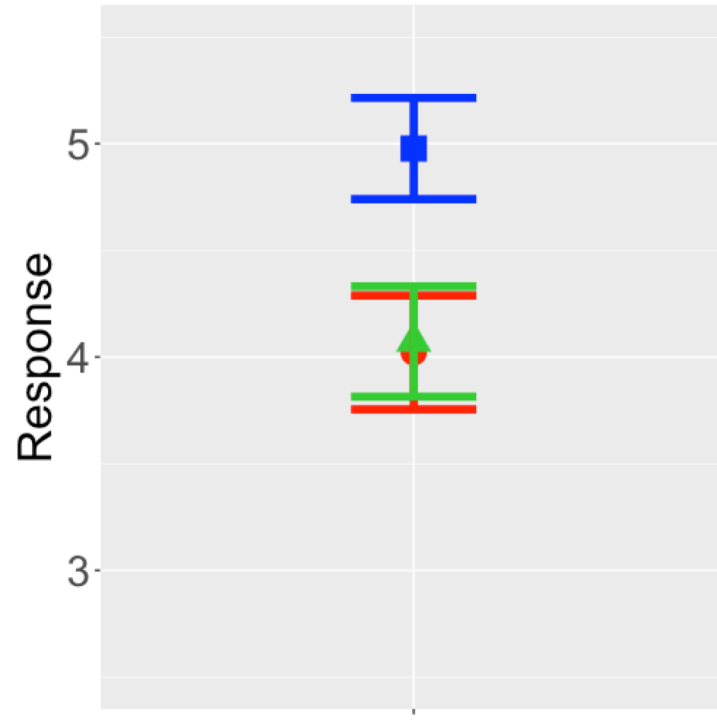
EXPERIMENT 3 – RESULTS

Accented V



Grammatical filler mean = 5.59
Ungrammatical filler mean = 2.31

Deaccented V



Verb status

● New

▲ Inferable

■ Repeated

new-inferable

n.s.

inferable-repeated

new-repeated

EXPERIMENT 3 – DISCUSSION

Repeated verbs sound **good** when **deaccented** and **less good** when **accented**.

New and **inferable** verbs sound **good** when **accented** and **less good** when **deaccented**.

BUT! It's not clear that **less good** means **bad**.

“Less good” ratings are still better than ungrammatical fillers, especially for deaccented **new/inferable**.

EXPERIMENT 3 – DISCUSSION

Problems for theoretical accounts:

One-mechanism:

Predicted identical licensing (felicitousness) of deaccented inferable material and deaccented repeated material

Two-mechanism:

Predicted deaccented inferable material would trigger accommodation and be marked as acceptable

WHERE ARE WE?

In both production and perception, **new** and **inferable** verbs pattern together to the exclusion of **repeated** verbs.

Contra the predictions of both theoretical accounts...

...but especially the **one-mechanism account**, which predicts identical licensing for **repeated** and **inferable** material.

WHERE ARE WE?

Can we find evidence in favor of the pragmatically mediated **two-mechanism account**?

This model predicts that a supportive context might facilitate accommodation of an identical antecedent.

It's possible the lexical inferencing relations were insufficient and require additional support from the context.

EXPERIMENT 4 – PERCEPTION IN CONTEXT

Replication of Experiment 3...

...except participants hear recording after reading a context sentence designed to construe antecedent verb and **inferable** verb as **pragmatically identical**.

EXPERIMENT 4 – PERCEPTION IN CONTEXT

Context:

The high school reunion was very eventful, with many people seeing each other for the first time in ten years.

