Syntax and prosody of coordination

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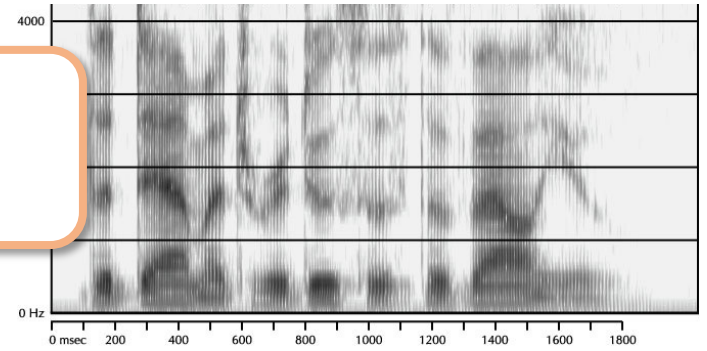
General Linguistics Seminar

Modularity

⟦She will arrive⟧

Meaning

Sounds



Scope ambiguity

(1) They were required to learn **two languages**.

✓*required* > *two*: 'The requirement is that they learn any two languages.'

✓*two* > *required*: 'There were two specific languages that they were required to learn.'

- Non-surface scope is often derived by movement

(2) a. They were required to **two languages** λx learn **x**. *required* > *two*

b. They were **two languages** λx required to learn **x**. *two* > *required*

Scope ambiguity in coordination

(3) They were required to learn **not** German **but** French.

✓*required* > *not*: ‘The requirement is that they don’t learn German but learn French.’

✓*not* > *required*: ‘They were not required to learn German, but they were required to learn French.’

- This talk: a different machinery to understand non-surface scope

Non-surface scope is the result of ellipsis and two positions of *not*

(4) My analysis of (3)

They were <u>required</u> to learn **not** German **but** French.

a. They were required to learn [not German but French].

required > not

b. They were [<not> required to learn not German but ~~required to learn~~ French].

not > required

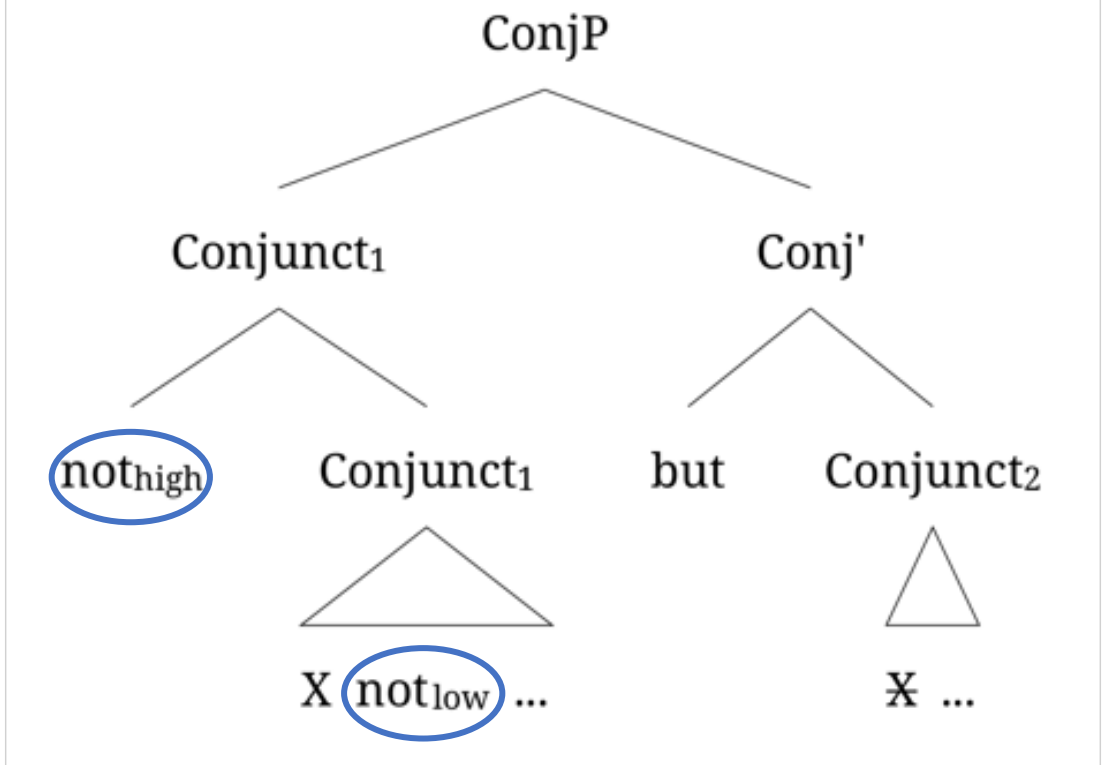
- Converging evidence for ellipsis from syntax, semantics and prosody

Same syntax for negation and *either*

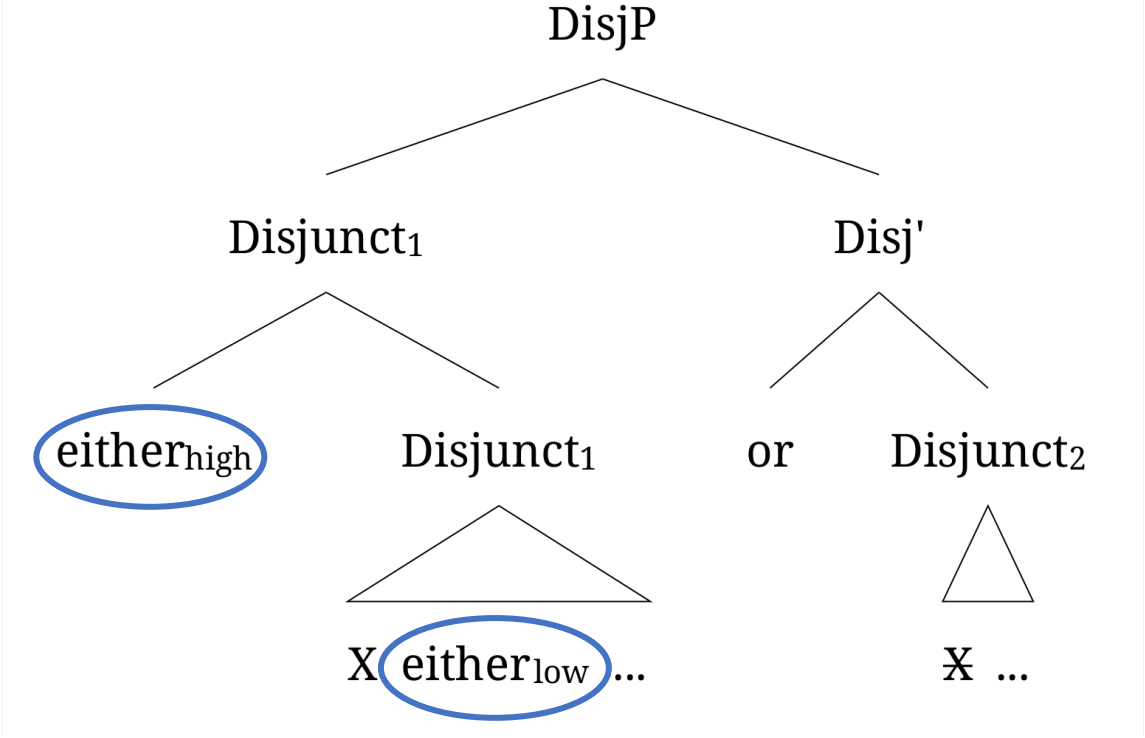
- There is a use of negation that must co-occur with *but*-coordination. In this use, negation is a focus-sensitive operator.
- *Either*, which must co-occur with *or*, is also a focus-sensitive operator, and has two positions in a sentence (Wu 2021a).

Bipartite structure of focus-sensitive operators

- All focus-sensitive operators have two positions in a sentence.[1]



Syntax of *not…but…*



Syntax of *either…or…*

[1] E.g., Lee (2004), Cable (2007), Hole (2015), (2017), Hirsch (2017), Quek & Hirsch (2017), and Bayer (2018).

Roadmap

- Background
- Neg-seems-normal can involve ellipsis: Syntactic-semantic arguments
- Neg-seems-normal can involve ellipsis: Prosodic argument
- Conclusion

But in English has at least three uses[1]

- Counterexpectational *but*: the first conjunct (i.e. *A* in *A but B*) creates an expectation that is rejected by the second conjunct (e.g. *Max eats spinach but hates it*).
- Semantic opposition *but*: each conjunct contains a member of an antonymic pair (e.g. *John is tall but Bill is short*).
- **Corrective *but***: there must be negation in the first conjunct and no negation in the second:

(5) a. Max does**n't** eat spinach but chard.[2]

b. #Max eats spinach but chard.

c. #Max does**n't** eat spinach but **not** chard.

[1] Toosarvandani (2013, 2014).
[2] Toosarvandani (2013:828).

Analysis in the literature

(6) a. Max does**n't** eat spinach but chard.

b. Max eats **not** spinach but chard.

- (6a) involves ellipsis (Vicente 2010 and Toosarvandani 2013).

(7) *Analysis of (6a)*

Max does [$_{vP}$ **not** eat spinach] but [$_{vP}$ chard$_i$ [~~eat t$_i$~~]].

- (6b) cannot involve ellipsis, and must be analyzed as coordination of two DPs, where the first DP is negated (Toosarvandani 2013).

(8) *Analysis of (6b)*

Max eats [$_{DP}$ **not** spinach] but [$_{DP}$ chard].

My analysis

(6) a. Max does**n't** eat spinach but chard.

b. Max eats **not** spinach but chard.

(9) *My analysis of (6a)*

Same as Vicente and Toosarvandani

Max does [$_{vP}$ **not** eat spinach] but [$_{vP}$ chard$_i$ [~~eat t$_i$~~]].

