

OVERT PROSODY IN THE RC-ATTACHMENT PROTOCOL: ELICITATION PROTOCOLS

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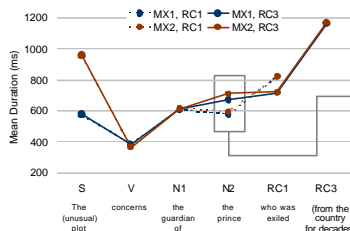
“POST-TO-TIMES” ELICITATION TECHNIQUE (Bradley, Fernández & Taylor, 2003)

- Participants combined two visually-presented simplex sentences (↗), and uttered (↘) a complex sentence containing the N1-of-N2-RC ambiguity.
- Simplex sentences disambiguated for N2-attachment, always. The structure is thus uniformly right-branching.

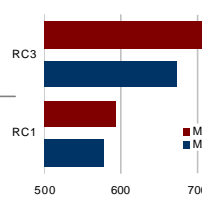
↗ The (unusual) plot concerns the guardian of the prince.
The prince was exiled (from the country for decades).

↘ The (unusual) plot concerns the guardian of the prince who was exiled (from the country for decades).

- Design: Matrix Weight (MX) x RC Length (RC).
- Study 1 (Prosody) analyzed critical region durations, for N=6x4 productions of N=8 American English speakers.
- Study 2 (Questionnaire) assessed preferred attachment, for N=36x4 target sentences read silently by N=11x4 speakers of American English.

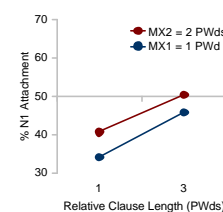


Breaks varied systematically with manipulations of matrix weight and RC length, only between N2 and RC — and nowhere else. (Breaks occurring elsewhere were effectively random.)



Duration, N2 Region

The likelihood of a phrasing break after N2 graded purely additively with matrix weight and RC length.



Attachment-Preference Data

The likelihood of N1-attachment graded purely additively with matrix weight and RC length.

CONCLUSION: PROSODY REALLY MATTERS!!

POTENTIAL LIMITATIONS AND PLANS FOR PRELIMINARY ASSESSMENT

- Might the elicitation protocol simply preclude phrasal breaks at sites other than N2][RC — because the first sentence of the visual display presents N1-of-N2 sentence-finally?
For a language differing in its prosodic phonology, does the identical protocol elicit utterances with materials-triggered phrasal breaks at sites additional to N2][RC?
- Might elicited RCs emerge in the protocol of Bradley et al. (2003) under non-restrictive rather than restrictive interpretation — because N2 (host for RC modification) is introduced with definite determiner?
When protocols are devised to bring out restrictive or non-restrictive readings, do phrasing patterns alter? (Systematicity here can clarify the restrictiveness type of the original protocol's elicitation.)

EXPERIMENT 1: CROATIAN

Why Croatian? Lovric (2003) finds that, in this language, an optional genitive preposition *od* (cf. English *of*) attracts phrasing breaks and affects attachment preference. N1][*od*-N2 can compete with N2][RC.

Procedure Identical to the elicitation protocol of Bradley et al. (2003)

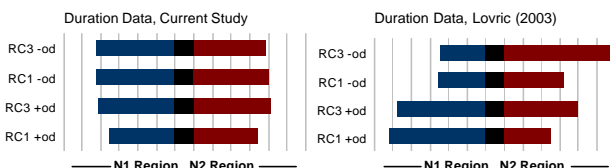
Materials N=10 quadruples from Lovric's (2003) attachment study
RC Length (1/3 Pwds) × Preposition (*-od/+od*)

Subjects N=4 Croatian speakers

↗ Fotografirali smo prevoditelja (od) veleposlanika.
We photographed the translator (of) the ambassador.
Veleposlanik vježba (u novootvorenoj) teretani.
The ambassador works out in the newly-opened gym.

↘ Fotografirali smo prevoditelja (od) veleposlanika
We photographed the translator (of) the ambassador
{što/koj} vježba (u novootvorenoj) teretani.
{that/who} works out in the newly opened gym.

RESULTS



To abstract away from varied phonetic content, these display charts employ different subtraction constants for N1 and N2 in each study. Vertical gridlines indicate 50 ms steps in mean duration.

