Predicting the predictable:
The effect of proficiency on lexical-semantic processing strategies in adult L2 learners

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Since second language (L2) processing has been investigated with Event-Related Potentials (ERPs), there is an ongoing debate whether native speakers and L2 learners have access to the same neural processing capacities and therefore should show comparable ERP responses to linguistic stimuli. With respect to syntactic processing, small changes in the onset of the age of acquisition (AoA) have shown to have a massive impact upon the observed ERP patterns of L2 learners; however, when it comes to semantic processing, even late learners show a qualitatively similar pattern (N400) as native speakers, though onset/peak latencies, amplitude, effect sizes, and distributional parameters of the N400 may slightly differ (e.g. Weber-Fox & Neville 1996; Moreno et al. 2008). Whereas most discussions about lexical-semantic N400 effects are based on the "N400 congruity effect" (difference wave between congruous and incongruous words) or proceed from the assumption that "larger N400s" for incongruent relative to congruent words always reflects increased processing costs for the former, only few studies considered the possibility that the N400 might not be a monolithic effect, but – at least under certain conditions – could involve *qualitatively* different processes (e.g. Vespignani et al., 2010; for an extensive discussion of this issue see Molinaro & Carreiras, 2010).

For example, Roehm et al. (2007) found evidence for distinct parsing strategies due to task demands and/or semantically restrictive contexts. In a sentential context involving antinomies (e.g. The opposite of *black* is …) participants showed a P300 for the sentence-final word in the antonym condition (*white*), in contrast to graded N400s for the related (*yellow*) and non-related (*nice*) conditions. The authors suggested that the P300 reflects the match between the parsers' prediction of an incoming element (pre-activated representation) and the target stimulus. In this experiment we wanted to investigate whether a prediction-based processing strategy is observable in high cloze-probability sentences for native speakers of English and whether such a strategy is restricted to L1 speakers or is also accessible to speakers with English as L2.

13 native English speakers and 13 advanced German learners of L2-English (Ø AoA = 9.9 yrs, Ø years of learning = 12.7) read sentences where the sentence-final word either was semantically congruent (A) or incongruent (B) with the previous context. In all sentences (20 sentences per critical condition), the prior context enabled a strong prediction about the upcoming last word. The stimulus material was part of a larger study with various other conditions (reported elsewhere). Crucially, the two groups showed no differences with respect to behavioral measures (accuracy, RTs).

As in previous studies (see Moreno et al., 2008), semantically deviant structures elicited a similar N400 for both groups (L1 & L2) suggesting similar processes for native and L2 speakers. More interestingly, only the native speakers showed an early positivity in the N400 time window for semantically congruent sentences (similar to the P300 for predictable antonyms in the Roehm et al. study) thereby indicating a prediction-based parsing strategy. As the early positivity was absent in the L2 group, we conclude that L2 learners - even with an advanced proficiency level - do not use to the same processing strategies as native speakers (at least in sentences / contexts which are not subject to certain highly specific restrictions).

A. semantically congruent: The tree was too high to <u>climb</u>.
B. semantically incongruent: The tree was too high to <u>laugh</u>.

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