ACCENTED V2

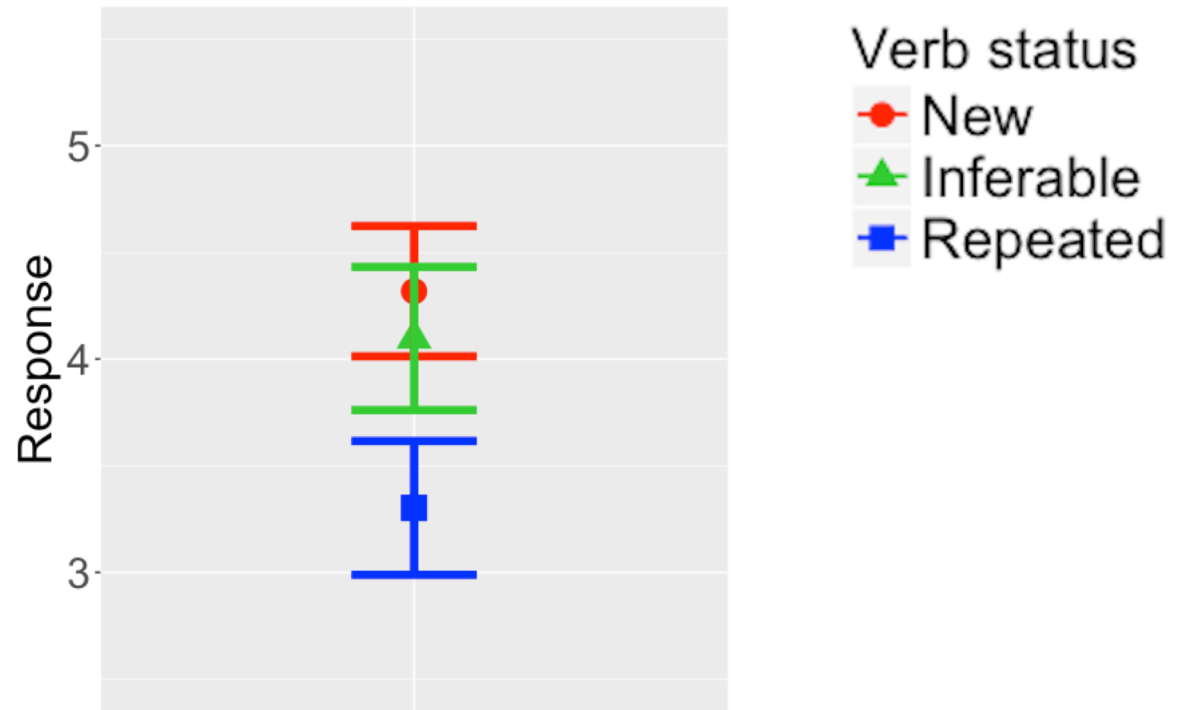
Andrea *rebuffed* Laura, and Ron *embraced* Laura.
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Christina *embraced* Laura, and Ron *embraced* Laura.

DEACCENTED V2

Andrea *rebuffed* Laura, and Ron *embraced* Laura.
Veronica *hugged* Laura, and Ron *embraced* Laura.
Christina *embraced* Laura, and Ron *embraced* Laura.

EXPERIMENT 4 – RESULTS

Accented V



new-inferable

n.s.

