task was manipulated by correct and bogus feedbacks about performance of the task. Significant activation in the medial orbitofrontal cortex (OFC) and dorsolateral prefrontal cortex was observed bilaterally in contrast of the uncontrollable minus the controllable conditions. Most importantly, significant positive correlations between cerebral activity and the changes of HR, SCR, and NK cell were found commonly in the medial OFC in the uncontrollable condition. These results are consistent with previous findings that the OFC evaluates contingency of stimulus and behavior and that this area can modulate peripheral physiological responses. The OFC should be a pivotal area for effects of controllability on autonomic and immune stress reactivity.

Poster Number: 065

KERNEL PLS ESTIMATION OF SINGLE-TRIAL EVENT-RELATED POTENTIALS

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Descriptors: nonparametric smoothing, single-trial ERPs, cognitive fatigue

Nonlinear kernel partial least squares (KPLS) regression is a novel smoothing approach to nonparametric regression curve fitting. We have developed a KPLS approach to the estimation of single-trial event related potentials (ERPs). For improved accuracy of estimation, we also developed a local KPLS method for situations in which there exists prior knowledge about the approximate latency of individual ERP components. To assess the utility of the KPLS approach, we compared non-local KPLS and local KPLS smoothing with other nonparametric signal processing and smoothing methods. In particular, we examined wavelet denoising, smoothing splines, and localized smoothing splines. We applied these methods to the estimation of simulated mixtures of human ERPs and ongoing electroencephalogram (EEG) activity using a dipole simulator (BESA). In this scenario we considered ongoing EEG to represent spatially and temporally correlated noise added to the ERPs. This simulation provided a reasonable but simplified model of real-world ERP measurements. For estimation of the simulated single-trial ERPs, local KPLS provided a level of accuracy that was comparable with or better than the other methods. We also applied the local KPLS method to the estimation of human ERPs recorded in an experiment on cognitive fatigue. For these data, the local KPLS method provided a clear improvement in the visual definition of single-trial ERPs as well as their averages. The local KPLS method may serve as a new alternative to the estimation of single-trial ERPs and improvement of ERP averages.

Poster Number: 066

ENDOTHELIAL NITRIC OXIDE SYNTHASE GENOTYPES AND TOTAL PERIPHERAL RESISTANCE AT RECOVERY FROM PERCEPTION OF AFFECT AMONG AFRICAN AMERICANS: GENDER DIFFERENCES

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Descriptors: eNOS, Cardiovascular reactivity, African-Americans

Endothelial Nitric Oxide Synthase (eNOS) has been shown to be important in regulation of vascular tone and blood pressure regulation. Impaired eNOS functioning has been associated with various risk factors (e.g., atherosclerosis, aging, myocardial infarction etc.) that are linked with increased incidence of cardiovascular disease. Although mixed, previous studies suggest that the GT (compared to GG) allele of the eNOS genotype is related to reduced nitric oxide mediated vasodilation. As part of a larger study examining emotional processing in older African-Americans, we examined the role of eNOS and gender on cardiovascular responses. Participants evaluated emotional expressions in faces and sentences (PAT). The PAT tasks were preceded by a five-minute baseline and followed by a five-minute recovery period. Diastolic blood pressure (DBP) and total peripheral resistance (TPR) were obtained continuously using a Portapres beat-to-beat BP monitor. Participants were 106 African-Americans (51 males, 55 females; aged 21 – 92) who are part of the Healthy Aging In Nationally Diverse Longitudinal Samples Study (HANDLS). We ran hierarchical regression models with the following steps: 1) gender, educational attainment (in years), age, and body mass index, 2) diagnosis of hypertension, 3) eNOS, and 4) interaction of eNOS and gender with DBP and TPR scores as dependent measures. The interaction of eNOS and sex was significant for DBP ($p < .06$) and TPR ($p < .01$). For men, the GT genotype was associated with higher DBP and TPR at recovery than the GG genotype. Interestingly, for the women, the GG genotype was associated with higher DBP and TPR at recovery than the GT genotype. These findings suggest that gender is an important variable for study when examining vascular regulation and its genetic underpinnings.

Poster Number: 067

EFFECTS OF SMOKING/NICOTINE ON ERP AND AUTONOMIC MEASURES DURING PERFORMANCE OF COGNITIVE TASK IN ABSTAINED SMOKERS

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Descriptors: ERP, ANS, smoking/nicotine

In previous studies, we found that smoking/nicotine following overnight abstention affected physiological activity and mental performance in habitual smokers. In the current study, we used a visual target detection (VTD) task to test 19 smokers following both overnight and one-hour abstention to clarify differential effects of long versus short periods of abstinence. Event-Related potentials (ERPs) were recorded using 128 channel EEG system. Heart rate (HR), HR variability, skin conductance level (SCL), and skin temperature (ST) were measured as indices of autonomic activity during task performance. Reaction time in VTD task was shorter following smoking nicotine-yielding cigarette both in ''1-hour'' and ''overnight'' abstention conditions. Smoking/nicotine resulted in an accelerated HR accompanied by increased low frequency component of HR variability in ''overnight'' abstention condition only. Nicotine elevated SCL and decreased ST in both ''1-hour'' and ''overnight'' abstention conditions. ERP effects of nicotine in ''overnight'' abstained smokers were exhibited in a shorter latency of P300 component at posterior (parietal, parieto-occipital and occipital) areas and an increased amplitude of P300 at anterior fronto-temporal (anterior-frontal and fronto-temporal) areas. In ''1-hour'' abstained smokers P300 amplitude increased following smoking/nicotine only at fronto-central area. Our results show that smoking/nicotine affects behavioral, peripheral and cortical measures during cognitive task in abstained smokers, and some of these effects are manifested not only in overnight, but also in minimally abstained smokers.

Poster Number: 068

KETAMINE-MODERATED SUBJECTIVE AND CARDIOVASCULAR EFFECTS OF NICOTINE IN SMOKERS AND NON-SMOKERS

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Descriptors: Nicotine, Glutamate, Mood

Although subjective experiences are recognized as determinants or correlates of physiological responses, subjective responses to nicotine, which are usually positive in smokers and negative in non-smokers, tend not to be influenced by nicotine-induced increments in cardiovascular responses. As a number of mood-