(10) *My analysis of (6b)*

More possible analyses than Toosarvandani claims

a. Max eats [$_{DP}$ **not** spinach] but [$_{DP}$ chard].

b. Max [$_{vP}$ eats **not** spinach] but [$_{vP}$ chard$_i$ [~~eat t$_i$~~]].

c. [$_{TP}$ Max eats **not** spinach] but [$_{TP}$ chard$_i$ [~~he eats t$_i$~~]].

- *Prediction*: possible ambiguity for sentences like (6b), but only a single reading for sentences like (6a).

Negation always takes scope immediately below the conjunction

(9) *My analysis of (6a)* Same as Vicente and Toosarvandani

Scope of negation

Max does [$_{vP}$ **not** eat spinach] but [$_{vP}$ chard$_i$ [~~eat t$_i$~~]].

(10) *My analysis of (6b)* More possible analyses than Toosarvandani claims

Scope of negation

a. Max eats [$_{DP}$ **not** spinach] but [$_{DP}$ chard].

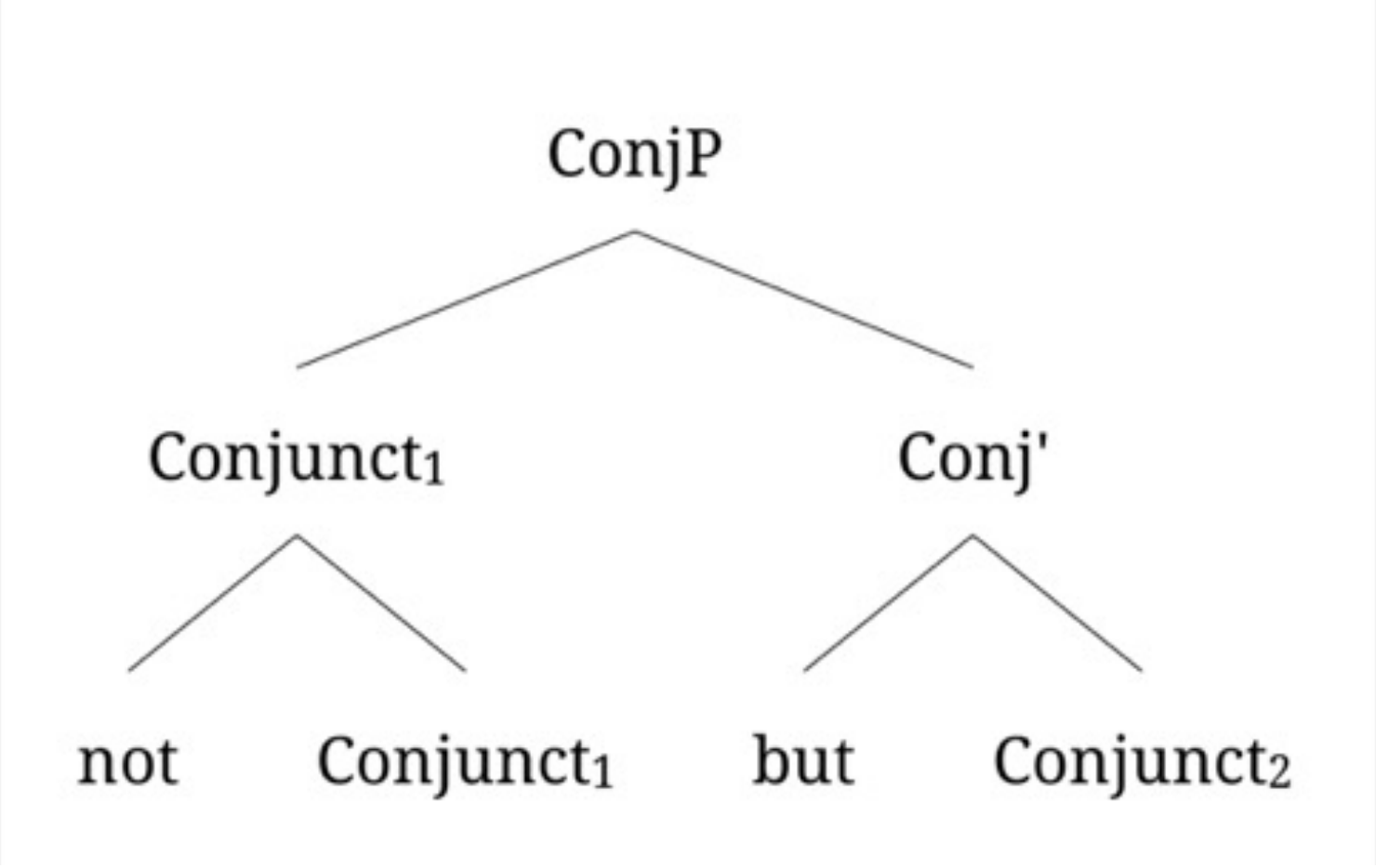
Scope of negation

b. Max [$_{vP}$ eats **not** spinach] but [$_{vP}$ chard$_i$ [~~eat t$_i$~~]].

c. [$_{TP}$ Max eats **not** spinach] but [$_{TP}$ chard$_i$ [~~he eats t$_i$~~]].

Scope of negation

Negation is the daughter of the first conjunct



Negation appears lower than its surface position

(9) *My analysis of (6a)* Same as Vicente and Toosarvandani

Scope of negation

Max does [$_{vP}$ **not** eat spinach] but [$_{vP}$ chard$_i$ [~~eat t$_i$~~]].

(10) *My analysis of (6b)* More possible analyses than Toosarvandani claims

Scope of negation

a. Max eats [$_{DP}$ **not** spinach] but [$_{DP}$ chard].

Scope of negation

b. Max [$_{vP}$ eats **not** spinach] but [$_{vP}$ chard$_i$ [~~eat t$_i$~~]].

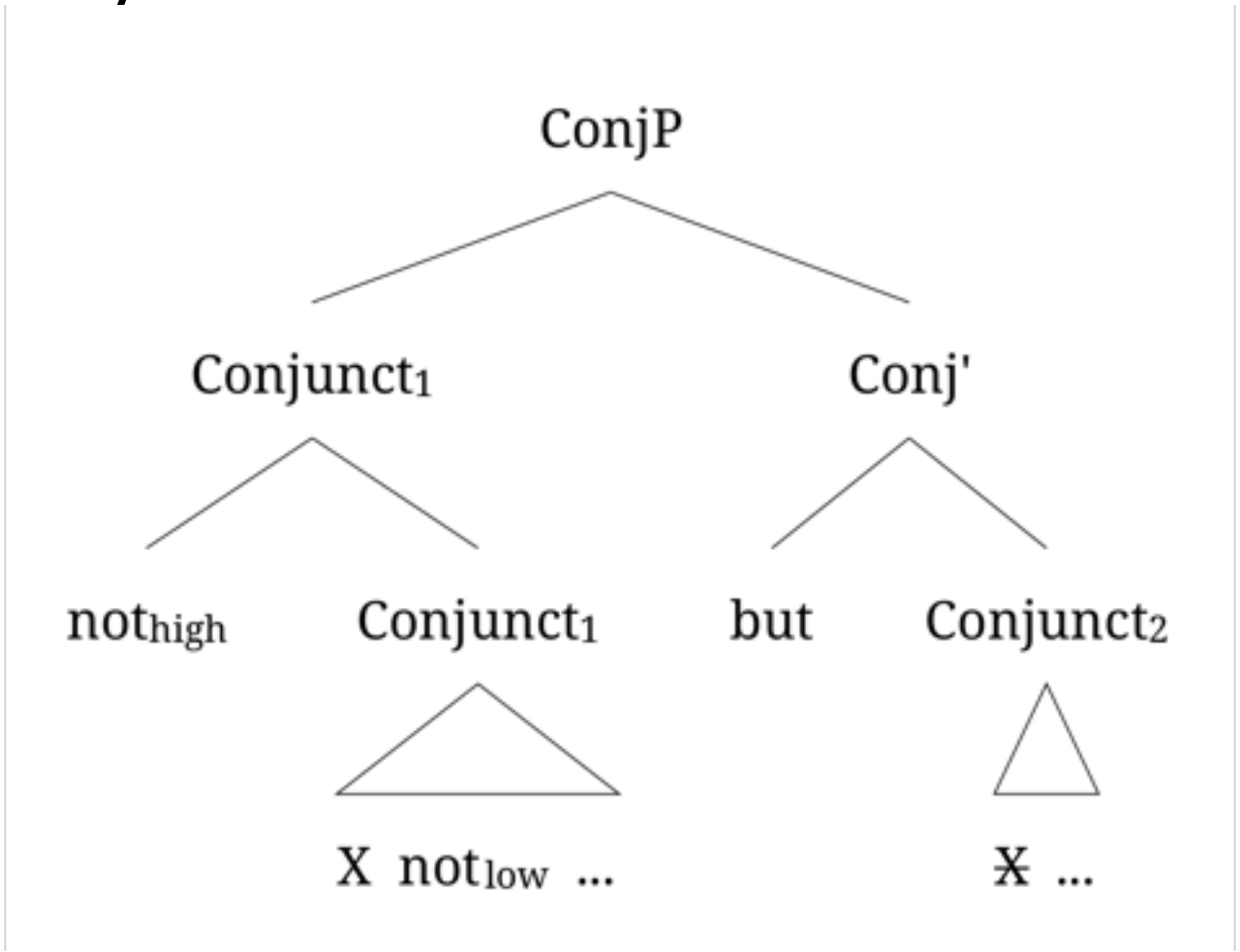
c. [$_{TP}$ Max eats **not** spinach] but [$_{TP}$ chard$_i$ [~~he eats t$_i$~~]].

Scope of negation

There are two positions for negation

- The higher position (which I call *high negation*) is interpreted, and is the daughter of the first conjunct.
- The lower position (which I call *low negation*) is semantically vacuous, and deeply embedded inside the first conjunct.
- Either position may be pronounced.
- When low negation is pronounced, because we do not see where high negation is, it has the effect that negation takes scope at a place higher than its surface position.

