replicate the finding that high-frequency words can elicit an N250 priming effect using this paradigm, and further show that the presence and size of this effect is dependent upon the order of stimulus presentation. Both high-frequency and low-frequency N250 priming effects were larger when the words were presented in the first block. High-frequency words only elicited a significant priming effect from 200-300ms when they preceded the low-frequency block. These findings suggest that the effects of word frequency on N250 masked priming effects are highly sensitive to experimental context. Both high- and low-frequency words are influenced by presentation order and N250 priming effects may be especially sensitive to presentation parameters when participants read extremely high-frequency words.

C68

HEMISPHERIC ASYMMETRY IN IMAGERY PROCESSING THAT LINKS TO LANGUAGE: AN EVENT-RELATED POTENTIAL STUDY

Li-Hsin Ning[1], Hsu-Wen Huang[2], Kara D. Federmeier[1]; [1]University of Illinois at Urbana-Champaign, [2]National Taiwan Normal University — This study used visual half-field (VF) presentation and event-related potential (ERP) measures to examine how the left (LH) and right (RH) hemispheres process concrete and abstract senses of polysemous nouns (e.g., "green book," referring to the concrete, physical object that is a book, versus "interesting book," referring to the abstract information that a book conveys) and, in particular, in their ability to switch between these senses. Participants read adjective-noun-adjective triplets, in which the first adjective and the noun were presented centrally and the second adjective was presented laterally, and were asked to judge which adjective was more appropriate as a description of the noun. Responses on the first adjective replicated standard ERP concreteness effects, with concrete adjectives eliciting a sustained frontal negativity (500–900 ms) that has been linked to imagery. With initial presentation to the LH, this concreteness effect was also seen on the second adjective, irrespective of the concreteness of the prior adjective. However, with presentation to the RH, sustained frontal negativity was seen only for concrete adjectives not preceded by a prior concrete adjective. That is, prior imagery eased additional imagery selectively for the RH. These results provide additional evidence for a critical role of the RH in creating, maintaining, and augmenting mental imagery during normal language comprehension.

C69

EARLY ELECTROPHYSIOLOGICAL COMPONENTS ARE ALTERED IN ADULTS WITH DEVELOPMENTAL DYSLEXIA DURING A LEXICAL DECISION TASK.

Darlene Oliveira[1], Patrícia Silva[1], Karen Ueki[1], Paulo Boggio[1], Elizeu Macedo[1]; [1]Social and Cognitive Neuroscience Laboratory - Mackenzie Presbyterian University — Developmental Dyslexia is a specific learning disorder characterized by difficulties in reading accuracy and fluency. Previous findings have been shown alterations on event related potential (ERP) latency and amplitude concerning different stages of word recognition on participants with dyslexia indicating core deficits and the use of compensatory mechanisms and/or inefficient reading. However, these are most described in children. Limited information is provided with respect to adults with this reading disability. c Therefore, we aimed to investigate the pattern of ERPs in adults with Dyslexia in a lexical decision task. 13 undergraduate dyslexics and 13 controls (mean age 23,5) matched by age, gender and educational level were enrolled in this experiment. The lexical decision task was composed by regular high frequency words (Brazilian Portuguese), quasi-words derived from real words and pseudowords not derived from real words. EEG were collected with the 128 electrodes Geodesic EEG System. Repeated measures ANOVAs were used to analyze behavioral and eletrophysiological data. Dyslexic subjects showed less accuracy and higher reaction times as compared to controls in all lexical categories. Occipital and occipito-temporal P1 and N1 amplitudes were lower in dyslexic group, reflecting an early-altered processing of the holistic characteristics of the stimuli. Moreover, parietal P600 amplitude was lower in dyslexics indicating deficits in reprocessing of linguistic items. Additionally, we find a significant effect of hemisphere for the control group that was not observed in the dyslexic group. Our data corroborate previous findings and introduce new data about the abnormal ERP pattern in dyslexic adults.

C70

DISTINCT PATTERNS OF BRAIN ACTIVITY CHARACTERIZE LEXICAL ACTIVATION AND COMPETITION IN SPEECH PRODUCTION

Vitoria Piai[1,2], Ardi Roelofs[1], Ole Jensen[1], Jan-Mathijs Schoffelen[1,3], Mathilde Bonnefond[1]; [1]Radboud University Nijmegen, Donders Institute for Brain, Cognition and Behaviour, [2]International Max Planck Research School for Language Sciences, Nijmegen, The Netherlands, [3]Max Planck Institute for Psycholinguistics, Nijmegen, The Netherlands — A fundamental ability of speakers is to quickly retrieve words from long-term memory. According to a prominent theory, concepts activate multiple associated words, which enter into competition for selection. Previous electrophysiological studies have provided evidence for the activation of multiple alternative words, but did not identify brain responses reflecting competition. We report a magnetoencephalography study examining the timing and neural substrates of lexical activation and competition. The degree of activation of competing words was manipulated by presenting pictures (e.g., dog) simultaneously with distractor words. The distractors were semantically related to the picture name (cat), unrelated (pin), or identical (dog). Semantic distractors are stronger competitors to the picture name, because they receive additional activation from the picture, whereas unrelated distractors do not. Picture naming times were longer with semantic than with unrelated and identical distractors. The patterns of phase-locked and non-phase-locked activity were distinct but temporally overlapping. Phase-locked activity in left middle temporal gyrus, peaking at 400 ms, was larger on unrelated than semantic and identical trials, suggesting differential effort in processing the alternative words activated by the picture-word stimuli. Non-phase-locked activity in the 4-10 Hz range between 400-650 ms in left superior frontal gyrus was larger on semantic than unrelated and identical trials, suggesting different degrees of effort in resolving the competition among the alternatives words, as reflected in the naming times. These findings characterize distinct patterns of brain activity associated with lexical activation and competition respectively, and their temporal relation, supporting the theory that words are selected by competition.

C71

THE NEUROANATOMY OF SENSORY-MOTOR INTEGRATION: A LESION STUDY

Tasha Poppa[1], Corianne Rogalsky[1], Kristin Raphel[2], Steve Anderson[3], Hanna Damasio[2], Tracy Love[4], Gregory Hickok[1]; [1]University of California, Irvine, [2]University of Southern California, [3]University of Iowa, [4]San Diego State University & University of California, San Diego — Numerous studies have demonstrated a tight link between sensory and motor speech processes. While many recent imaging and transcranial stimulation studies have focused on sensorimotor functions of frontal regions during speech perception, research on speech production has identified a region in the let temporal-parietal junction (area Spt) that serves as a sensorimotor interface for vocal tract effectors. The present lesion study investigates the neuroanatomy of sensorimotor integration by measuring speech repetition and perception abilities in 55 patients with left-hemisphere lesions. Subjects completed a psycholinguistic battery to assess their phonological, lexical, and sentence-level speech comprehension and production abilities. This battery included word and non-word repetition tasks. The non-word repetition task should particularly tax sensorimotor integration processes because these novel speech stimuli do not have lexical-semantic representations to assist in their production. Voxel-based lesion-symptom mapping identified a large voxel cluster spanning gray and white matter in the left temporal-parietal junction, including area Spt, where damage was significantly related to poor non-word repetition. The real-word repetition task analysis identified a very similar dorsal network including area Spt, as well as a small adjacent middle temporal gyrus region. Removing variance associated with speech perception abilities (as measured by d-prime scores on a syllable discrimination task) did not alter the overall lesion pattern for either task. These preliminary results suggest that area Spt is critically involved in both word and non-word repetition, and that its contribution is not driven by perceptual processes alone. Supported by NIH-DC03681.