

Research question: How do interface mapping principles interact with wh-movement?

Syntax-prosody mapping: The following mapping constraints are one way to capture the basic prosodic pattern in German sentences (Truckenbrodt 1995):

- ▶ **STRESS-XP:** each lexical **XP needs to be stressed**; within transitive VPs, stressing an object XP is sufficient to satisfy Stress-XP for the VP.
- ▶ **HI:** it is preferred to assign **sentence stress to the rightmost stressed element**, which usually is the object in transitive sentences.

Interaction with syntactic movement: When a wh-object is fronted, the question arises if mapping constraints apply in a **surface-oriented** way (Kahnemuyipour 2009) or **traces/lower copies** are taken into account for at least some constraints (Bresnan 1971, Korth 2014, Truckenbrodt forthcoming, Wierzba forthcoming).

Can the object's trace satisfy Stress-XP for the VP?

- ▶ $n: \underline{O} \dots \underline{S} \dots [\Theta \underline{V}]_{VP}$
- ▶ $y: \underline{O} \dots \underline{S} \dots [\Theta \underline{V}]_{VP}$

Does the position of the object's trace count for HI?

- ▶ $n: \underline{O} \dots \underline{S} \dots [\Theta \underline{V}]_{VP}$ sentence stress on the verb
- ▶ $y: \underline{O} \dots \underline{S} \dots [\Theta \underline{V}]_{VP}$ sentence stress on the object
- ▶ $n: \underline{O} \dots \underline{S} \dots [\Theta \underline{V}]_{VP}$ sentence stress on the subject

Prosody-meaning mapping: Wh-questions and wh-exclamatives are **structurally similar**, but **differ in meaning**; does this affect sentence stress placement?

Experiment: sentence stress preferences in different wh-constructions

Participants and method: 42 native speakers rated the acceptability of the target utterance (presented auditorily and preceded by a short context) on a 1–7 scale.

Design and stimuli: The position of **sentence stress** (on the subject vs. object) was manipulated in four different wh-constructions as shown in (1–4). In (1–2), the influence of **object type** (full phrase vs. pronoun) on the stressability of the verb was tested in addition. All items were preceded by a context intended to trigger an **all-new reading** (e.g., 'Did you hear anything interesting?', 'You wanted to ask me something?', ...) to hold information-structural factors as constant as possible.

(1) **Subordinate clause:** *subject* < *object* < *verb*

- Ich habe gelesen, dass Emma Anderson ein Buch geschrieben hat.
I have read that Emma Anderson a book written has
'I read that Emma Anderson has written a book.'
- Ich habe gelesen, dass Emma Anderson ein Buch geschrieben hat.
- Ich habe gelesen, dass Emma Anderson ein Buch geschrieben hat.
- Ich habe gelesen, dass Emma Anderson was geschrieben hat.

(2) **Wh-question:** *object* < *subject* < *verb*

- Was für ein Buch hat Emma Anderson geschrieben?
what for a book has Emma Anderson written
'What book has Emma Anderson written?'
- Was für ein Buch hat Emma Anderson geschrieben?
- Was für ein Buch hat Emma Anderson geschrieben?
- Was hat Emma Anderson geschrieben?

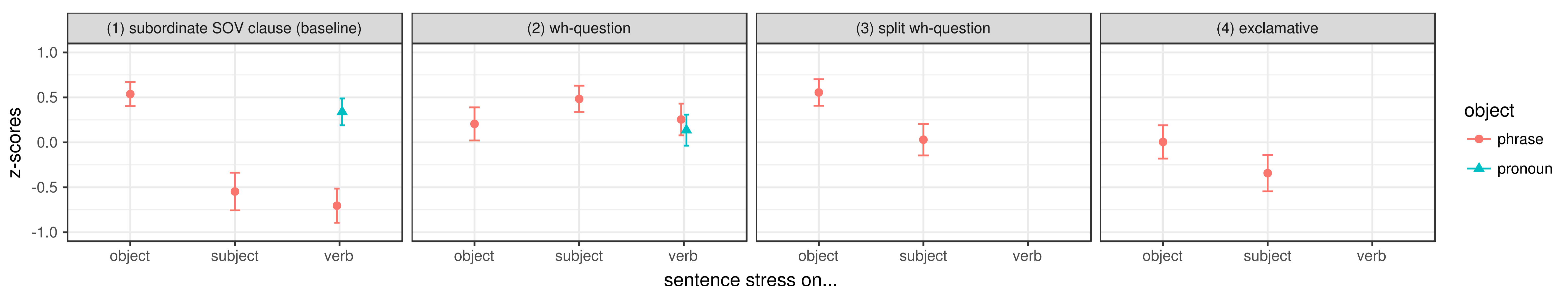
(3) **Split wh-question:** *part of the obj.* < *subject* < *part of the obj.* < *verb*

