left hemisphere than right hemisphere, just as low familiarity words were more accurately processed by the left hemisphere. These findings fit the assumption that the left hemisphere shifts to phonological processing as words become more challenging, and provide new evidence that laterality and the effect of hemispheric interaction are subject to context effects.

E65

PHONEME RELATED SOMATOTPY AND LEXICO-SEMANTIC KNOWLEDGE BECOME ACTIVATED IN PARALLEL WITHIN 200 MS DURING OBJECT NAMING.

Kristof Strijkers[1], Friedemann Pulvermuller[2], Albert Costa[3]; [1]Laboratoire de Psychologie Cognitive, CNRS and Université d'Aix-Marseille, Marseille, France, [2]Brain-Language Laboratory, Free University of Berlin, Berlin, Germany, [3]Center for Brain and Cognition, UPF, ICREA, Barcelona, Spain. — In this study we explored the time course of processes related to lexical and phonological access during speech production. Fifteen native English speakers named objects aloud while their MEG was recorded. We orthogonally manipulated the lexical frequency of the object names, as an index for lexico-semantic retrieval, and the articulator movement of the first phoneme of a picture's name (i.e., labial: Monkey vs. dental: Donkey), as an index of when the brain starts retrieving phonological-phonemic knowledge. Consistent with previous data we found early MEG activation for the lexical frequency effect (160 – 240 ms), with a stronger brain response for low frequency compared to high frequency items in the mid temporal gyrus and the left inferior frontal gyrus. Crucially, differences associated to the articulator movement of the first phoneme were also present at this time-window. In the pre- and post-central gyri we observed a single dissociation in that there was more cortical activity in that region responsible for tongue-movements when a picture's name started with a dental sound compared to a labial sound. Furthermore, we also encountered a double dissociation in the superior temporal gyrus (STG), a region typically associated with acoustic-to-phoneme mappings. Anterior portions of the STG responded more strongly for labial than for dental sounds, and the opposite was observed in posteriors sections of the STG. In contrast to the traditional hierarchical view underlying word production, these data offer compelling evidence for very rapid and parallel retrieval of lexico-semantic and phonological-phonetic knowledge associated with perceived objects.

E66

CHARACTERIZING OBJECT NAMING ERRORS IN PREOPERATIVE SPEECH MAPPING VIA NAVIGATED TRANSCRANIAL MAGNETIC STIMULATION

Noriko Tanigawa[1,2], Phiroz Tarapore[1], John Houde[1], Srikantan Nagarajan[1]; [1]University of California, San Francisco, [2]University of Oxford — Navigated transcranial magnetic stimulation (nTMS) during the object naming task has been used to map cortical areas causally related to speech functions in the preoperative context. To improve the mapping efficiency, the present study investigates phonological and semantic properties that may affect rates and spatial distributions of object naming errors in preoperative nTMS speech mapping using the NexSpeech® module with the NBS system 4 (Nexstim Ltd., Helsinki, Finland). Only the correctly responded pictures without TMS were presented in the nTMS condition. A 5-Hz 2-second pulse train started at each picture onset. Data from seven English-speaking left-hemisphere tumor patients were analyzed for phonological and semantic properties preselected from interdisciplinary findings. All error types (Corina, 2010) were collapsed. Overall, error rates were higher for targets starting with a [-CONTINUANT] feature (e.g., /b/, /m/, /d/) than those with a [+CONTINUANT] feature (e.g., /v/, /l/, /o/). Typical of one-word production, error-prone targets included disyllabic words with three different consonants (e.g., bucket), multisyllabic words with stress on a non-standard syllable position (e.g., banana). Semantic specificity differed by tumor locations. Whereas insula and temporal tumor patients were more susceptible to phonological constraints, handknob and inferior parietal lobe tumor patients were more susceptible to region-specific semantic constraints, 'hand-related objects' (e.g., glove) and 'tools' (e.g., globe) respectively. The semantically selective error distributions accord with the conceptual category-specificity literature (e.g., Mahon_et_al_2009). The present study adds to the models of object naming (e.g., Indefrey_2011), the global phonological, and location-specific semantic constraints, tailoring word lists for efficient preoperative nTMS speech mapping.