- Inexplicably, we fail in this study to replicate a raft of earlier work. In the current study's data, N1- or N2-Region durations are entirely insensitive to design manipulations. There's none of the usual N2-Region sensitivity to RC weight variation (cf. Bradley et al., 2003; Lovric, 2003; amongst others), nor any impact at N1 of preposition *od* (cf. Lovric, 2003) — let alone any intricate pattern involving tradeoffs between N1][*od*-N2 and N2][RC phrasing sites. *Nothing*
- Why this would be so is a mystery as yet unresolved by data-diving. Could it matter that the experiment was run by non-speakers of Croatian? Or that Croatian-speaking subjects were based in New York? Or that the “Post-to-Times” disambiguation targeted N2-attachment uniformly, cf. the number disambiguation of Lovric's procedure, presenting N1- and N2-attached sentences, unblocked.
- It was a *great idea*, though. Watch this space.

EXPERIMENT 2: ENGLISH

Procedure Two protocol variants, presented in fixed order:

Restrictive (R) followed by Non-Restrictive (NR) elicitations

Materials N=8 quadruples from Bradley et al. (2003); N1/N2 inanimate Sentence Weight (Bare/Rich = 5/8 Pwds) × Protocol (R/NR)

Subjects N=6 American-English speakers

RESTRICTIVE PROTOCOL (R)

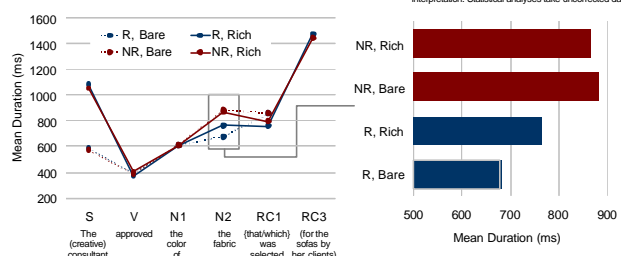
↗ The (creative) consultant approved the color of the fabric.
Which fabric? The fabric that was selected (for the sofas by her client).

NON-RESTRICTIVE PROTOCOL (NR)

↗ The (creative) consultant approved the color of the fabric.
By the way, that particular fabric was selected (for the sofas by her client).

↘ The (creative) consultant approved the color of the fabric (that/which) was selected (for the sofas by her client).

RESULTS



Note: Displayed data are rate-corrected, to allow quick interpretation. Statistical analyses take uncorrected data.

- Phrasing breaks reflecting weight variation in complex sentences arise systematically *only* at N2][RC — and there, *only* for utterances elicited via the Restrictive protocol.
In R-protocol elicitation, N2-Region durations increase with prosodic weight, $F(1,5)=9.48, p<.05, F(1,7)=23.08, p<.005$.
- Utterances elicited via the Non-Restrictive protocol do not lack phrasing breaks. Rather, N2][RC breaks are *likely* but *weight-insensitive*.
In NR-protocol elicitation, N2-Region durations are uniform across weight variation, $F's < 1$. Overall, those N2-Region durations are markedly longer for NR- than for R-protocol utterances, $F(1,5)=7.73, p<.05, F(1,7)=22.46, p<.005$.

CONCLUSIONS AND FUTURE DIRECTIONS

Two potential limitations in the “Post-to-Times” elicitation protocol (Bradley et al., 2003) were explored in the current study. One has been eliminated, but the other remains moot.

- “Post-to-Times” does not elicit non-restrictive RCs (Experiment 2).
English, a new protocol encouraging restrictive readings (“Which N2?”) replicates previous findings of weight-sensitive phrasing, cf. weight-insensitive phrasing for a non-restrictive protocol.
- “Post-to-Times” may or may not limit phrasing breaks to N2][RC (Experiment 1).
Although the Croatian venture has yet to produce data bearing on the issue, we draw comfort from the fact that Experiment 2's successful “Which N2?” protocol presents N2 fragment-initially (“Which N2? The N2 who ...”) as well as sentence-finally (“... the N1 of the N2.”).

- Does American English offer any means at all for determining a speaker's intent with respect to (non-)restrictiveness?
Use of *RelPro who/which* and avoidance of *Comp that* (obligatory for NR in some dialects of English) is not routinely in play in American English. Intuition suggests that very different tunes normally accompany NR vs. R modification. But is that *really* so?