- Was hat Emma Anderson für ein Buch geschrieben?
what has Emma Anderson for a book written
'What book has Emma Anderson written?'
- Was hat Emma Anderson für ein Buch geschrieben?

(4) **Exclamative:** *object* < *subject* < *verb*

- Mann, was für ein Buch Emma Anderson geschrieben hat!
man what for a book Emma Anderson written has
'Man, what a book Emma Anderson has written!'
- Mann, was für ein Buch Emma Anderson geschrieben hat!

Results: Sentence stress preferences differed significantly from the SOV baseline (1) in all wh-construction (2–4) according to a linear mixed model. Wh-questions even show a reversed preference for sentence stress on the subject (structure × stress: $t = 10.57$). In exclamatives and split wh-questions, sentence stress on the object is preferred, but the preference is significantly less pronounced than in SOV clauses ($t = 5.71$; $t = 4.34$). **Object type** interacted significantly with structure as well: in wh-questions, the difference between phrase and pronoun (within the condition with verb stress) is smaller than in the subordinate clause ($t = -9.03$).



Discussion:

- ▶ The preference for sentence stress on the subject in wh-questions points towards **surface-oriented application of HI**: the rightmost phrase on the surface is preferably most prominent. The preference for object stress in split questions is expected, as the in-situ part of the object is rightmost also underlyingly.
- ▶ Object type matters in subordinate clauses: only accented object phrases, not unaccented pronouns exempt the verb from carrying stress. In wh-questions, this difference is absent, pointing also towards a **surface-oriented application of Stress-XP**.
- ▶ **But:** If both Stress-XP and HI were surface-oriented, sentence stress on the verb should be the most acceptable option in wh-constructions.
- ▶ Exclamatives show a different pattern than wh-questions. It is unlikely that two structurally similar structures differ in how syntax-prosody mapping constraints are applied. More plausibly, **meaning** is decisive: exclamatives express emphasis on the fronted element, and emphasis is linked to higher prominence.

Conclusion and outlook

Conclusion: HI seems to apply in a surface-oriented manner in wh-questions. Exclamatives show the reverse pattern, probably due to prosody-meaning mapping. For Stress-XP, there is some evidence for surface-oriented mapping (no effect of object type in questions) but also against it (sentence stress on the verb is not optimal).

Open issues: It is difficult to enforce an all-new context for questions: wh-questions involve **presuppositions**, which could lead to **accommodation** of further context. Also, the exact reason for the reversed pattern in wh-questions/exclamatives remains open. Directions for further research:

- ▶ Try to limit accommodation by providing more **explicit contexts**, leaving less room for interpreting constituents as given/focused.
- ▶ Try to **control emphasis** in questions/exclamatives via context and see whether that reduces or even eliminates the observed difference.

References: Bresnan, J. W. 1971. Sentence stress and syntactic transformations. *Language* 47. — Kahnemuyipour, A. 2009. *The Syntax of Sentential Stress*. Oxford Studies in Theoretical Linguistics. — Korth, M. 2014. *Von der Syntax zur Prosodie*. PhD thesis, Universität Stuttgart. — Truckenbrodt, H. 1995. *Phonological phrases: their relation to syntax, focus, and prominence*. PhD thesis, MIT. — Truckenbrodt, H. Forthcoming. *Notes on stress reconstruction and syntactic reconstruction*. In: *Reconstruction effects in relative clauses* (eds. M. Krifka and M. Schenner). — Wierzba, M. Forthcoming. *Revisiting prosodic reconstruction: An interface-based approach to partial focus and topic fronting in German*. PhD thesis, Universität Potsdam.