University Paris 3, Paris, France — Perception of speech sounds is influenced by listeners’ experience with their native language. Previous behavioral and imaging studies have mostly investigated the perception of non-native speech sounds and demonstrated that exposure to native sound shapes listeners’ perceptual space such that non-native sound inputs are perceptually transformed into native sounds. However, in everyday life, listeners have to deal with their own language rather than foreign languages and strikingly, knowledge on their native language may also bias their perception of native sounds. For instance, in French, the sound [g] is perceived as [k] in /igmo/, while the same sound can be perceived as [k] in /igdo/. While the existence of such transformation is known and explained by compensation for French voice assimilation rule, the question of when it occurs during speech processing is still unclear. Here, we investigated this question using EEG recordings. French listeners were asked to detect change between items. In the first condition (/igmo/-/ikmo/), the change was well detected; whereas in the second condition (/igdo/-/ikdo/), the change was not detectable because /igdo/ is perceptually transformed into /ikdo/. In particular, our electrophysiological data show an early negative component (MMN) at 130 ms in response to the sound change only in the /igmo/-/ikmo/ condition, but not in the /igdo/-/ikdo/ condition, suggesting that the transformation takes place at early stages of sound perception. In conclusion, our findings demonstrate that native phonological rules impact listeners’ perception of native sounds and that the resulting transformation involves early perceptual mechanisms rather than late conscious reconstruction.

**C81**

FUNCTIONAL BRAIN IMAGING PREDICTS FOREIGN LANGUAGE LEARNING SUCCESS IN THE CLASSROOM

Zhenghan Qi1, Tyler Perriholie1, Michelle Han1, Keri Garei1, Ez San Chen1, Amy Finn1, John Gabrielli1, 1Massachusetts Institute of Technology, 2Boston University, 3Massachusetts General Hospital — Foreign language learning is one of the most challenging educational activities for adults, including learning to comprehend and produce a new vocabulary and grammar that are represented by foreign speech sounds. We used functional MRI to measure the neural response to linguistic and nonlinguistic pitch (tones) in adults before and after an intensive, 4-week, classroom-based introductory Mandarin Chinese course. Learning achievement was measured by performance on the HSK (Level 1), a standardized test of Mandarin proficiency assessing both aural and written vocabulary and grammar. Activation in bilateral dorsolateral prefrontal cortex (DLPFC) and inferior frontal gyrus (IFG) to linguistic pitch in pre-training brain images significantly predicted students’ performance on the post-training HSK (FDR=0.05, p<0.05). A behavioral assessment of lexical tone perception also significantly predicted classroom learning achievement (r=0.52, p=0.007). We also observed that, compared to the pre-training scans, students at the end of the Mandarin course evinced an increase in the neural response of left DLPFC and left IFG to linguistic versus nonlinguistic pitch (FDR = 0.05, p<0.05) - a result paralleling behavioral improvement in lexical pitch perception after training. In addition to demonstrating the plasticity of the neural systems for language in adulthood, these results reveal that individual differences in neural responses to foreign-language speech sounds before training can predict learners’ holistic attainment of the foreign language, including speech, vocabulary, and grammar.

