A prosodic factivity alternation explained by clause movement

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1 The prosodic factivity alternation

A traditional view about the factive inference:

inference lexically encoded in attitude verb

$$[\![know]\!] = \lambda w_s \, \lambda p_{st} \, \lambda x_e \, \boxed{: p(w) \, .} \; believe(x, p, w)$$

But across languages, availability of inference affected by:

– choice of attitude verb ⎫
– embedded clause type ⎬ inference is derived
– **stress position** (novel data) ⎭

Core observation: Availability of inference correlates with position of MAIN SENTENCE STRESS *in root declaratives*.
[Previous research: "Focus affects presupposition *projection*."]

(1) a. *Dilara [yağmur yağdığını] BİLİYOR.*   **stress on att.**
   Dilara rain   rain.NMZ knows   **verb: factive**
   Dilara knows it's raining.

   b. *Dilara [YAĞMUR yağdığını] biliyor.*   **stress elsewhere:**
   Dilara thinks it's raining.   **non-factive**

Hypothesis: The prosodic contrast is the effect of a syntactic difference between factive & non-factive reports.

2 Diagnosing the factive inference

1b is not factive · 1a presupposes that *p*

· **Non-deniability of entailments & presuppostions**

(2) *…ama yağmur yağmıyor.*   ⊥ after 1a, ✓ after 1b
   Dilara {# knows, ✓ thinks} it's raining but it's **not**.

· **Maximize presupposition! effects**   (*düşünüyor*: 'thinks')

(3) *Yağmur yağıyor ve ✓ D. [yağmur yağdığını] BİLİYOR*
          # D. [yağmur yağdığını] DÜŞÜNÜYOR
   It's raining and Dilara {✓ knows, # thinks} that it is.

· **Presupposition projection**

(4) *Dilara [yağmur yağdığını] bilmiyor.*   ⤳ rain
   Dilara does**n't** know that it's raining.

Unless 1a has a factive semantics, (2–4) are unexplained.

Pilot study testing the prosodic factivity alternation

(5) **Stimuli**: Matrix verb vs. Embedded clause stress
   a. *Merve [öğretmeninin Paris'te yaşadığını] BİLİYOR.*
   b. *Merve [öğretmeninin PARİS'TE yaşadığını] biliyor.*
   Merve her teacher in Paris live.NMZ   knows
   Merve knows that her teacher lives in Paris.
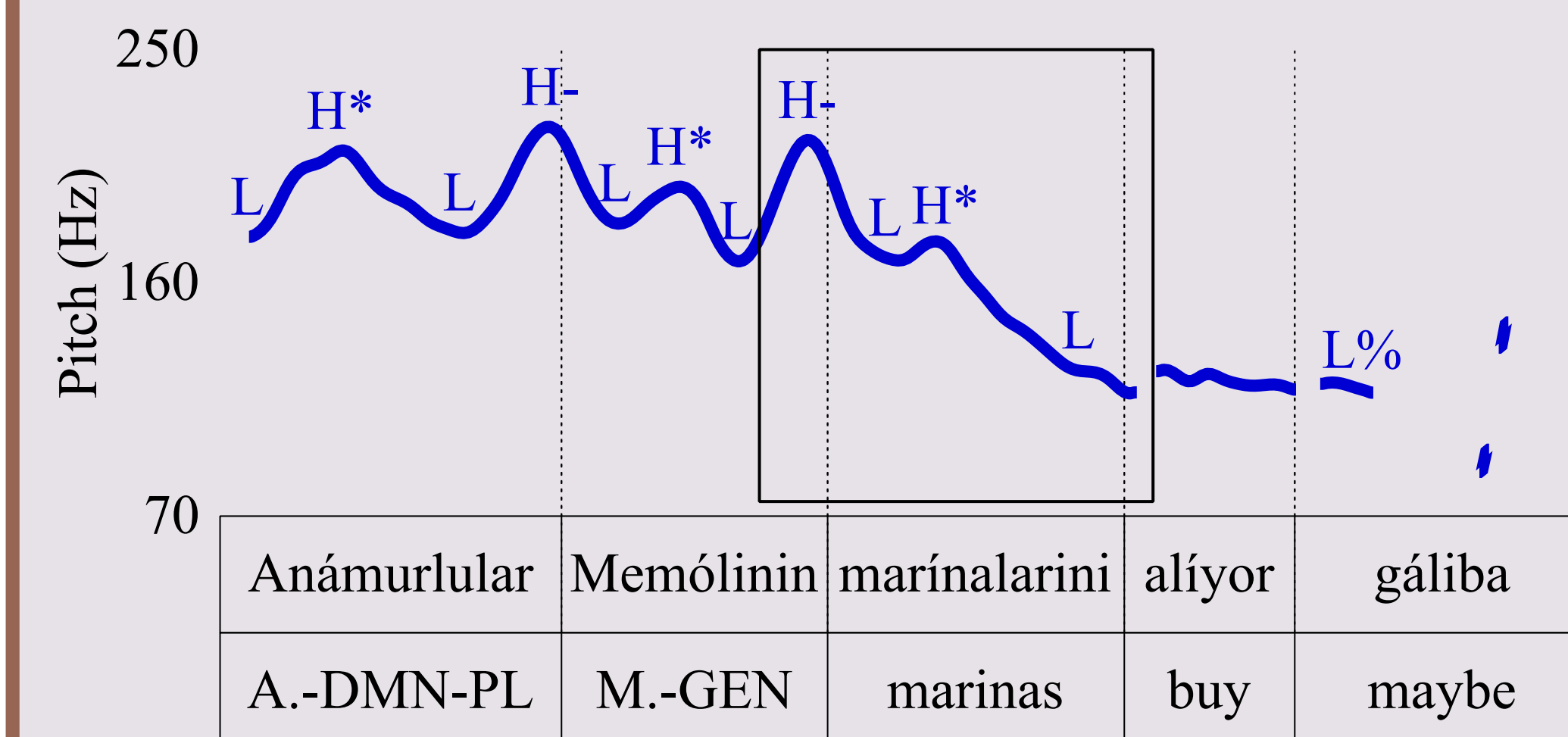
Task: Is the embedded proposition true?
   Yes (entailment) · Not necessarily (no entailment)

