

the other a parafoveal one. Tests performed monocularly. All subjects gave their informed consent. Comparison of fading latencies between targets presented at the edge of the scotomas (scar or blind spot) and far away from them shows no significant difference ( $p > 0.01$ ). This was verified with both peripheral and parafoveal lesions. We conclude that: (i) Perceptual completion at the edge of chronic lesions is not different from healthy areas; (ii) different eccentricities present the same relative response.

#### CLARIFYING THE NEUROCOGNITIVE SUBSTRATES OF THE BEHAVIORAL INHIBITION SYSTEM: BIS AND THE NO-GO N2

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Descriptors: behavioral inhibition, no-go N2, EEG asymmetry

The behavioral inhibition and activation systems (BIS/BAS) are thought to comprise a fundamental organization of personality (e.g., Gray, 1982). BIS is sensitive to punishment and novelty, and functions to halt ongoing behavior, whereas BAS is sensitive to appetitive cues, and functions to engage behavior. Research on neural correlates of BIS and BAS suggest a link between BAS sensitivity and frontal EEG alpha asymmetry, supporting the theoretical association of BAS with approach motivation. Findings for BIS are less clear; some work suggests that BIS predicts right frontal cortical activity, thus reflecting avoidance motivation rather than inhibitory processes. To test the hypothesis that BIS reflects sensitivity of response inhibition rather than avoidance motivation systems, we examined the relation between BIS and the N2 component of the event-related potential obtained from no-go trials in a standard go/no-go task. The no-go N2 provides an index of response inhibition processes, and has been associated with anterior cingulate cortex activity. We predicted that BIS would relate to no-go N2 amplitudes, beyond any relationship with frontal cortical asymmetry. Subjects' EEG was collected during a baseline resting period and while they completed the go/no-go task. Self-reported BIS/BAS scores (Carver & White, 1994) were collected in a separate session. As hypothesized, larger N2 amplitudes predicted higher BIS, whereas greater left frontal EEG predicted higher BAS. Results link BIS with neurocognitive mechanisms of response inhibition rather than avoidance motivation.

#### AN ELECTROPHYSIOLOGICAL STUDY OF COGNITIVE FUNCTION IN BENIGN MS – PRELIMINARY RESULTS

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Descriptors: Cognitive Function, Multiple Sclerosis, Controls

Impairment of cognitive skills, mainly affecting memory and attention, has been reported in more than 60% of multiple sclerosis (MS) patients. Nevertheless little information is available on cognitive impairment in subgroups of MS. Objective: To study cognitive (dys)function by long latency event-related potentials (ERPs) in a group of Benign Course MS (BCMS). Sixteen patients (Kurtzke EDSS of d3 at least 10 years from onset) and eighteen healthy subjects were studied. ERPs were measured by a visual and auditory oddball paradigm. Latencies of ERP were related with demographic and clinical data. Spearman, Mann-Whitney tests and chi-square tests were applied. Ten patients were female, the mean Mini-Mental State Examination score of patients was 29.5 and 60% were professionally active. No statistically significant differences were found in N1, P2 and P3 auditory or visual latencies between patients and controls. In 5 out of 16 patients (31.3%), visual P3 (vP3) was absent, and in controls no vP3 absence was found ( $p = 0.04$ ). Significant correlations were found between auditory P3 latencies (aP3) and index progression ( $r = 0.58$ ,  $p = 0.018$ ) and between aP3 and EDSS

( $r = 0.58$ ,  $p = 0.018$ ), but not with age and disease duration. The normality of aP3 in our BCMS patients suggests that cognitive function is relatively preserved in this subtype of MS. However, absence of vP3 in some patients and the correlation between aP3 and disease severity (measured by EDSS score and progression index) can reveal subtle cognitive dysfunction. To confirm these results a larger sample should be studied.

#### EMOTIONAL FACIAL COMMUNICATION SYNCHRONIZES LOCAL BRAIN ACTIVITY: A SEMI-INTERACTIVE FMRI STUDY

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Descriptors: emotional communication, neuroimaging, correlation analysis

Neuroimaging studies on emotional facial communication typically involve subjects watching faces they have no relation to, and analysis is based on models using the time course of the stimulus presentation as predictor, thereby neglecting dynamic interactions between the sender and the interpreter. We present a novel approach allowing facial interaction between subjects and thus enabling a direct comparison of the BOLD signal time course of the sender and the interpreter. Subjects were told that they would be scanned simultaneously. The first subject (the sender) was asked to imagine and put herself into a specific emotional situation (fear, sadness, disgust, anger, or joy) and to communicate her emotional feelings to her partner. The second subject (the interpreter) was not informed about the sender's task and was asked to watch (via a video camera) and empathise with his partner. After removal of linear trends, the time course of each voxel of one subject was correlated with the time course of the corresponding voxel of the second subject. Correlation analysis revealed peak correlation in bilateral occipitotemporal areas, in the right somatosensory-related cortex, and in the right premotor face area across all emotions. Local emotion-specific correlations were found in emotion-specific regions as the amygdala (fear), putamen/insula (disgust), and nucleus accumbens (joy). Future applications of this novel paradigm include identification of networks underlying different modes (implicit and explicit) and modalities (gesture, prosody, verbal) of emotional communication.

#### ADULTS AND CHILDREN WITH ATTENTION-DEFICIT HYPERACTIVITY DISORDER PRESENT ATYPICAL CONTINGENT NEGATIVE VARIATIONS DURING AN EXECUTIVE FUNCTION/PLANNING TASK

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Descriptors: Attention-Deficit Hyperactivity Disorder, Contingent Negative Variation, Executive Functioning

Thirty-four children (ages 8–13) and 36 adults (ages 18–21), half with ADHD, attempted 96 Tower of London (TOL) problems while EEG was recorded. Problems of varying difficulty level were presented in an S1/S2 paradigm with S1 being the TOL presented for 6 s, while planning occurred, and S2 an instruction to respond. For the adults groups, a typical CNV was found which included a frontally-driven late wave which increased in negativity as difficulty increased. The child groups showed a similar, but more diffuse late wave activity in the frontal and parietal regions. Earlier in the planning interval, children showed a large, parietally-focused positive component which was not found in the adult groups. ADHD-diagnosed adults displayed a late-wave component of decreased amplitude in the frontal regions and more diffuse negative amplitudes during the most difficult problems. ADHD-diagnosed children had increased amplitudes in the early positive component for the easiest move problems and decreased amplitude late-waves in the frontal and parietal regions for the more difficult prob-