My full analysis



(6) a. Max does**n't** eat spinach but chard.

b. Max eats **not** spinach but chard.

(9) *My full analysis of (6a)*

Max does [$_{vP}$ **<not>** **not** eat spinach] but [$_{vP}$ chard$_i$ [~~eat t$_i$~~]].

(10) *My full analysis of (6b)*

a. Max eats [$_{DP}$ **<not>** **not** spinach] but [$_{DP}$ chard].

b. Max [$_{vP}$ **<not>** eats **not** spinach] but [$_{vP}$ chard$_i$ [~~eat t$_i$~~]].

c. [$_{TP}$ **<not>** Max eats **not** spinach] but [$_{TP}$ chard$_i$ [~~he eats t$_i$~~]].

Terminology

- If we follow my analysis that negation is the daughter of the first conjunct, then corrective *but* sentences can be divided into two types:
  - Sentences that seem to follow the generalization that negation is the daughter of the first conjunct (e.g., (6b)) – *neg(ation)-seems-normal*
  - Sentences seem to challenge my generalization that negation is the daughter of the first conjunct (e.g., (6a)) – *neg(ation)-seems-high*

(6) b. Max eats [**not** spinach] but [chard]. *neg-seems-normal*

(6) a. Max does**n't** eat [spinach] but [chard]. *neg-seems-high*

- Neg-seems-normal can involve ellipsis, but it doesn't have to.
- Neg-seems-high is an illusion (following Vicente 2010): negation is still the daughter of the first conjunct, but this has been obscured by ellipsis.

(6) a. Max does**n't** eat spinach but chard. *neg-seems-high*

b. Max eats **not** spinach but chard. *neg-seems-normal*

- Vicente (2010): (6a) must involve ellipsis
- Toosarvandani (2013): (6b) cannot involve ellipsis
- My analysis:

  Vicente + Toosarvandani

  + (6b) can involve ellipsis, based on evidence from syntax, semantics (section 2) and prosody (section 3)

  + not has two positions in (6a-b), based on semantic evidence (section 2)

Roadmap

- §1 Background on corrective *but*
- §2 Neg-seems-normal can involve ellipsis: Syntactic-semantic arguments
  - Argument 1: Constituency
  - Argument 2: Scope interaction with a subject quantifier
  - Argument 3: Scope interaction with intensional verbs
- §3 Neg-seems-normal can involve ellipsis: Prosodic argument
- §4 Conclusion

Argument 1 for ellipsis: constituency

- Assumption: only constituents can be combined with *but*
- Logic of the argument: if apparent non-constituents can be combined with *but,* then the underlying conjunction must involve constituents – a fact obscured by ellipsis

  $[_{ConjP}$ A but $[_{Conjunct}$ ~~B~~ C]], where C is not a constituent, but B+C is

Argument 1 for ellipsis: constituency

(11) *Conjunction of apparent constituents*

a. John looked at **not** [the planet with ice caps], but [the star with dark spots].

b. Mary played **not** [checkers from Egypt], but [chess from India].

(12) *Cleft – independent test of constituency*

It was [the star with dark spots] that John looked at.

Argument 1 for ellipsis: constituency

(13) *Conjunction of apparent non-constituents*

a. John looked at **not** [the planet with a telescope], but [the star with binoculars].

b. Mary played **not** [checkers today], but [chess yesterday].

(14) *Cleft – independent test of constituency*

*It was [the star with binoculars] that John looked at.

Argument 1 for ellipsis: constituency

(13) Conjunction of apparent non-constituents

a. John looked at **not** [the planet with a telescope], but [the star with binoculars].

(15) *If neg-seems-normal can involve ellipsis → ✓coordination of constituents*

John [looked at **not** the planet with a telescope], but [[the star]$_i$ [with binoculars]$_j$ ~~looked at t_i t_j~~].

Roadmap

- Background on corrective *but*
- Neg-seems-normal can involve ellipsis: Syntactic-semantic arguments
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  - Argument 3: Scope interaction with intensional verbs
- Neg-seems-normal can involve ellipsis: Prosodic argument
- Conclusion

Argument 2 for ellipsis: scope interaction with a subject quantifier

(16) At most five students drank **not** the whiskey but the gin.[1]

✓∧ > ¬ > *at most five*: 'It's not the case that at most five students drank the whiskey, but it is the case that at most five students drank the gin.'

- Possible in this context: the caterer is deciding what alcohol to serve at colloquium parties, and wants to eliminate the drink that is drunk by at most five students because it is not economical. The speaker says (16) to argue for the elimination of gin but not whiskey.

[1] Toosarvandani (2013:838).

Argument 2 for ellipsis: scope interaction with a subject quantifier

(16) At most five students drank **not** the whiskey but the gin.

(17) Analysis with ellipsis of (16)

[At most five students drank **not** the whiskey] but [~~at most five students drank~~ the gin].

Roadmap

- Background on corrective *but*
- Neg-seems-normal can involve ellipsis: Syntactic-semantic arguments
  - Argument 1: Constituency
  - Argument 2: Scope interaction with a subject quantifier
  - Argument 3: Scope interaction with intensional verbs
    - Neg-seems-normal is ambiguous
    - Neg-seems-high is unambiguous
- Neg-seems-normal can involve ellipsis: Prosodic argument
- Conclusion

Argument 3 for ellipsis: scope interaction with intensional verbs

(18) Sherlock pretended to be looking for **not** a burglar but a murderer.[1]

✓Reading 1: Sherlock acted like he tried to find someone who is [**not** a burglar but a murderer].

✓Reading 2: Sherlock acted like [he did**n't** try to find a burglar, but he tried to find a murderer].

✓Reading 3: [Sherlock did**n't** act like he tried to find a burglar, but he acted like he tried to find a murderer].

[1] Kayne (1998) has made observations about variants of neg-seems-normal and neg-seems-high parallel to mine.

Ambiguity of neg-seems-normal

(18) Sherlock pretended to be looking for **not** a burglar but a murderer.

✓Reading 1: Sherlock acted like he tried to find someone who is [**not** a burglar but a murderer].

- Reading 1 follows from the analysis without ellipsis:

(19) *Analysis without ellipsis of neg-seems-normal (18)* → reading 1

Sherlock pretended to be looking for [$_{DP}$ not a burglar] but [$_{DP}$ a murderer].

Ambiguity of neg-seems-normal

(18) Sherlock pretended to be looking for **not** a burglar but a murderer.

- Readings 2 and 3 follow from ellipsis, giving us higher scope of conjunction than its surface position

(20) *Analysis with ellipsis of neg-seems-normal (18) → readings 2 & 3*

a. *Reading 2*

Scope of negation

Sherlock pretended [to be looking for **not** a burglar] but [[a murderer]$_i$ ~~to be looking for t_i~~].

b. *Reading 3*

Scope of negation

Sherlock did [pretend to be looking for **not** a burglar] but [[a murderer]$_i$ ~~pretend to be looking for t_i~~].

Negation has two positions

(18) Sherlock pretended to be looking for **not** a burglar but a murderer.

- Readings 2 and 3 follow from ellipsis, giving us higher scope of conjunction than its surface position

(21) *Analysis with ellipsis of neg-seems-normal (18) → readings 2 & 3*

a. *Reading 2*

Sherlock pretended [<not> to be looking for **not** a burglar] but [[a murderer]$_i$ ~~to be looking for t$_i$~~].

b. *Reading 3*

Sherlock did [<not> pretend to be looking for **not** a burglar] but [[a murderer]$_i$ ~~pretend to be looking for t$_i$~~].

Alternative analysis

- Can we account for readings 2 and 3 of neg-seems-normal without positing two positions for negation?
- An alternative:[1]
  - There is no ellipsis, but just DP-conjunction *not a burglar but a murderer*.
  - This DP-conjunction QRs to above *looking for* (for reading 2) or *pretended* (for reading 3).
  - Then each conjunct (the indefinites) is reconstructed.

(22) *Alternative analysis without ellipsis of neg-seems-normal (18) → reading 2*

Step 1: Sherlock pretended [not a burglar but a murderer]$_i$ to be looking for t_i.

Step 2: Sherlock pretended [not a burglar but a murderer]$_i$ to be looking for t_i [a burglar] [a murderer].

[1] Recalling Penka & Zeijlstra's (2005) analysis of negative indefinites in Dutch and German.

Problem for the alternative analysis

- Problem for this alternative proposal: Neg-seems-normal with VP-conjunction (23) can also have ambiguity, and VPs are usually assumed to not be able to QR.

(23) Sherlock pretended to be not singing but dancing.

✓Reading 1: Sherlock acted like he was doing something that was not singing but dancing.

✓Reading 2: Sherlock didn't act like he was singing, but he acted like he was dancing.

(24) *My analysis of reading 2 of (23)*

Sherlock did [<not> pretend to be not singing] but [~~pretend to be~~ dancing].

Lack of ambiguity of neg-seems-high

(25) *Neg-seems-high*

Sherlock pretended **not** to be looking for a burglar but a murderer.

✓Reading 2 only: Sherlock acted like [he did**n't** try to find a burglar, but he tried to find a murderer].

(26) *Neg-seems-high*

Sherlock did**n't** pretend to be looking for a burglar but a murderer.
✓Reading 3 only: [Sherlock did**n't** act like he tried to find a burglar, but he acted like he tried to find a murderer].

Lack of ambiguity of neg-seems-high

(25) Sherlock pretended **not** to be looking for a burglar but a murderer.

(26) Sherlock did**n't** pretend to be looking for a burglar but a murderer.

- Neg-seems-high must involve ellipsis
- The only reading of neg-seems-high sentences follows from ellipsis, once we recover the elided material

(27) *Analysis of neg-seems-high (25)*

Sherlock pretended [$_{TP}$ not to be looking for a burglar] but [$_{TP}$ [a murderer]$_i$ ~~to be looking for t$_i$~~].

(28) *Analysis of neg-seems-high (26)*

Sherlock did [$_{vP}$ not pretend to be looking for a burglar] but [$_{vP}$ [a murderer]$_i$ ~~pretend to be looking for t$_i$~~].