**LANGUAGE: Semantic**

**C82**

RECOVERY OF MEANING DURING READING: AN EVENT-RELATED POTENTIAL STUDY ON THE PROCESSING OF ELLIPTICAL SENTENCES

Bobby Ruijgrok1, Crit Cremers1, Lisa L. Cheng2, Niels O. Schiller2, 1Leiden University — The interpretation of elliptical sentences (e.g., “The man bought a book in Boston and the woman […] a cd in Houston”) requires a process of semantic recovery: Ellipsis may be resolved by inserting a copy of the missing structure (e.g. “bought”). Such a “copy-paste” procedure predicts a low processing cost - regardless of the size of the antecedent. In contrast, a more laborious inferencing mechanism may be required for ellipsis resolution, which predicts the activation of relatively more processing resources. We studied the online processing of a particular type of ellipsis, i.e. “gapping”, in Dutch. We recorded event-related brain potentials while Dutch participants read sentences containing gapping constructions interspersed with filler sentences. Three elliptical conditions were compared with their non-gapped counterpart (control condition). The gapped sentences differed with respect to the omitted structure: verb only (as above), verb plus object, or verb plus object and adjunct. The latter structure was replaced by “ook” (“too”). We observed a broadly distributed early negativity following the occurrence of omitted structures. In addition, the negativity appeared to be more sustained if larger structures are elided. These results suggest that different resolution strategies are involved in the recovery of meaning during gapping resolution. If only a verb is gapped, a copy-paste procedure applies. Recovery of larger structures requires more effort pertaining to broadly distributed processing resources.

**C83**

N400 PROCESSES INHIBIT INAPPROPRIATELY ACTIVATED LOW-CLOZE PROBABILITY SENTENCE ENDINGS LEARNED AT PRIOR OCCURRENCES.

Ana Lucia Fernandez Cruz1, Katrina Gong2, J. Bruno Debruille2; McGill University — When a low-cloze probability word ends a sentence frame, their association is stored in working memory. Thus, a second occurrence of that sentence frame will probably automatically activate short-term memory representations corresponding to this word. However, if this sentence frame now ends with another word, activations of the first word’s representations are inappropriate and might have to be inhibited. These representations of the first word should then be harder to re-activate. Thus, if the sentence frame is presented a third time and subjects asked to produce the first word that comes to mind, they will less frequently come up with the initial word. The hypothesis that the N400 indexes inhibition predicts that the inhibitions generate additional N400 activity in the event-related brain potentials (ERPs). To test this hypothesis, 3 series of 3 blocks were presented to 26 participants. The first block of each series contained 50 sentences ending with a low-cloze probability word. The second blocks included again these 50 sentences ending now with a new low-cloze probability word. Each third block included only the 50 sentence frames. After each of them, subjects had to verbalize aloud the first word that came to mind. In accordance with the N400 inhibition hypothesis, N400s elicited by new words at second blocks were larger at lateral frontal sites F4 and F3 when first words were not verbalized at third blocks than when they were. We thus propose that these additional frontal N400s activities could index the inhibition of inappropriately activated working memory representations.

**C84**

ERP CORRELATES OF PREDICTION AND PLAUSIBILITY IN SENTENCE COMPREHENSION

Megan D. Bardolph1, Cyma Van Petten2, Dianne Thornhill3; Seana Coulson1; UC San Diego, 2Binghamton University — We investigated the nature of prediction during reading by manipulating sentence constraint, predictability, semantic relation, and plausibility and examining their impact on ERPs. Previous studies suggest that multiple factors influence the presence and scalar distribution of late positive potentials to less-than-predictable words. A frontal positivity for low-cloze compared to high-cloze sentence completions has been observed in several studies. Thornhill and Van Petten (2012) used high and low constraint sentences ending with either the best completion (highest cloze probability), a word semantically unrelated to the best completion and observed that, following the N400, all of the less predictable endings elicited a larger frontal positivity than the high constraint best completion. Other studies have found a partially distributed positivity for incongruent sentence completions relative to congruent completions, but previous studies have not examined both unpredictable congruent and incongruent completions. We thus expanded the Thornhill and Van Petten stimulus set by adding semantically implausible completions (e.g., “Gary doesn’t think a husband should cheat on his... WIFE/SPouse/TAXES/CEMENT.”). ERPs were recorded while participants read each sentence. Across participants, each sentence frame was paired with all four ending types. N400 amplitude was modulated by cloze probability and semantic relatedness, confirming previous findings. We found a frontally distributed positivity for all ending types relative to the best completion, suggesting that this potential may reflect a failed lexical prediction of any kind. No sentence type elicited a partially distributed positivity.