Results (n=38):
· Matrix verb stress: **97% entailment** responses
· Embedded stress: **66% entailment** responses (Why 66%?)

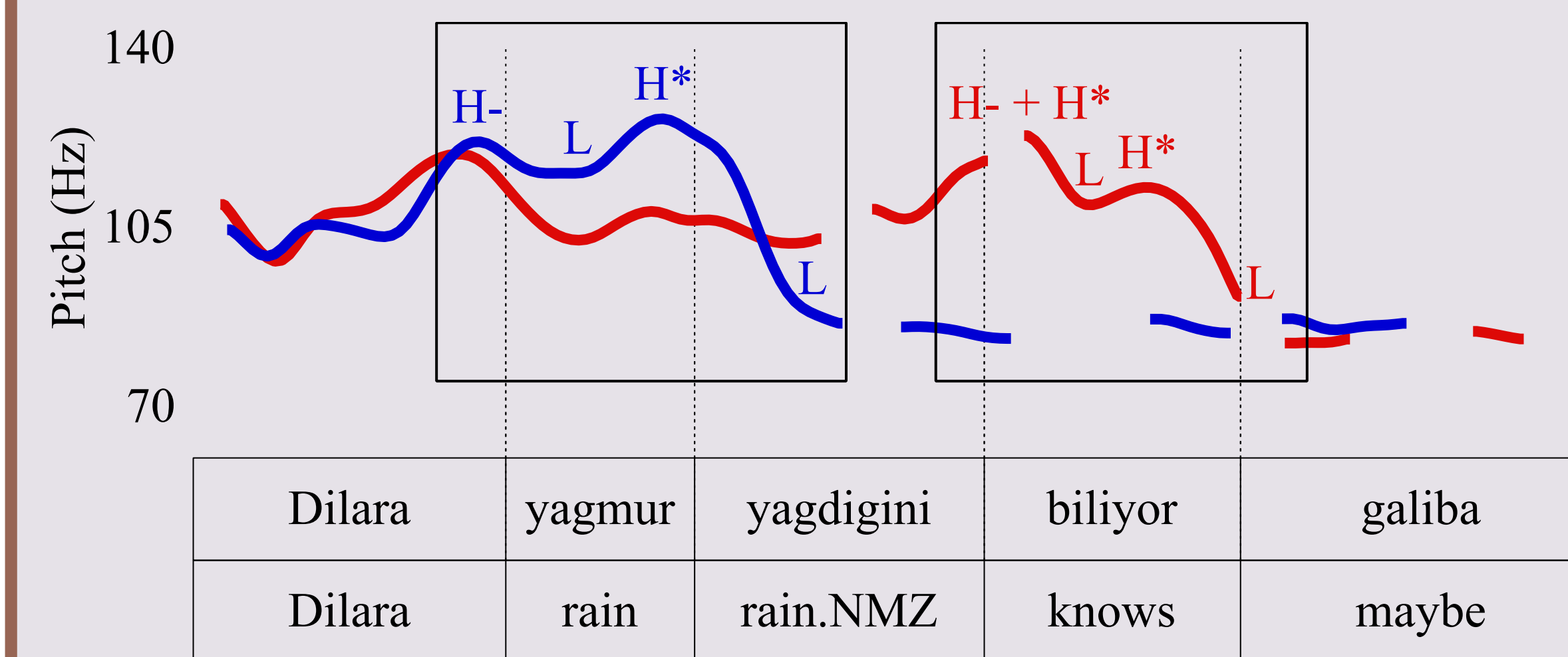## 3 Background: Turkish declarative intonation in a nutshell

