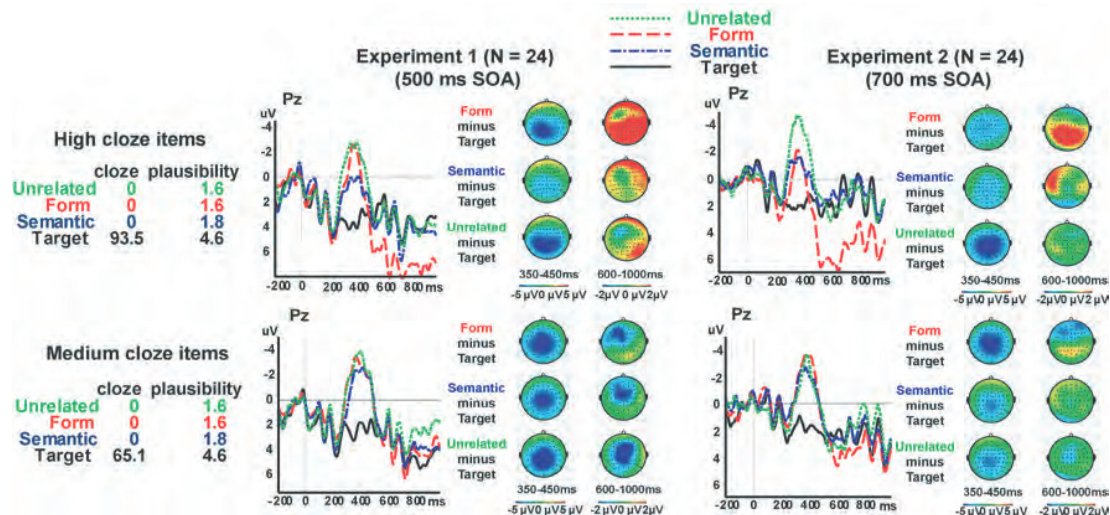**Predicting form and meaning: Evidence from ERPs**

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In language production, people appear to access meaning before word form [1], suggesting a crucial link between meaning and form. Given that production system seems to aid comprehension [2], this link might be useful in comprehension, particularly in prediction of upcoming words [3]. Two ERP experiments examined prediction of meaning [4] and of form [5-6] . Participants read 160 high-cloze sentence contexts (e.g., "*The student is going to the library to borrow a…*") followed by the predicted word (*book*), a word that was form-related (*hook*) or semantically related (*page*) to the predictable word, or an unrelated word (*sofa*). We predicted that pre-activation, reflected in reduced N400 amplitude for related compared to unrelated words, would be likely for meaning than for form, and would depend on target word cloze.

In Experiment 1, participants read sentences for comprehension at a standard 500 ms SOA per word. Semantically related words elicited smaller N400s than unrelated words, most prominently at posterior channels, (M = -1.3 µV, SD = 2.4), t(47) = -3.7***. Form-related words showed no N400 reduction but elicited a post-N400 posterior positivity (LPC effect), (M = 1.6 µV, SD = 2.6), t(47) = 4.4***. Both effects occurred in high-cloze items but not in medium-cloze items (median cloze split, no differences in plausibility or in semantic relatedness to context words). In Experiment 2, sentences were presented at 700 ms SOA, allowing more time to generate predictions while reading. The semantic pre-activation N400 effect was replicated. Critically, form-related words again elicited an LPC effect, but also a reduced N400, which was only found in high-cloze items, (M = 2.6 µV, SD = 3.6), t(47) = 5.0***.

Our N400 results show that readers pre-activate meaning as well as form of highly predictable words. However, pre-activation of meaning is more robust than that of form, given that people only pre-activated form information when sentences unfolded more slowly. Regardless of pre-activation of form information, form similarity to highly predicted words evokes interpretation conflict between expected and encountered input, reflected in an LPC effect [7]. The finding that form prediction but not semantic prediction was limited to the slow rate fits with the claim that prediction makes use of the production system [3], in which meaning selection occurs earlier than form selection.

References: [1] Levelt (1992). *Cognition*. [2] Pickering & Garrod (2012). *Behav. Brain Siences.* [3] Pickering & Garrod (2007). *Trends Cogn. Sci.* [4] Federmeier & Kutas (1999). *J. Mem. Lang.* [5] Kim & Lai (2012) *J. Cogn. Neurosci.* [6] Laszlo & Federmeier (2009). *J. Mem. Lang.* [7] Van Herten, et al. (2006). *J. Cogn. Neurosci.*