

The Neural Responses to Neg Raising with and without Negation: Evidence from ERPs

Julie Maria Rohde (jmr@cc.au.dk)¹, Doug Saddy², Alex Sheehan²

¹Department of English, Aarhus University, ²Centre for Integrative Neuroscience and Neurodynamics, University of Reading

Neg Raising (NR), see (1), has been argued to result from syntactic movement [5], [6], [9], [19], though other authors contend that the embedded reading of NR instead arises through conversational implicatures [2], [11], [15], [20], [22]. Whether NR involves syntactic movement has previously been investigated using acceptability judgement studies that found NR to be more acceptable than parallel sentences with embedded-clause negation [7], [10]. Filler-gap dependencies normally increase syntactic complexity and decrease acceptability [8], [18] and elicit P600 ERP-components [17]. The preference for NR could support the absence of a filler-gap dependency in NR, though it could also be explained by a tendency to anticipate and express salient information early [16], [14], [10]. Such a tendency might mitigate a penalty on acceptability associated with extraction, meaning that a preference for NR does not exclude a syntactic analysis of NR.

A positive polarity counterpart presents an avenue for investigating NR: *Adverb Raising* (AR) [1]. NR involves ambiguity between (preferred) embedded readings and matrix readings, which are also entailed by the embedded readings [13], but in AR the matrix-clause adverbial is interpreted in the embedded clause, see (2), and a matrix reading is often considerably less plausible, which favours an embedded interpretation. Both constructions were found to be highly acceptable in previous work, though AR did not show a preference for extraction. AR therefore provides a parallel to NR with obligatory reanalysis of the adverbial, no early-expression preference, and less ambiguity between matrix and embedded readings. This contrast motivates the EEG study which is the topic of this presentation. The study consists of acceptability ratings and EEG recordings of 30 English speakers. The experiment follows a 2x2 design with Extraction (-Ex vs. +Ex) as one factor and Polarity (Neg vs. Adv) as the other, see table 1. We predict that if AR and NR are filler-gap dependencies and the adverbial or negation is reanalysed at the embedded clause verb, this will elicit a P600 component in response to the syntactic reintegration of the filler. Sentences with matrix clause adverbials will serve as controls for word-order variations, and comparisons with Wh-filler-gap dependencies will serve as P600 controls. If AR and NR are the results of implicature, we instead expect an N400 component at the presentation of the adverbial in the matrix clause in response to the semantic incompatibility [21]. The implicature account of NR excludes the possibility of syntactic reanalysis. A P600 could thus be indicative of syntactic reanalysis of AR/NR, but the P600 has also been implicated in discourse integration [3], [12], [4], meaning that a P600 cannot exclude an implicature-based analysis of NR/AR. However, given the observed preference for NR, and the fact that the non-syntactic P600 is connected to increased effort with discourse integration [4], a P600 at the embedded clause verb in extraction conditions could signify syntactic reanalysis. In contrast, the syntactic account does not bar an initial N400 component. Due to the factorial design, the study will also be able to determine whether any differences between the [Neg] and [Adv] conditions are attributable to polarity, as these differences would be present in the [-Ex] condition as well, or whether NR and AR differ due to other factors, such as syntactic structure. This study therefore aims to clarify the origins of both NR and AR and whether and how they differ.

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Figures and Tables

- (1) a. English
 I don't₁ want to ____₁ be with you.
 'I want to not be with you.'
- b. Danish
 Jeg tror ikke₁, det ____₁ er sandt.
 I think not₁ it ____₁ is true.
 'I think it is not true.'
- c. Dutch

Ik denk niet₁, dat Jan ____₁ komt.
 I think not₁ that Jan ____₁ comes.
 'I think that Jan will not come.'

(2) a. English

I always₁ want to ____₁ be with you.
 'I want to always be with you.'

b. Danish

Jeg tror altid₁, det ____₁ har været sådan.
 I think always₁ it ____₁ has been like-that.
 'I think it has always been like that.'

c. Dutch

Ik denk zeker₁, dat Jan ____₁ komt.
 I think certainly₁ that Jan ____₁ comes.
 'I think that Jan will certainly come.'

	Neg	Adv
[-Ex]	I want to <u>not</u> be with you	I want to <u>always</u> be with you
[+Ex]	I <u>don't</u> want to be with you	I <u>always</u> want to be with you

Table 1: Factorial design