- Would non-restrictiveness affect attachment preference in the N1-of-N2-RC ambiguity?

Prediction 1: NR interpretation should neutralize the usual effect of weight variation. Note that Hemforth et al. (submitted) report just that result for extraposed RCs in German.
Prediction 2: If prosodic breaks are parsing cues for syntactic discontinuity (Fodor, 2002), N1-attachment should be more likely for NR- than R-modification.

Overt prosody in the RC-attachment construction: Elicitation protocols

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The “Post-to-Times” protocol of Bradley, Fernández & Taylor (2003) (BFT) presents two short sentences, see (1), to elicit an utterance containing a complex NP with a modifying relative clause (RC); for the speaker, RC's attachment is disambiguated. BFT reported that their instrumental analyses of elicited utterances (N2-disambiguated, uniformly) showed remarkable systematicity in phonological phrasing: Whole-sentence length controlled the likelihood of phrasal breaks occurring at RC's left edge, i.e., N2][RC. They argued that the overt prosody facts support an implicit prosody explanation (Fodor, 2002) of RC-attachment preferences: When ambiguous sentences were read silently, attachment was higher both when matrix subjects were heavier and when RCs were longer; see (2).

We report research extending these preliminary findings. We first examine BFT's claim that N2][RC is the sole site of systematic variation in default phonological phrasing in English because it is privileged in the syntax/prosody interface of that language. We evaluate the possible objection that this break site has merely been picked out by a protocol presenting N2 sentence-finally. Data were collected in an overt prosody study of Croatian, a language in which a proclitic preposition 'od' (non-thematic, and similar to English 'of') optionally precedes N2 in the complex NP; Lovric (2003) shows N1][Prep-N2 to be a second site attracting phrase breaks in Croatian's default prosody. With materials factorially combining RC-Length (short/long) and Preposition (absent/present) and utterances elicited with BFT's protocol (see (3)), we explore whether phonological phrasing for this construction in Croatian involves a trade-off between two break-sites: RC's left edge, as in English, and Prep-N2's left edge. BFT's findings for English would not, therefore, be an artefact of the protocol. However, these data are moot.

In a second study, we explore effects of RC's (non-)restrictiveness on phonological phrasing in English, contrasting two variants of the elicitation protocol. Restrictive RCs are elicited when an introductory sentence is accompanied by a “Which X?” question and response, as in (4a) and (4b), and non-restrictive RCs, when (4c) accompanies (4a); note that RC predicates are segmentally identical across restrictive and non-restrictive types. We demonstrate that it is only for restrictive RCs that the likelihood of the N2][RC phrasing break reliably grades with whole-sentence length. This result suggests an implicit prosody account of the finding of Hemforth et al. (submitted), that extraposed RCs in German fail to exhibit length effects on preferred attachment. Separate phonological phrasing of RC is obligatory under extraposition; and where break-likelihood is at ceiling, length-sensitivity is ruled out.

- (1) The plot concerns the guardian of the prince. The (guardian/prince) was exiled.
- (2) The (unusual) plot concerns the guardian of the prince who was exiled (from the country for decades).
- (3) Opisali smo bratca (od) rukometaša.
Described are-[1st,PL] the cousin (of) the handball-player.
Rukometaš studira (na odsjeku za arheologiju).
The handball-player studies (at the department of archeology).
- (4) a. The plot concerns the guardian of the prince.
b. Which prince? The prince who was exiled.
c. By the way, that particular prince was exiled.

References

- Bradley, D., Fernández, E. & Taylor, D. (2003). Prosodic weight versus information load in the relative clause attachment ambiguity. Paper presented at the 16th Annual CUNY Conference on Human Sentence Processing, Cambridge MA.
- Fodor, J. D. (2002). Psycholinguistics cannot escape prosody. *Proceedings of the 1st International Conference on Speech Prosody*, Université de Provence, 83-88.
- Hemforth, B., Fernández, S., Clifton, C., Jr., Frazier, L., Konieczny, L., & Walter, M. (submitted). Relative clause attachment in German, English and Spanish: Effects of position and length.
- Lovric, N. (2003). *Implicit prosody in silent reading: Relative clause attachment in Croatian*. Doctoral dissertation, CUNY Graduate Center.