

Poster 2-091**TWO-VALUE, MODIFIED MONETARY INCENTIVE DELAY (MID) TASK**Maximino Salazar¹, Keisha Novak², Colin Sauder¹ & Daniel Foti²
¹University of Texas Health at San Antonio, ²Purdue University*Descriptors: ERPs, reward processing, monetary reward*

The monetary incentive delay (MID) task has been used to investigate the dynamics of reward processing, and can be utilized to assess multiple anticipatory (cue-P3, CNV) and consummatory (RewP, fb-P3) ERPs. Previous studies have shown that valence (gain vs. loss) can modulate consummatory ERPs, with larger amplitudes for rewards relative to losses. In anticipatory ERPs, incentive cues (possibility of gain/loss) elicit larger amplitudes relative to non-incentive cues. However, previous versions of the MID task do not consider potential feedback magnitude effects, independent and in interaction with reported valence effects. In the current study, we modified the MID task to include two degrees of incentive trials (big win/loss vs. small win/loss) where participants could potentially win \$1 or lose 50¢, and win 20¢ or lose 10¢. EEG was collected from undergraduate students at Purdue University (N = 28). There was a significant main effect of feedback magnitude ($p < .05$) on consummatory ERPs (RewP and fb-P3) where big trials elicited larger amplitudes than small trials. In anticipatory ERPs, we found that big trials elicited a larger but non-significant amplitude in the cue-P3 when compared to small trials, and no differences between incentive trials were found for the CNV. Initial analyses showed no significant effects of valence on either anticipatory or consummatory ERPs and no significant magnitude x valence interactions. These preliminary analyses suggest that the magnitude of incentive may further modulate consummatory ERPs, and should be considered in future studies.

Poster 2-092**SUCCESS, ONE STEP AT A TIME: APPROACH-MOTIVATED STATES ENHANCE THE REWARD POSITIVITY DURING PROGRESSIVE GOAL PURSUIT**Hunter Threadgill & Philip Gable
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Past research has demonstrated that the reward positivity (RewP) indexes a performance monitoring system sensitive to positive outcomes in approach-motivated states. Presumably, this performance monitoring system signals the evaluation of whether goal pursuit was successful or not, in order to determine if one needs to modify future goal-directed behaviors. However, recent advances in theoretical models of reinforcement learning have suggested that behaviors are not isolated events, but are comprised of action sequences in the pursuit of some goal. The present study sought to go beyond simple stimulus-response paradigms to examine how approach-motivated states occurring in sequential goal pursuit influence neural correlates of performance monitoring. Using a modified monetary incentive delay paradigm, participants played a reaction time game where multiple goal pursuit trials were required to attain a reward. Results revealed that the RewP was larger to positive feedback leading to goal completion and on win feedback as compared to no-win feedback for trials leading to a reward. This difference was not observed on trials where a reward was not possible. Approach-motivated pregoal states appear to enhance performance monitoring for successful goal pursuit throughout the stages leading to a goal.

Poster 2-093**EFFECTS OF STIMULUS REPETITION ON EARLY AND LATE BRAIN RESPONSES TO CIGARETTE CUES IN SMOKERS AND NEVER-SMOKERS**Menton Deweese¹, Hannah Stewart¹, Kimberly Claiborne², Jason Robinson¹, Paul Cinciripini¹, Maurizio Codispoti³ & Francesco Versace⁴¹The University of Texas MD Anderson Cancer Center, ²Methodist Hospital Research Institute, ³University of Bologna, ⁴The University of Oklahoma Health Sciences Center*Descriptors: event-related potentials, nicotine dependence, emotion*

While findings that smokers reliably show higher reactivity to cigarette versus neutral cues are theoretically supported, it is unclear why never-smokers also show enhanced brain responses to these cues. Using a repetitive picture viewing paradigm, in which responses evoked by affective cues are more resistant to habituation, we assessed the effects of stimulus repetition on event-related potentials (ERP) evoked by pleasant, unpleasant, cigarette and neutral images in 34 smokers (SMO) and 34 never-smokers (NEV). We examined the late positive potential (LPP) and early posterior negativity (EPN) components, which are sensitive to a picture's motivational qualities. During initial picture viewing, emotional cues produced greater LPP amplitude than neutral cues in all subjects. Following repetition, cigarette cues evoked greater LPPs than neutral cues among SMO in the first two repetition blocks. For NEV, cigarette cues evoked greater LPPs than neutral only in the second repetition block. The EPN was modulated by all emotional stimuli, but not by smoking status. While there were no group differences in stimulus ratings of pleasure and arousal, NEV rated smoking cues as unpleasant. Together, these data suggest that cigarette cues are motivationally relevant to both SMO and NEV, but for different reasons.

Poster 2-094**GUIDED SOURCE SEPARATION FOR PHASE-AMPLITUDE COUPLING USING GENERALIZED EIGENDECOMPOSITION IN A SAMPLE OF CONTACT COLLISION ATHLETES**Ezra Smith¹, Michael X. Cohen² & John Allen¹¹University of Arizona, ²Donders Center for Neuroscience, Radboud University Nijmegen Medical Centre*Descriptors: concussion, cross-frequency coupling, EEG source*

Coordination between brain regions is crucial for healthy cognition, and may be impaired following closed-head injuries that athletes experience during contact sports. One manifestation of inter-regional coordination is phase-amplitude coupling (PAC), which refers to interactions between slower and faster brain rhythms. Based on this idea, and on previous studies linking theta-gamma PAC to performance in response-conflict and other cognitive tasks, we predicted weaker PAC in athletes who have experienced head injury. We recorded EEG during a flankers task in 23 athletes with a history of concussion, and in 16 concussion-free athletes. PAC was identified using a recently introduced source-separation method termed generalized eigendecomposition-based cross-frequency coupling (GEDCFC). This method has several advantages over other techniques including improved signal-to-noise ratio, which is important for our dataset (relatively small trial counts and potentially small effect sizes). We first created a spatial filter that optimized theta-band activity, and then created a second spatial filter that identified networks more active during theta-band troughs (1/4-cycle window surrounding each local minima) relative to other theta phase regions. GEDCFC successfully extracted theta-gamma PAC, and component maps were suggestive of a distributed theta-gamma PAC network. Consistent with our hypothesis, individuals with concussion history had significantly weaker PAC. Results suggest that PAC may be a sensitive measure of brain health, and that PAC-mediate inter-regional coordination.