(6) "Maybe people from Anamur are buying Memoli's marinas."

Anámurlular	Memólinin	marínalarini	alíyor	gáliba
A.-DMN-PL	M.-GEN	marinas	buy	maybe

· H(igh) and L(ow) tones organized into:
   Prosodic words (H*), intermediate phrases (H-), and intonational phrases (L%).   (status of other Ls disputed)

· Main sentence stress:
   – Realized on highest XP in v's spell out domain:
     [Subject [vP v [vP Object Verb]]]   (1° stress domain)
   – Preceded by H- and followed by compression.

· Pre-nuclear syntactic constituents mapped onto intermediate phrases.

4 Production studies: The intonation of factive and non-factive attitude reports

(7) "Dilara knows/thinks that it's raining."   **non-factive · factive**

Dilara	yagmur	yagdigini	biliyor	galiba
Dilara	rain	rain.NMZ	knows	maybe

· **Regular realization of stress on attitude reports**:
   – On matrix verb in factive contexts
   – In embedded clause in non-factive contexts
   – No evidence for e.g., tonal morphemes.

· **Contexts eliciting matrix verb stress**:
   Out of the blue when p is common ground,
   after asserting embedded p

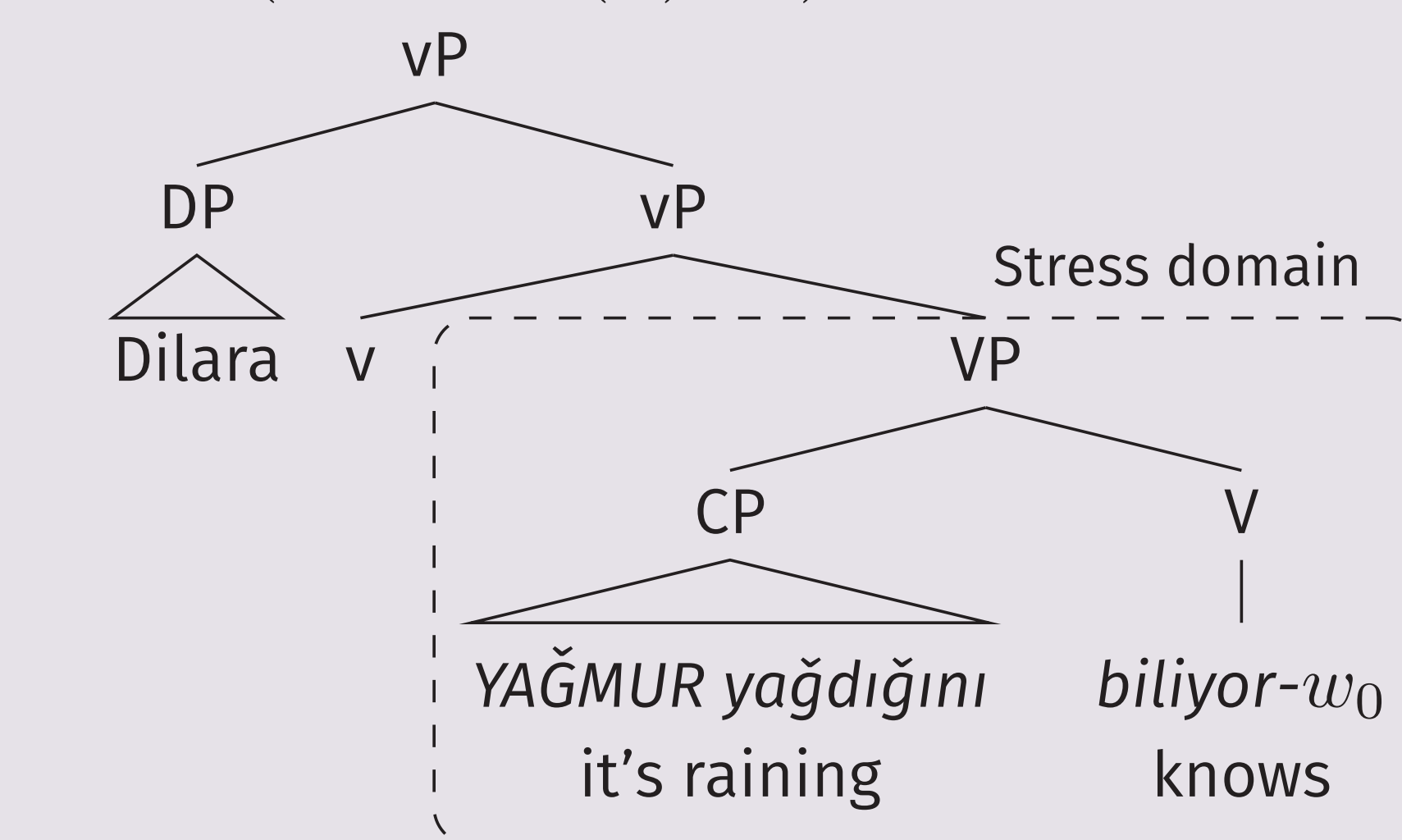· **Contexts eliciting embedded stress**:
   Out of the blue when p is not common ground,
   after asserting $\neg p$ or asking $?p$