Why can’t neg-seems-high have ambiguity?

(25) *Neg-seems-high*

Sherlock pretended **not** to be looking for a burglar but a murderer.

✓Reading 2 only: Sherlock acted like [he did**n’t** try to find a burglar, but he tried to find a murderer].

- If it could, then (25) would have reading 3, contrary to fact:

(29) *Impossible reading 3 of (25)*

Sherlock [<not> pretended not to be looking for a burglar] but [[a murderer]$_i$ ~~pretended to be looking for t$_i$~~].

Why can’t neg-seems-high have ambiguity?

- Assumption 1: in parallel to the movement of the remnant (*a murderer*), the correlate (the phrase that corresponds to the remnant, *a burglar*) moves to the parallel position at LF

(30) Sherlock [<not> [a burglar]$_i$ pretended not to be looking for t_i] but [[a murderer]$_j$ ~~pretended to be looking for t_j~~].

- Assumption 2: ellipsis requires identity between an antecedent and the elided phrase (*pretended to be looking for trace*).

Why can neg-seems-normal have ellipsis?

(18) *Neg-seems-normal*

Sherlock pretended to be looking for **not** a burglar but a murderer.

- *Not* is pied-piped by the movement of the correlate *a burglar*

(31) Sherlock [<not> [not a burglar]$_i$ pretended to be looking for t$_i$] but [[a murderer]$_j$ ~~pretended to be looking for t$_i$~~].

Further arguments

- Antecedent-contained deletion
- Verb particle constructions
- Prosody

Roadmap

- Background on corrective *but*
- Neg-seems-normal can involve ellipsis: Syntactic-semantic arguments
- Neg-seems-normal can involve ellipsis: Prosodic argument
  - Basic assumptions about the syntax-prosody mapping
  - Research questions
  - The prosodic experiment
  - Possible alternative explanation
- Conclusion

Prosody corresponds to syntax closely in coordination

- In coordination, the syntactic size of the coordinated constituents is correlated with their prosody.[1]

(32) a. *Clausal-coordination*

[$_{TP}$ Max misses spinach])and [$_{TP}$ he also misses chard].

b. *DP-coordination*

Max mixes [$_{DP}$ spinach])and [$_{DP}$ chard] every morning.

- Following this generalization, we can use prosodic evidence to adjudicate between different theories about neg-seems-normal

(33) Max misses **not** spinach but chard.

[1] This has been confirmed experimentally (e.g., Wagner 2005, 2010, and confirmed again by the experimental results in Wu 2022).

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    - Question 2: Can prosodic structure be recursive?
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Their prosodic predictions

Max misses **not** spinach but chard.

	Syntactic analysis	Prosodic predictions
Strictly-DP-coordination approach		
Ambiguity approach		

Their prosodic predictions

Max misses **not** spinach but chard.

	Syntactic analysis	Prosodic predictions
Strictly-DP-coordination approach	Max misses [$_{DP}$ **not** spinach] but [$_{DP}$ chard].	
Ambiguity approach		

Their prosodic predictions

Max misses **not** spinach but chard.

	Syntactic analysis	Prosodic predictions
Strictly-DP-coordination approach	Max misses [$_{DP}$ **not** spinach] but [$_{DP}$ chard].	Prosodic boundary after *spinach* ≈ boundary of a DP
Ambiguity approach		

Their prosodic predictions

Max misses **not** spinach but chard.

	Syntactic analysis	Prosodic predictions
Strictly-DP-coordination approach	Max misses [$_{DP}$ **not** spinach] but [$_{DP}$ chard].	Prosodic boundary after *spinach* ≈ boundary of a DP
Ambiguity approach	a. Max misses [$_{DP}$ **not** spinach] but [$_{DP}$ chard]. b. Max [$_{vP}$ misses **not** spinach] but [$_{vP}$ chard$_i$ ~~misses t$_i$~~]. c. [$_{TP}$ Max misses **not** spinach] but [$_{TP}$ chard$_i$ ~~he misses t$_i$~~].	

Their prosodic predictions

Max misses **not** spinach but chard.

	Syntactic analysis	Prosodic predictions
Strictly-DP-coordination approach	Max misses [$_{DP}$ **not** spinach] but [$_{DP}$ chard].	Prosodic boundary after *spinach* ≈ boundary of a DP
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Their prosodic predictions

(A) Max doesn't mix spinach) and chard.

(B) Max misses not spinach)$_?$ but chard.

	Syntactic analysis	Prosodic predictions
Strictly-DP-coordination approach	Max misses [$_{DP}$ **not** spinach] but [$_{DP}$ chard].	Prosodic boundary after *spinach* in (B) ≈ boundary after *spinach* in (A)
Ambiguity approach	a. Max misses [$_{DP}$ **not** spinach] but [$_{DP}$ chard]. b. Max [$_{vP}$ misses **not** spinach] but [$_{vP}$ chard$_i$ ~~misses t$_i$~~]. c. [$_{TP}$ Max misses **not** spinach] but [$_{TP}$ chard$_i$ ~~he misses t$_i$~~].	Prosodic boundary after *spinach* in (B) > boundary after *spinach* in (A)

Roadmap

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Research question 2

(34) Max doesn't miss spinach but chard.

(35) *The uncontroversial analysis of (34)*

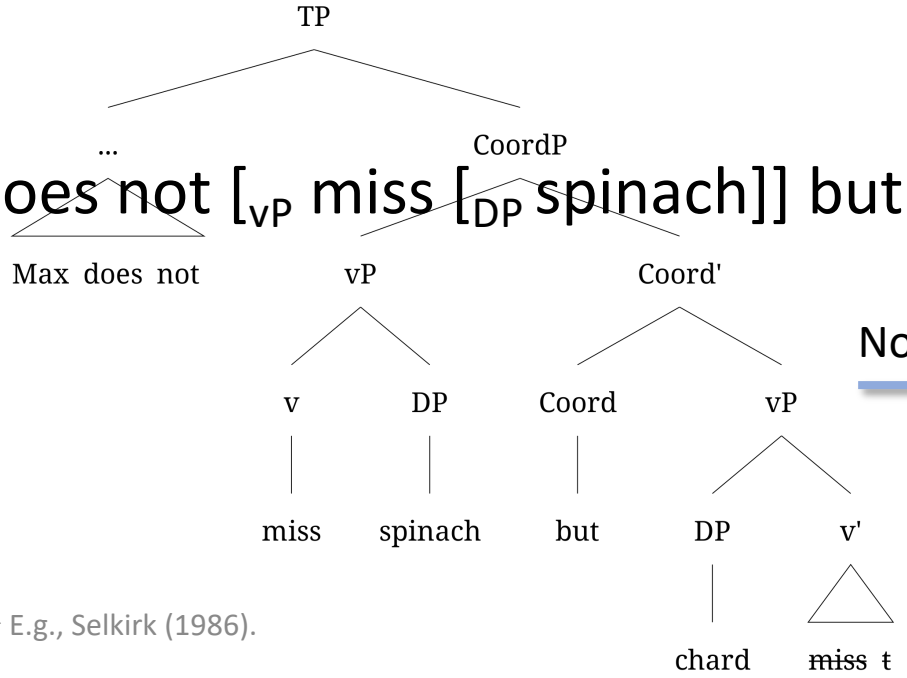
Max does [$_{vP}$ not miss [$_{DP}$ spinach]] but [$_{vP}$ chard$_i$ ~~miss t$_i$~~].

- Research question 2: how is a vP containing a DP mapped onto prosody?
- Different theories on syntax-prosody mapping make different predictions

Question about syntax-prosody mapping

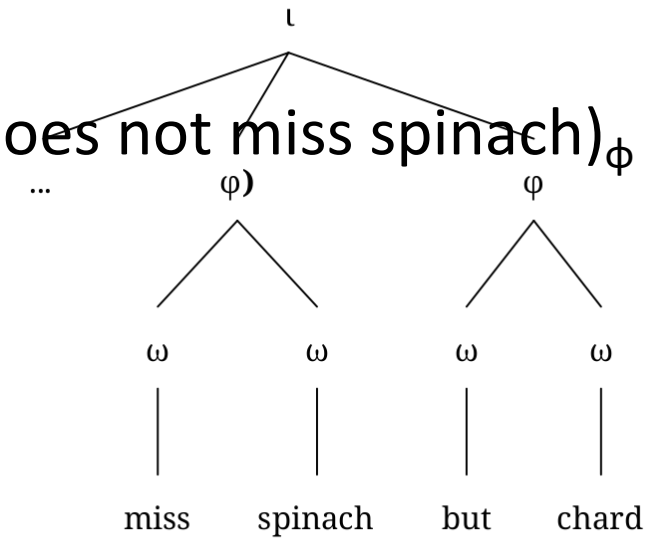
- Theories that do not allow recursive prosodic structure (e.g., versions of edge-based theory[1]): all syntactic phrases that are smaller than a clause correspond to the same prosodic unit
- E.g., right edge of XP → right edge of phonological phrase (ϕ)

Max does not [$_{vP}$ miss [$_{DP}$ spinach]] but chard.