E67

CHOOSING FIRST OR SECOND LANGUAGE PHONOLOGY IN 125 MS

Kalinka Timmer[1,2], Lesya A. Ganushchak[1,3], Yulia Mitlina[2], Niels O. Schiller[1,2]; [1]Leiden Institute for Brain and Cognition (LIBC), Leiden, The Netherlands, [2]Leiden University Centre for Linguistics (LUCL), Leiden, The Netherlands, [3]Max Planck Institute for Psycholinguistics, Nijmegen, The Netherlands — We are often in a bilingual situation (e.g., overhearing a conversation in the train). We investigated whether first (L1) and second language (L2) phonologies are automatically activated. A masked priming paradigm was used, with Russian words as targets and either Russian or English words as primes. Event-related potentials (ERPs) were recorded while Russian (L1) – English (L2) bilinguals read aloud L1 target words (e.g. РЕЙС /reis/ 'flight') primed with either L1 (e.g. РАНА /rana/ 'wound') or L2 words (e.g. PACK). Target words were read faster when they were preceded by phonologically related L1 primes but not by orthographically related L2 primes. ERPs showed orthographic priming in the 125-200 ms time window. Thus, both L1 and L2 phonologies are simultaneously activated during L1 reading. The results provide support for non-selective models of bilingual reading, which assume automatic activation of the non-target language phonology even when it is not required by the task.

E68

TRACKING LEXICALITY EFFECTS IN SECOND LANGUAGE VOCABULARY LEARNING

Yen Na Yum[1], Katherine J. Midgley[1], Jonathan Grainger[2], Phillip J. Holcomb[1]; [1]Tufts University, [2]CNRS and Aixs-Marseille University — Second language (L2) learning in adulthood often begins with acquiring new visual word forms and mapping meanings onto them. One measure of L2 word knowledge is sensitivity to lexicality, which is indexed by larger N400 amplitudes to L2 pseudowords (PWs) and non-words (NWs) than L2 words. Previous research has shown that learning-related changes in ERPs, including the emergence of lexicality effects, could occur rapidly following L2 word learning. While effects of visual familiarity and lexicality were demonstrated for learners whose L1 and L2 were both alphabetic, the emergence of these effects has not been shown for learners with visually distinct L1 and L2. To address this, we followed native English speakers during their first 5 weeks of Chinese word learning. In 3 ERP recording sessions, participants made lexicality judgments to learned Chinese words, Chinese PWs (unfamiliar words that obey Chinese orthographic structure), and Chinese NWs (unfamiliar words that violate orthographic structure). At the beginning of learning, N400 amplitudes to Chinese words, PWs and NWs were indistinguishable. Across the sessions, an increase in N400 amplitude was observed to Chinese PWs relative to Chinese words. In addition, a larger N400 was seen to Chinese NWs compared to Chinese PWs. Results suggested that beginning learners readily acquired both the orthographic structure and meaning of Chinese words. Although learning a visually distinct L2 could feel more challenging than learning a visually familiar L2, lexical knowledge could be acquired at a comparable rate.

E69

PRE-ATTENTIVE PITCH PROCESSING IS LEFT HEMISPHERE LATERALIZED IN CANTONESE SPEAKERS

Caicai Zhang[1,2], Feng Gu[3]; [1]Haskins Laboratories, Yale University, USA, [2]Language Engineering Laboratory, the Chinese University of Hong Kong, Hong Kong, [3]CAS Key Laboratory of Brain Function and Diseases, University of Science and Technology of China, China — There is a continuous debate between two views regarding the brain asymmetry for speech and music. Function-dependent lateralization suggests that left hemisphere (LH) lateralization for speech and right hemisphere (RH) lateralization for music is determined by the functional properties of speech and music. Acoustic-dependent lateralization suggests that the hemispheric asymmetry is determined by temporal and spectral cues of acoustic signals irrespective of speech and music. Tone languages in which spectral cues are lexically contrastive can provide insights into these two views. In this study we examine the hemispheric lateralization of lexical and acoustic pitch processing in Cantonese speakers. We found LH lateralization for mismatch negativity (MMN) response elicited by lexical pitch contrast in speech stimuli, supporting the function-dependent lateralization. Importantly, the MMN elicited by pitch contrast in nonspeech stimuli is also LH lateralized. The lateralization pattern in Cantonese is different from previous studies of non-tone languages which found a RH lateral-