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57. Non-negated and double-negated constructions

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Natural languages are not logical constructions. Not only is natural language grammar full of exceptions to general rules but even constructs such as negations do not behave logically. Take for instance the following two sentences:

- (1a) Arie's lecture was interesting.
- (1b) Arie's lecture was not uninteresting.

Basic logic tells us that two negating elements cancel each other out (as in '**not uninteresting**'). Therefore, cases as in (1b) should be equivalent to non-negated word forms (in this case *interesting*), as in (1a). However, our intuition as speakers of Dutch or English tells us that (1a) and (1b) are in fact not completely equivalent. Verhagen (2005) proposed that the function of sentential double negation is to create coherence between sentences containing opposing information. For instance, according to Verhagen, in contexts where inferred expectations are cancelled, a sentence containing a double negation would be easier to process than one with the non-negated word form. Thus, 'not uninteresting' is functionally different from *interesting*.

Verhagen's hypothesis was tested in an experimental study employing event-related brain potentials (ERPs) in Dutch. Native speakers of Dutch read sentences, presented word by word on a screen, in which evoked negative expectations are cancelled by a second sentence including either a double negation (as in (2b)) or the corresponding non-negated word form (as in (2a)).

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- (2a) Arie's lecture was long, but interesting.
- (2b) Arie's lecture was long, but not uninteresting.

One ERP component, the so-called *N400*, is regarded to indicate how difficult it is for participants to integrate a word in the current context. The *N400* is a negative-going deflection (hence 'N') that peaks around 400 milliseconds after the onset of a stimulus, e.g. the non-negated or double-negated word in this case, and is typically maximal over centro-parietal electrode sites.

Results of our study showed that in sentences such as those given above, non-negated word forms, such as *interesting* (as in (2a)), elicited a larger *N400* than double negations, such as 'not uninteresting' (as in (2b)). This result suggests that canceling out a negative expectation by a double negation, compared to the non-negated word form, makes it easier for participants to integrate the two sentences semantically and connect them to the present discourse. Furthermore, it was shown in a control study – comparing sentences such as (1a) and (1b) – that this effect was not due to the non-negated and double-negated forms per se. The *N400* effect only occurred in the appropriate context conditions.

This is a nice example of theory-driven hypothesis testing. Verhagen's theoretical hypothesis was tested using state-of-the-art psycholinguistic methodology.

References

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