No recursivity

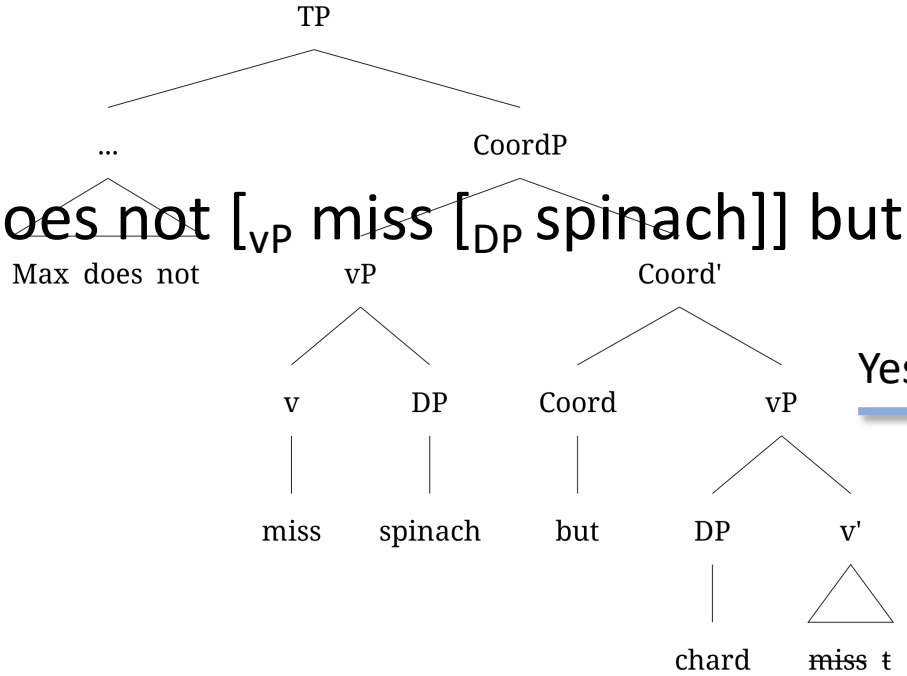
Max does not miss spinach)$_{\phi}$ but chard.



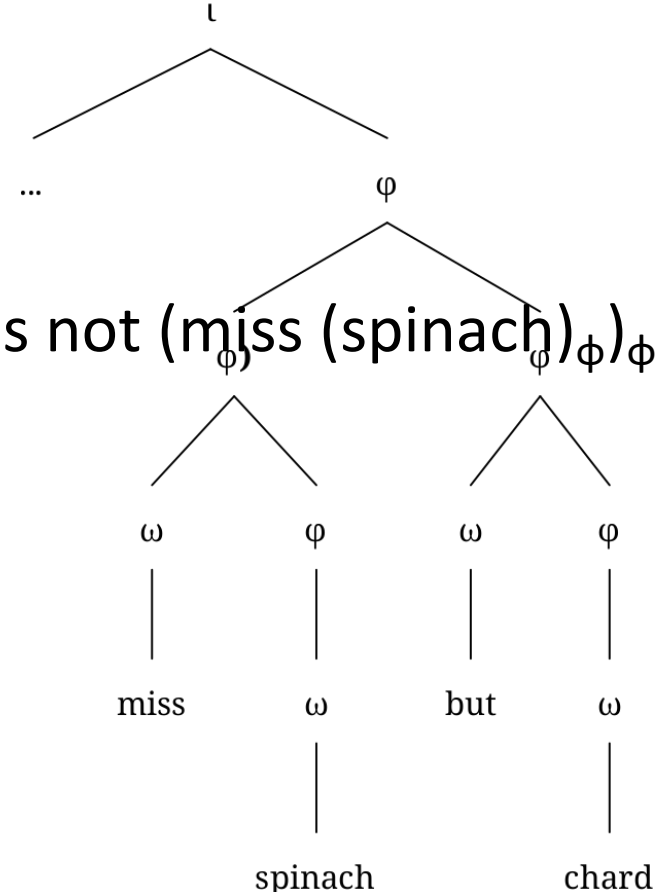
[1] E.g., Selkirk (1986).

Question about syntax-prosody mapping

- Theories where prosodic structure replicates the dominance relations in syntax (e.g., Match Theory[1], theory based on embedding[2])
- E.g., each XP is mapped to a ϕ



Yes recursivity



Max does not [$_{vP}$ miss [$_{DP}$ spinach]] but chard. Max does not (miss (spinach)$_{\phi}$)$_{\phi}$ but chard.

[1] E.g., Selkirk (2009), (2011); Elfner (2012), (2015); Bennett et al. (2016); Ito & Mester (2013), (2015).
[2] Wagner (2010).

Question about syntax-prosody mapping

- Research question 2: can the prosodic structure be recursive?

Max does not [$_{vP}$ miss [$_{DP}$ spinach]] but chard.

No recursivity → Max does not miss spinach)$_{\phi}$ but chard.

Yes recursivity → Max does not miss spinach)$_{\phi}$)$_{\phi}$ but chard.

Predictions by different theories on syntax-prosody mapping

(A) Max doesn't mix [$_{DP}$ spinach] and chard.

(C) Max doesn't miss spinach)$_{?}$ but chard.

Predictions by different theories on syntax-prosody mapping

(A) Max doesn't mix spinach)$_{\Phi}$ and chard.

(C) Max doesn't miss spinach)$_{?}$ but chard.

- Theories that don't allow recursive prosodic structure: boundary in (C) ≈ boundary in (A)
- Theories that allow recursive prosodic structure: boundary in (C) > boundary in (A)

Research questions and predictions

- Question 1: is neg-seems-normal strictly DP-coordination or structurally ambiguous? *and* sentence (A) vs. neg-seems-normal (B)
- Question 2: can the prosodic structure be recursive? *and* sentence (A) vs. neg-seems-high (C)

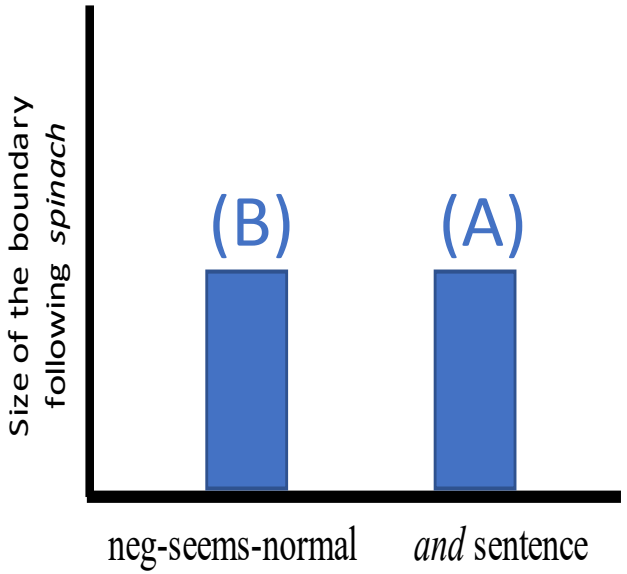


Figure 1: *Prediction of the strictly-DP approach.*

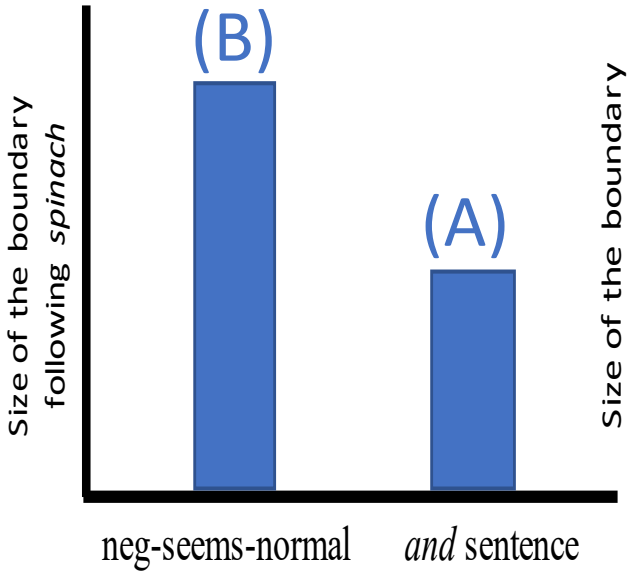


Figure 2: *Prediction of the ambiguity approach.*

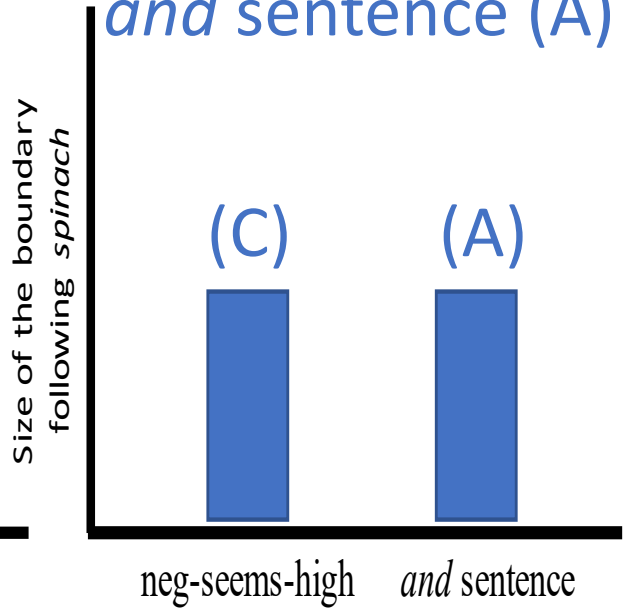


Figure 3: *Prediction of edge-based theory.*

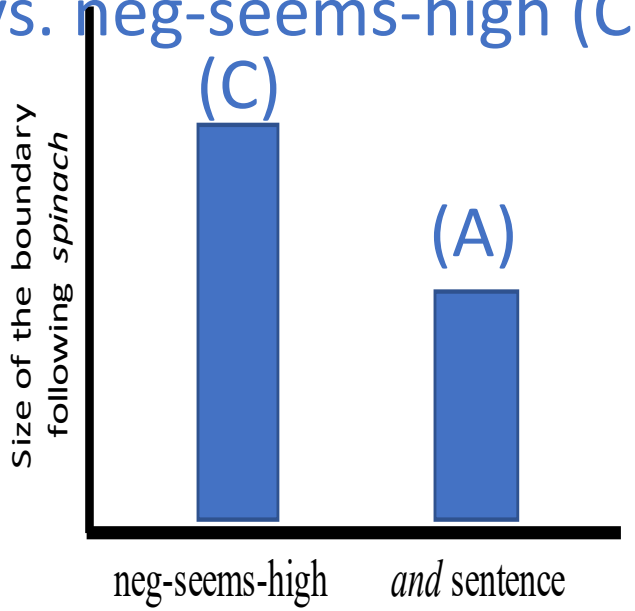


Figure 4: *Prediction of Match Theory.*

Roadmap

- Background on corrective *but*
- Neg-seems-normal can involve ellipsis: Syntactic-semantic arguments
- Neg-seems-normal can involve ellipsis: Prosodic argument
  - Basic assumptions about the syntax-prosody mapping
  - Research questions
  - The prosodic experiment
    - Methods and design
    - Results from transcriptions
    - Results from durational measure
    - Discussion
  - Possible alternative explanation
- Conclusion

The experiment: methods and design

- Production experiment
- Materials: 3 items x 6 sets

Item #	Sentence type	Item
(A)	*and* sentence	Max doesn't mix spinach and chard.
(B)	neg-seems-normal	Max misses not spinach but chard.
(C)	neg-seems-high	Max doesn't miss spinach but chard.