5 Proposal: Raised embedded clauses are asserted & escape stress domain

Desiderata: The factive inference is encoded as a presupposition & the prosodic contrast is accounted for.

Non-factive attitude reports:
Embedded clause remains within stress domain.
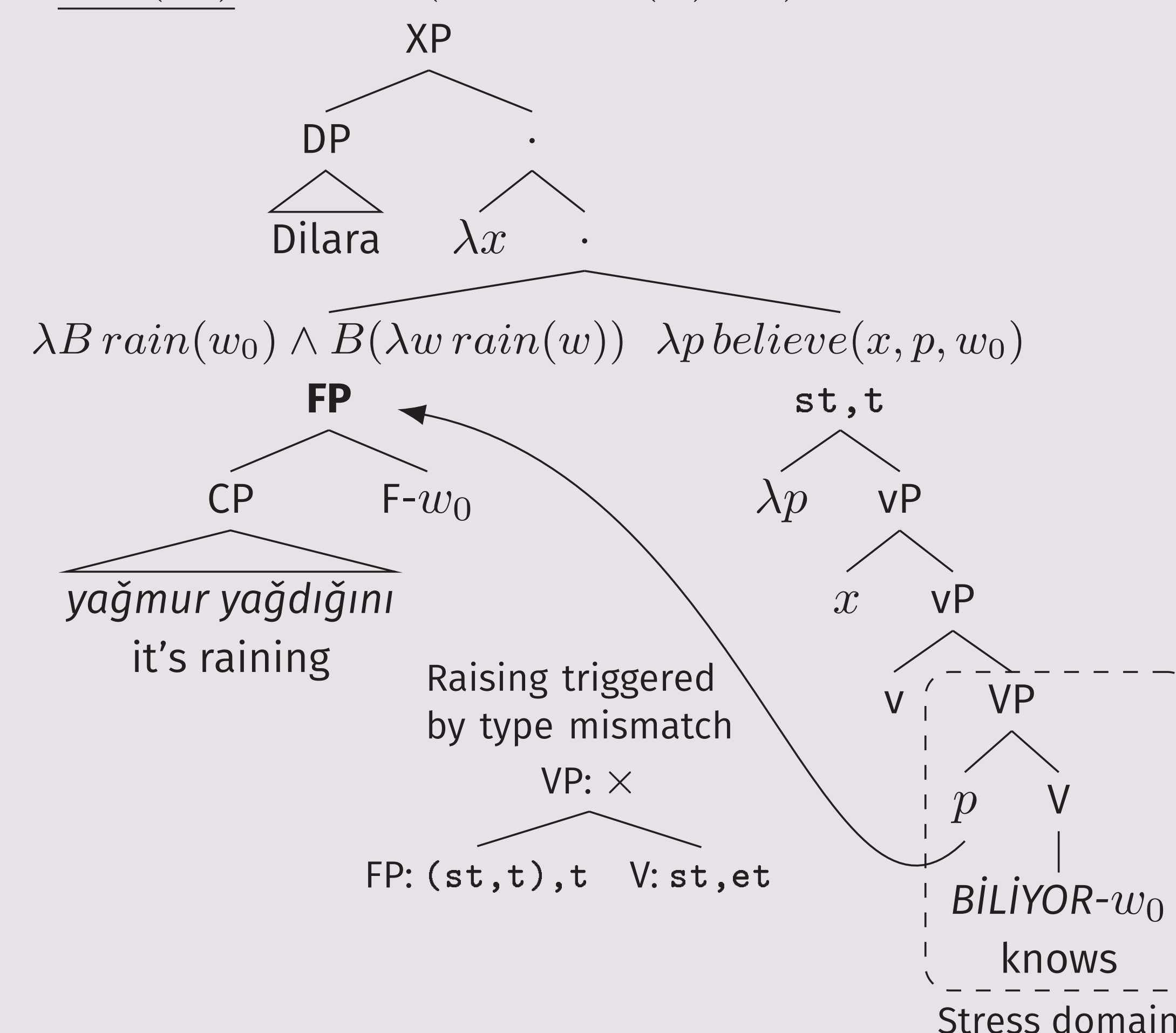$believe(d, \lambda w \, rain(w), w_0)$