inferable-repeated

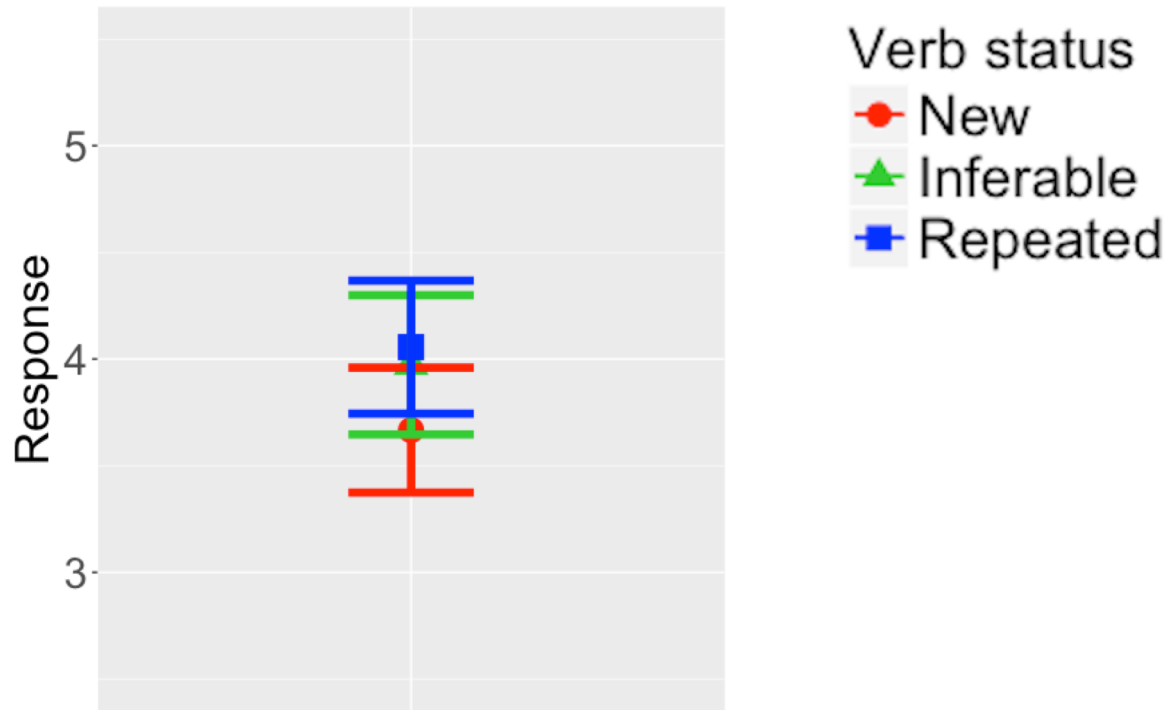
new-repeated

Grammatical filler mean = 5.41

Ungrammatical filler mean = 2.43

EXPERIMENT 4 – RESULTS

Deaccented V



no significant effect of verb status

Grammatical filler mean = 5.41

Ungrammatical filler mean = 2.43

EXPERIMENT 4 – DISCUSSION

The addition of context...

- collapsed naturalness scores toward the middle of the scale
- eliminated any effect of discourse status on ratings for deaccented verbs

GENERAL DISCUSSION

Echoing recent work...

- Deaccenting of inferable constituents was elusive in both production and perception

(Chodroff & Cole 2019)

- Participants had eroded intuitions regarding the appropriateness of certain prosodic realizations in context

(Roettger et al 2019)

GENERAL DISCUSSION

What do we do with ubiquitous reports of such deaccenting in the literature?

viola - string instrument

call a Republican - insult

GENERAL DISCUSSION

It seems clear that inferable and repeated material don't have the same grammatical status.

The **one-mechanism account** is out.

GENERAL DISCUSSION

The accommodation model predicts that inferable material should be deaccented much more readily than it actually is.

Deaccenting doesn't come "for free" just because the material is inferable.

The **two-mechanism account**, as construed in the literature, is out.

GENERAL DISCUSSION

Modified two-mechanism account:

Processing deaccented inferable material involves difficult/costly/late/otherwise non-trivial accommodation

Listeners need to “think” (maybe explicitly!) to make sense of such utterances

THANKS TO...



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SELECTED REFERENCES

Büring, D. (2016). *Intonation and Meaning*. Oxford: Oxford University Press.

Chodroff, E. & Cole, J. (2019). The phonological and phonetic encoding of information structure in American English nuclear pitch accents. *Proceedings of ICPhS 19*.

Fox, D. (2000). *Economy and Semantic Interpretation*. Cambridge, MA: MIT Press.

Rochemont, M. (1986). *Focus in Generative Grammar*. Amsterdam: John Benjamins.

Roettger, T., Mahrt, T., & Cole, J. (2019). Mapping prosody onto meaning – the case of information structure in American English. *Language, Cognition and Neuroscience* 34(7). 841-860.

Rooth, M. (1992). Ellipsis redundancy and reduction redundancy. *Proceedings of the Stuttgart Ellipsis Workshop*.

Sauerland, U. (2005). Don't interpret focus! Why a presuppositional account of focus fails and how a presuppositional account of givenness works. *Proceedings of Sinn und Bedeutung* 9. 370-384.

Schwarzschild, R. (1999). GIVENness, AvoidF and other constraints on the placement of accent. *Natural Language Semantics* 7(2). 141-177.

SELECTED REFERENCES

- Selkirk, E. (1995). Sentence prosody: Intonation, stress, and phrasing. In Goldsmith, J. (ed.), *The Handbook of Phonological Theory*. Cambridge. 550-569.
- Tancredi, C. (1992). Deletion, deaccenting, and presupposition. MIT doctoral thesis.
- Wagner, M. (2015). Focus and givenness: A unified approach. In I. Kučerová and A. Neeleman, eds., *Contrasts and Positions in Information Structure*. Cambridge: Cambridge University Press. 102-147.
- Xu, Y. (2013). ProsodyPro – A tool for large-scale systematic prosody analysis. *Proceedings of Tools and Resources for the Analysis of Speech Prosody*. 7-10.