The experiment: methods and design

- Production experiment
- Materials: 3 items x 6 sets
- Each target sentence was shown to the subjects along with a leading context sentence and an interlocuter, speaker A's utterance

(36) Context: Max has been on an all-meat diet.

A: Max misses spinach.

B: He doesn't miss spinach but chard.

The experiment: methods and design

- Dependent variable: duration of the last rime before the boundary: *…spinach) or…*
- This duration is positively correlated with the boundary following *spinach*[1]

Item #	Sentence type	Item
(A)	*and* sentence	Max doesn't mix spinach and chard.
(B)	neg-seems-normal	Max misses not spinach but chard.
(C)	neg-seems-high	Max doesn't miss spinach but chard.

[1] Following Wightman et al.'s (1992) findings.

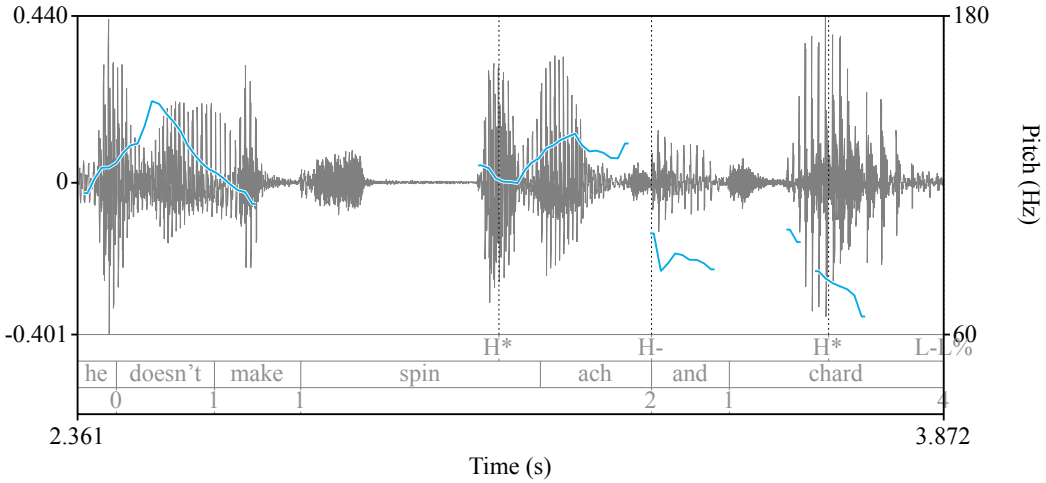
The experiment: methods and design

- Participants: 6 native speakers (4 female, 2 male)
- Data collection:
  - Items in pseudo-randomized order
  - Participants were asked to act out the items, and allowed to retry
  - Recording was done at participants' own homes due to the pandemic
- Annotation by 2 research assistants
- Data analysis: linear mixed effects model with the durational measure as the dependent variable, item as the fixed effect and random slopes and intercepts by speaker and item set

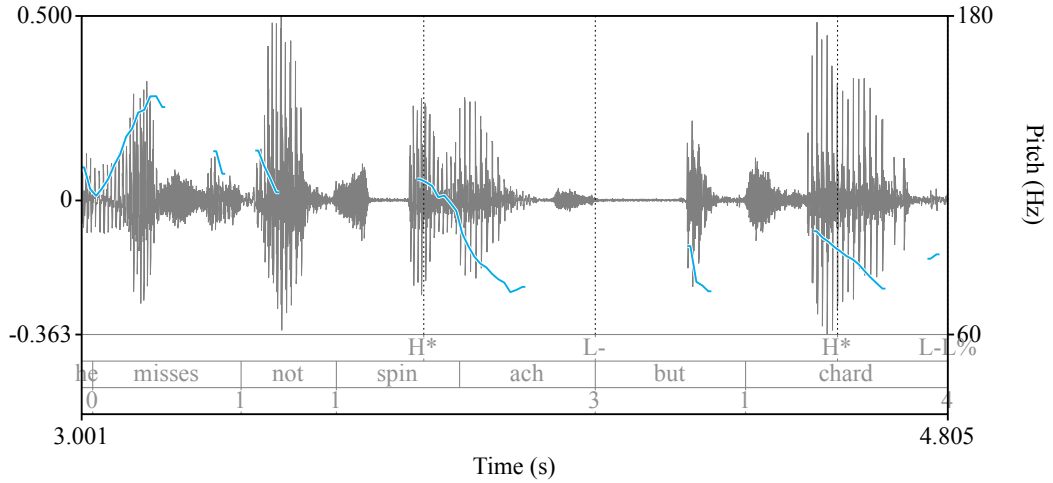
Roadmap

- Background on corrective *but*
- Neg-seems-normal can involve ellipsis: Syntactic-semantic arguments
- Neg-seems-normal can involve ellipsis: Prosodic argument
  - Basic assumptions about the syntax-prosody mapping
  - Prosodic predictions by competing syntactic analyses
  - The prosodic experiment
    - Methods and design
    - Results
    - Discussion
  - Possible alternative explanation
- Conclusion

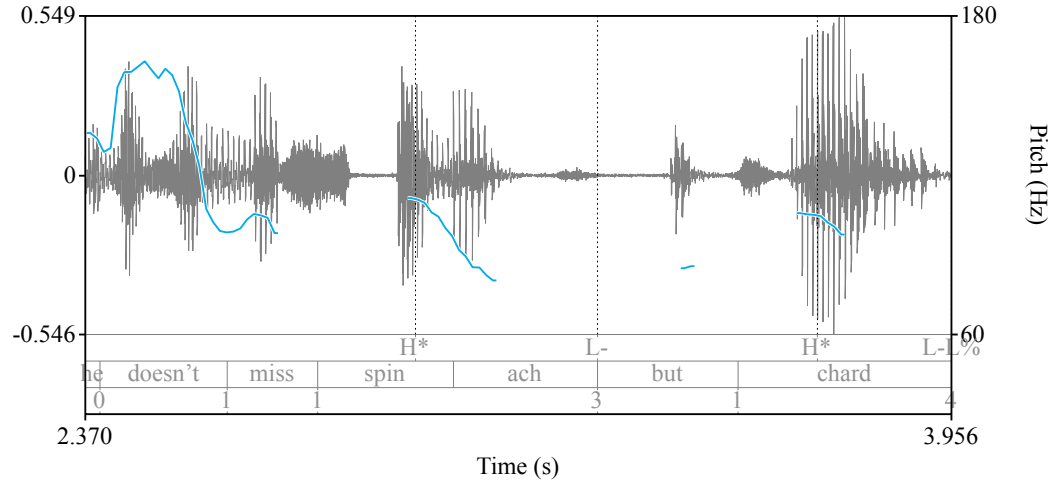
The experiment: case study



A speaker's production of (A) "He doesn't mix spinach and chard."



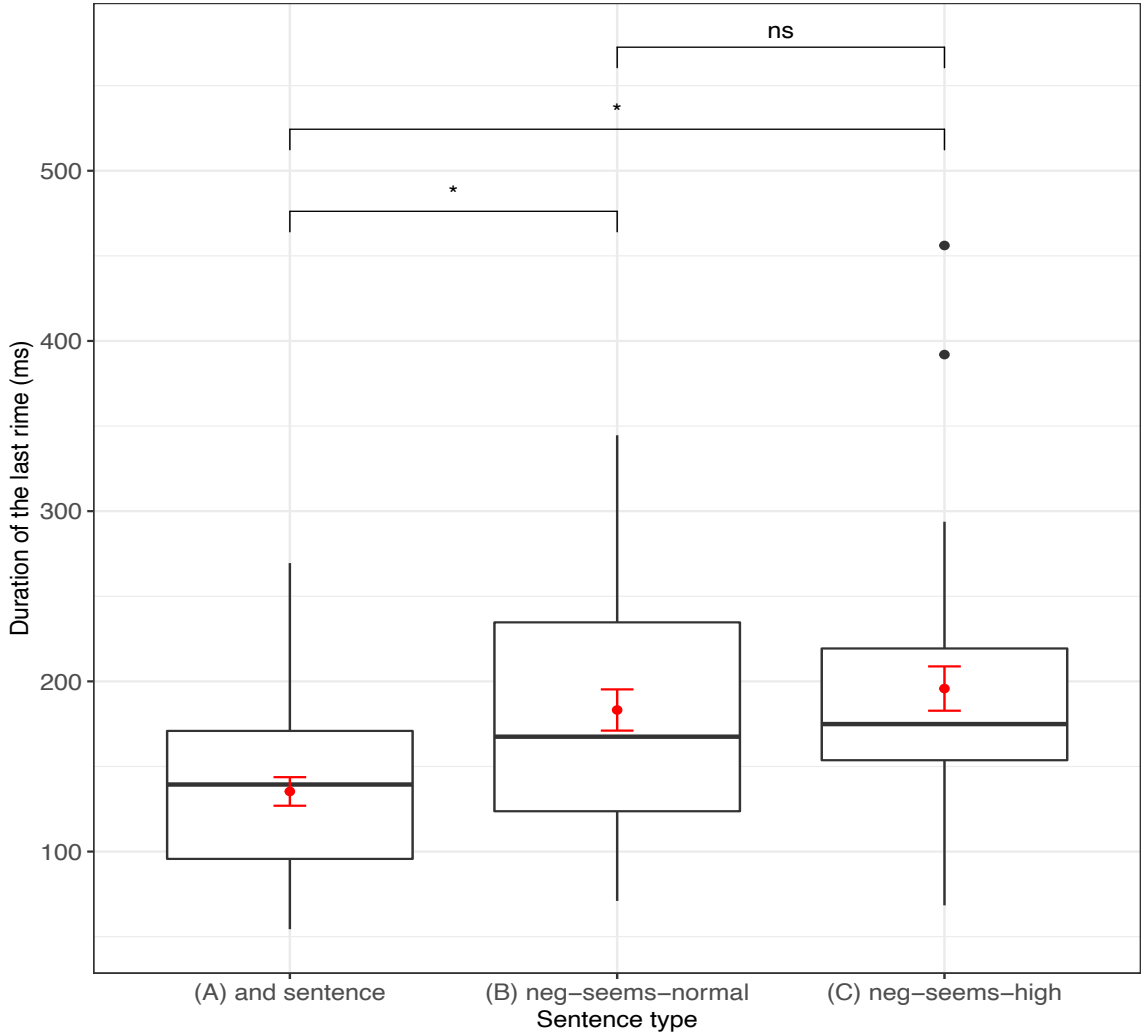
A speaker's production of (B) "He misses not spinach but chard."