Factive attitude reports:
Embedded clause moves outside stress domain.
$\underline{rain(w_0)} \wedge believe(d, \lambda w \, rain(w), w_0)$

Raising triggered by type mismatch
VP: ×
FP: (st,t),t   V: st,et

Assumptions
· A non-factive attitude verb:
   $[\![biliyor]\!] = \lambda w_s \, \lambda p_{st} \, \lambda x_e \, believe(x, p, w)$
· Regular embedded propositions:
   $[\![yağmur \, yağdığını]\!] = \lambda w_s \, rain(w)$
· A 'factive complementizer':
   $[\![F]\!] = \lambda w_s \, \lambda p_{st} \, \lambda B_{st,t} \, p(w) \wedge B(p)$

6 Discussion

· **Structural difference translates into prosodic difference**

An **alternative hypothesis** would be to establish a direct link between presupposition and prosodic structure, e.g.,:

   Presupposed material does not carry main stress!

Alternative fails to generalize to other presuppositions:
[+ Wagner, Büring: "Presupposition is independent from prosody."]

(8) *ANNEM   geliyor.*   cf. #*annem GELİYOR.*
   My mother is coming. (⤳ I have a mother.)

· **Is Quantifier Raising visible to phonology?**

Certain quantificational direct objects do not carry main stress in out of the blue contexts:

(9) What happened at the party?
   a. *Ali {her, çoğu} davetliyi ÖPTÜ.*   #*…DAVETLİYİ…*
     Ali every most guest.ACC kissed
     Ali kissed {every guest, most of the guests}.
     [Ali [every guest [___ KISSED]]]

   b. *Ali bi DAVETLİYİ öptü.*   #*…ÖPTÜ.*
     Ali a guest.ACC kissed
     Ali kissed a guest.
     [∃f [Ali [f(GUEST) kissed]]]

This is potentially the same underlying phenomenon as the prosodic factivity alternation.

· **Remaining issues**

Not all factive reports are realized with matrix verb focus.

(10) *Dilara [YAĞMUR yağdığını] fark etti.*
    Dilara [yağmur yağdığını] FARK etti.
    Dilara rain   rain.NMZ realized
    Dilara realized that it was raining.
    a. Embedded stress commits speaker to p
    b. Matrix stress commits speaker & hearer to p

Prosodic contrast something other than a structural reflex?

Acknowledgments and references

[1] Abrusán. Predicting the presuppositions of soft triggers. 2011. [2] Beaver. Have you noticed that your belly button lint color is related to the color of your clothing? 2010. [3] Büring. Intonation and Meaning. 2016. [4] Djärv. Attitude Verbs & Clausal Complementation. 2017. [5] Djärv and Bacovcin. Prosodic effects on factive presupposition projection. 2017. [6] Güneş. Deriving prosodic structures. 2015. [7] İpek. The phonology and phonetics of Turkish intonation. 2015. [8] Arslan Kahnemuyipour. The syntax of sentential stress. 2009. [9] Kamali. Topics at the PF interface of Turkish. 2011. [10] Kratzer and Selkirk. Phase theory and prosodic spellout: The case of verbs. 2007. [11] Legate. Some interface properties of the phase. 2003. [12] Özyıldız. Attitude reports with and without true belief. 2017. [13] Percus. Antipresuppositions. 2006. [14] Tonhauser. Prosodic cues to presupposition projection. 2016. [15] Tonhauser. Categorical and gradient distinctions between content: Implications for theories of speaker presuppositions. 2018. [16] Wagner. Focus and givenness: A unified approach. 2012.