A speaker's production of (C) "He doesn't miss spinach but chard."

The experiment: duration

Item #	Item
(A)	He doesn’t mix spinach) and chard.
(B)	He misses not spinach) but chard.
(C)	He doesn’t miss spinach) but chard.



The experiment: discussion

- The prosodic boundary in neg-seems-normal (B) is greater than the prosodic boundary in *and* sentences (A): ambiguity approach to neg-seems-normal.
- A vP that contains a DP corresponds to a stronger prosodic phrase than just a DP: the prosodic structure can replicate dominance relations in syntax.
- One way to implement this is to map each XP to a ϕ, and a ϕ can dominate another ϕ; boundary strength depends on the number of ϕ-levels that a ϕ dominates.

Roadmap

- Background on corrective *but*
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- Neg-seems-normal can involve ellipsis: Prosodic argument
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  - The prosodic experiment
  - Possible alternative explanation and objections to it
- Conclusion

Possible alternative explanation

- The context of the *and* sentence was set up in a way that the entire conjunction carries focus.

(37) Context: Max is particular about cooking: he mixes all sorts of vegetables, except two kinds.

A: What doesn't Max mix?

B: He doesn’t mix [spinach and chard]$_F$.

- But in corrective *but* sentences, each conjunct contrasts with each other, and therefore is separately focused.

(38) a. He doesn’t miss [spinach]$_F$ but [chard]$_F$.

b. He misses not [spinach]$_F$ but [chard]$_F$.

Possible alternative explanation

- Alternative hypothesis: the experimental results do not tell us anything about syntactic theory or syntax-prosody mapping, but are completely due to focus: perhaps focused material is surrounded by a stronger prosodic boundary than unfocused material.

Roadmap

- Background on corrective *but*
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  - Basic assumptions about the syntax-prosody mapping
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  - The prosodic experiment
  - Possible alternative explanation and objections to it
    - Possible alternative explanation
    - Objection 1: no empirical support
    - Objection 2: follow-up experiment
- Conclusion

Objection 1 to the alternative hypothesis

- There is no evidence that focus can alter prosodic boundaries this way.
- An analysis of materials from Wagner et al.'s (2010) experiment

(39) *Double focus*

Gramma only gave a bunny$_F$ to Maryanne$_F$.

(40) *Single focus*

a. Gramma only gave a bunny$_F$ to Maryanne.

b. Gramma only gave a bunny to Maryanne$_F$.

Objection 1 to the alternative hypothesis

(39) *Double focus*

Gramma only gave a bunny$_F$) to Maryanne$_F$.

(40) *Single focus*

a. Gramma only gave a bunny$_F$) to Maryanne.

b. Gramma only gave a bunny) to Maryanne$_F$.

Predictions of the alternative hypothesis:

- boundary in (39) > boundary in (40b)
- maybe boundary in (39) > boundary in (40a)

Objection 1 to the alternative hypothesis

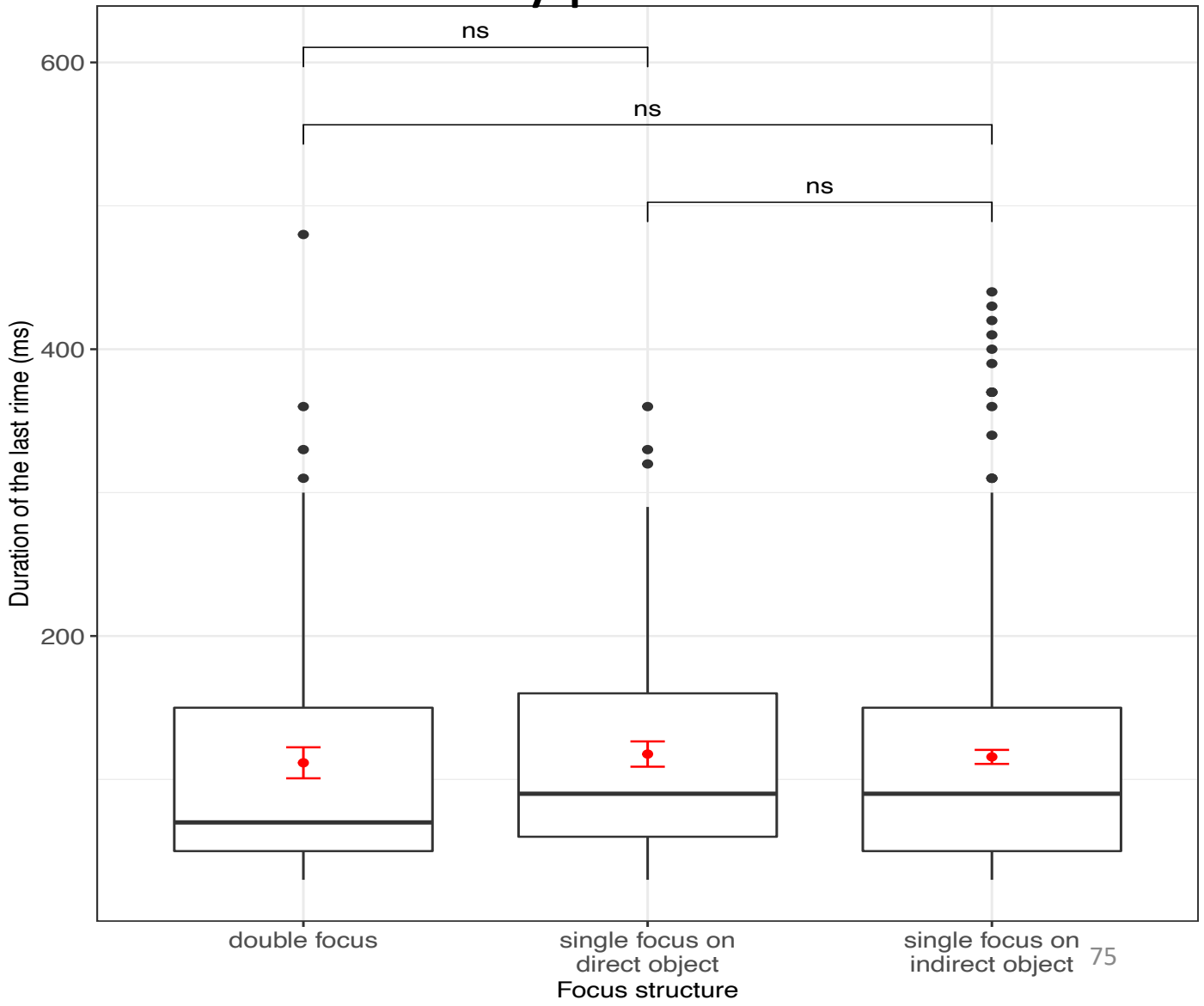
(39) *Double focus*

Gramma only gave a bunny$_F$) to Maryanne$_F$.

(40) *Single focus*

a. Gramma only gave a bunny$_F$) to Maryanne.

b. Gramma only gave a bunny) to Maryanne$_F$.



Objection 2 to the alternative hypothesis: follow-up experiment

- Materials: 3 items x 8 sets

(41) Context: Max is particular about his smoothie: he mixes all sorts of ingredients, except a vegetable and a fruit.

A: Which vegetable and which fruit doesn't Max mix?

B: He doesn't mix spinach$_F$ and pears$_F$.

(42) Context: Max has been on an all-meat diet, and misses something in particular. They're debating about what Max misses.

A: Max misses spinach.

B1: He doesn’t miss spinach$_F$ but pears$_F$.

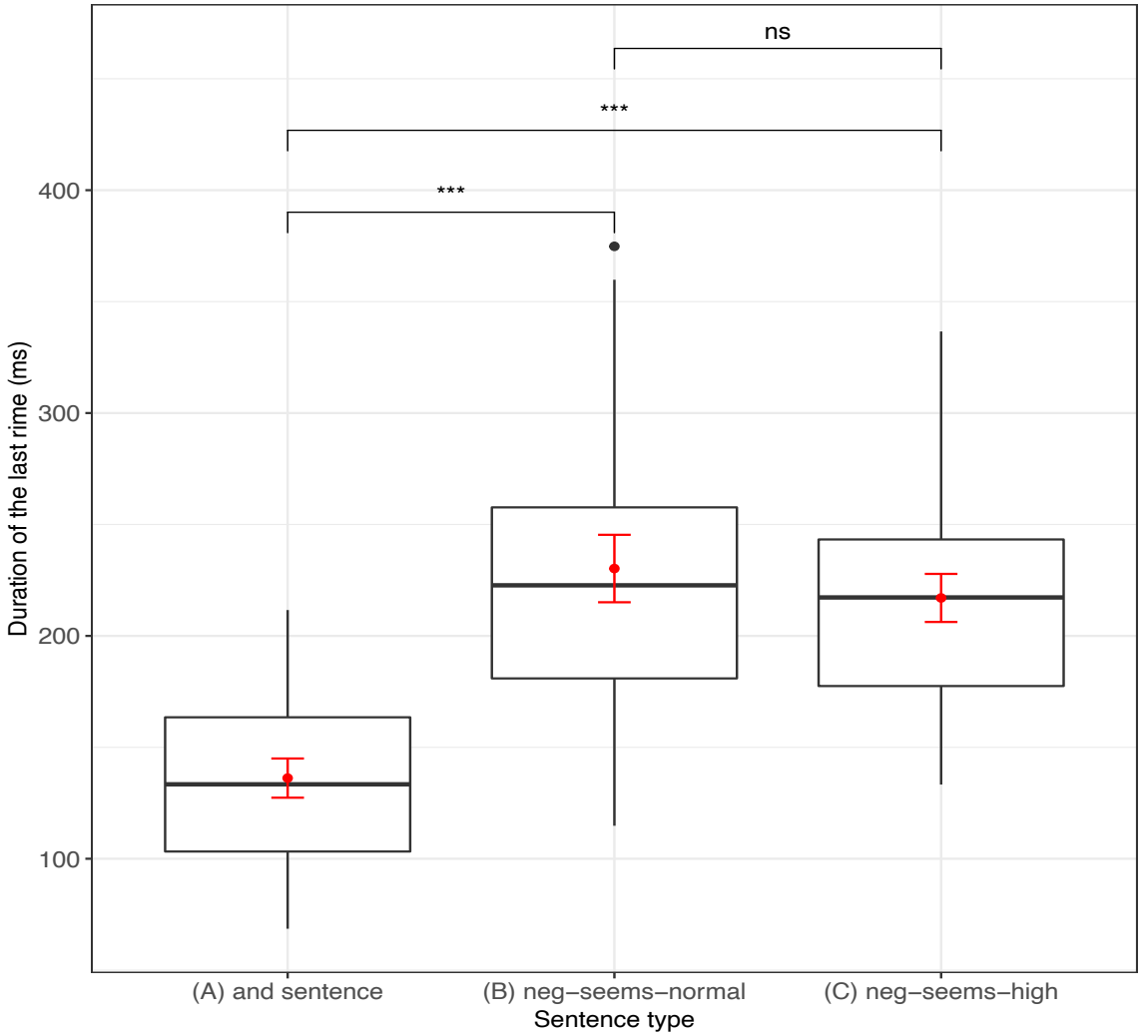
B2: He misses not spinach$_F$ but pears$_F$.

The follow-up experiment: methods and design

- Participants: 3 native speakers (2 female, 1 male)
- Data collection:
  - Items in pseudo-randomized order
  - Participants were asked to act out the items, and allowed to retry
  - Recording was done in the phonetics lab
- Annotation by me

The follow-up experiment: duration

Item #	Item
(A)	He doesn’t mix spinach) and pears.
(B)	He misses not spinach) but pears.
(C)	He doesn’t miss spinach) but pears.

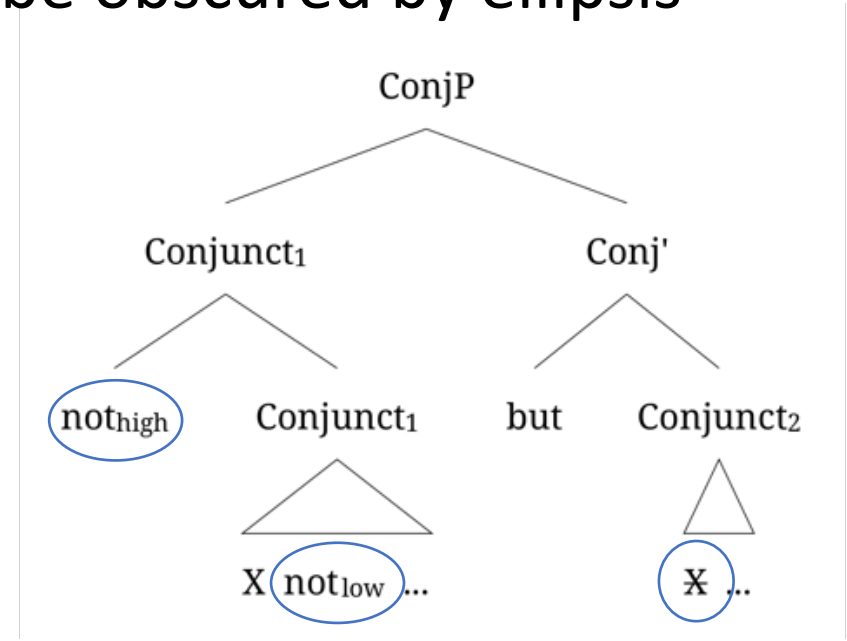


The follow-up experiment: discussion

- Holding constant the focus structure across sentences, there is still a significant prosodic difference between each corrective *but* sentence and the *and* sentence.
- Neg-seems-normal is structurally ambiguous.
- A vP containing a DP corresponds to a stronger prosodic phrase than just a DP.

Conclusion

- Negation in corrective *but* sentences has two positions:
  - High negation is the daughter of the first conjunct, and interpreted
  - Low negation is embedded inside the first conjunct, and not interpreted
  - Either position of negation can be pronounced
- This structure can be obscured by ellipsis

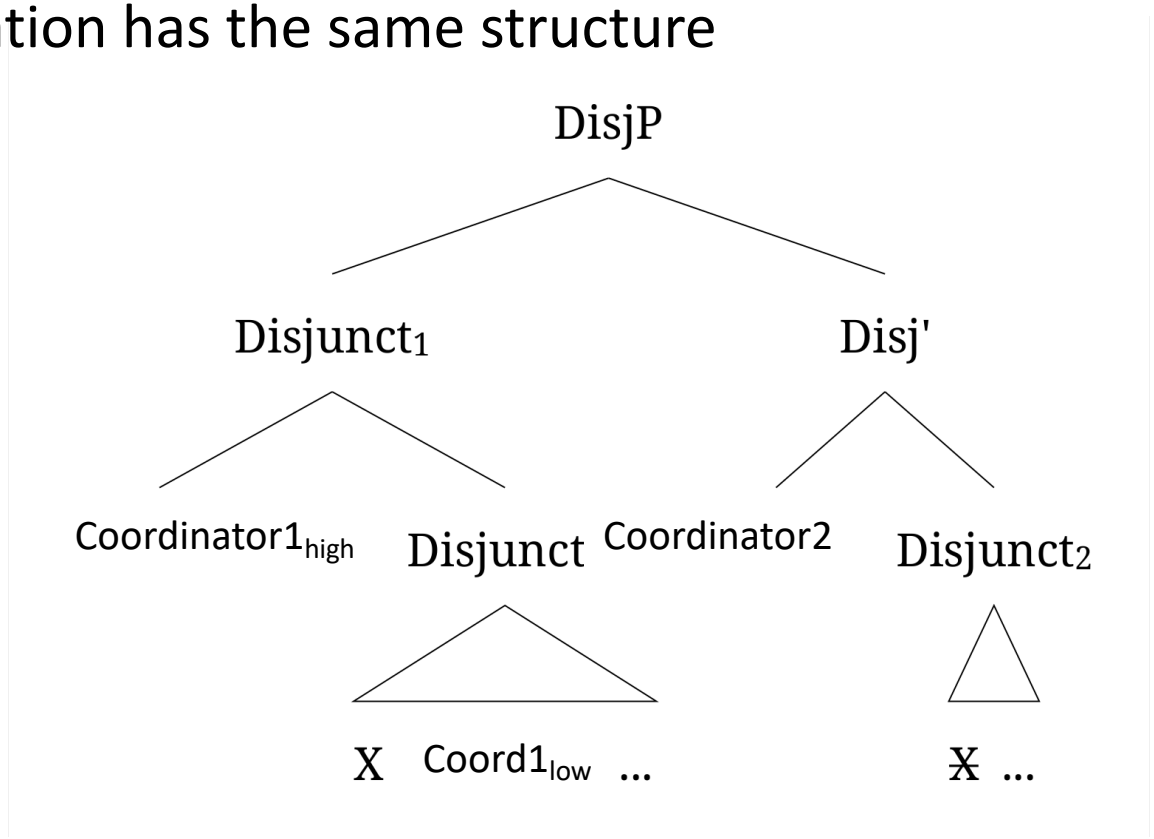


Syntactic-semantic implications

- Non-surface scope can be derived by ellipsis plus two positions of the operator, a different mechanism from traditional Quantifier Raising
- There is converging evidence from syntax, semantics and prosody for the presence of hidden structure

Syntactic-semantic implications

- For coordination:
  - *Either…or…* sentences have the same analysis as corrective *but* (Wu 2021a)
  - All coordination has the same structure



Syntactic-semantic implications

- For coordination:
  - *Either…or…* sentences have the same analysis as corrective *but* (Wu 2021a)
  - All coordination has the same structure
  - This analysis of *either* can be extended to *whether* and *neither* in English, Polish and Bengali, with minimal additional assumptions, and resolves a puzzling contrast between *whether* and *if* (Wu 2021b)
- For focus-sensitive operators: all focus-sensitive operators have two positions in a sentence[1]
  - Low position is semantically inert and c-commands focus
  - High position is interpreted

[1] E.g., Lee (2004), Cable (2007), Hole (2015), (2017), Hirsch (2017), Quek & Hirsch (2017), and Bayer (2018).

Implications for syntax-prosody mapping

- Prosodic experiments can lend support for syntactic claims[1]
- Prosodic structure might correspond to syntactic structure more closely than some theories claimed (e.g., edge-based theory)

[1] Other works in this effort include Bresnan (1971), Clemens & Coon (2018) and Clemens (2019).

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