Alcohol Imagery Boosts Reward Positivity in Individuals with Alcohol Use Disorder

Garima Singh[1], Ethan Campbell[1], Jeremy Hogeveen[1], Eric Claus[2], Katie Witkiewitz[1], James F. Cavanagh[1]
[1]University of New Mexico
[2]PennState College of Health & Human Development

THE UNIVERSITY OF NEW MEXICO

COGNITIVE RHYTHMS AND COMPUTATION LAB

Background

- The Reward Positivity (RewP) is a component of the event related brain potential (ERP) that is sensitive to reward receipt.
- The RewP can be augmented with affective imagery manipulations, suggesting an additional sensitivity to affective valuation ("liking").
- This study examines Reward Positivity into alcohol cue-modulated rewards individuals with alcohol use disorder (AUD).

Methods & Materials

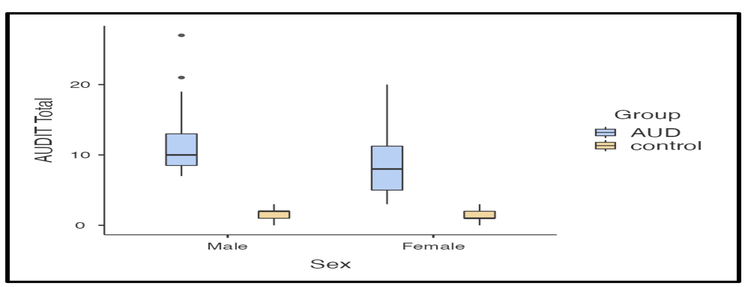
Participants

- Community Participants, 18-55 years old
- N=54; In this analysis,
- N_{AUD}=28 (Female= 16, Mean age= 38.6)
- N_{CTL}= 26 (Female= 16, Mean age= 37.7)

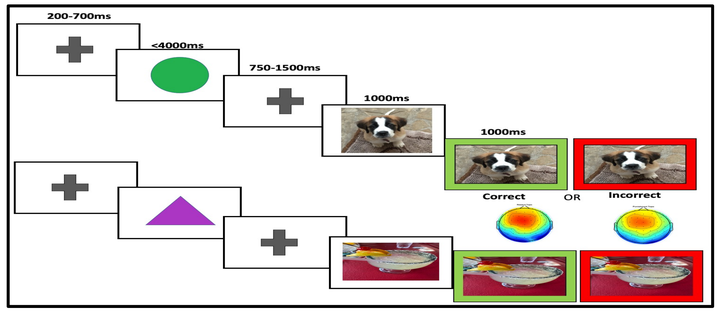
Materials & Procedures

- Phase I: Clinical SCID and AUDIT assessments for AUD group
- Phase II: In-lab pen and paper administration of self-report questionnaires of demographics, AUDIT
  - EEG assessment during the Ratings Task and the Reinforcement Learning Affective State Task. Probabilities of reward were orthogonal to the affective cue type.

AUDIT Range

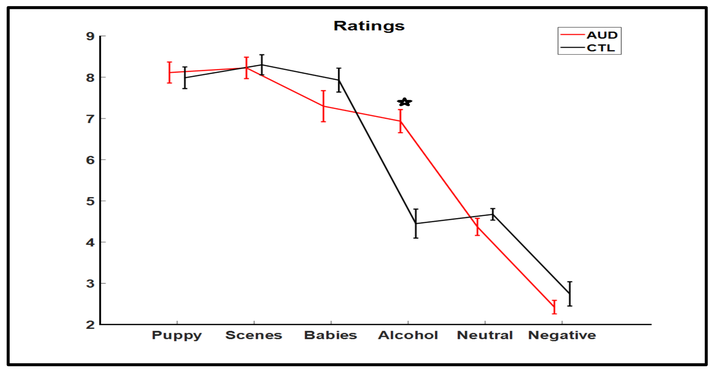


Affective State Task

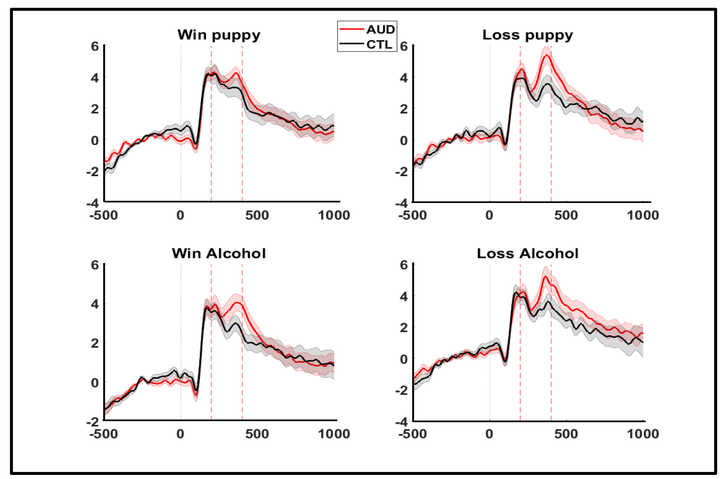


Behavioral Data

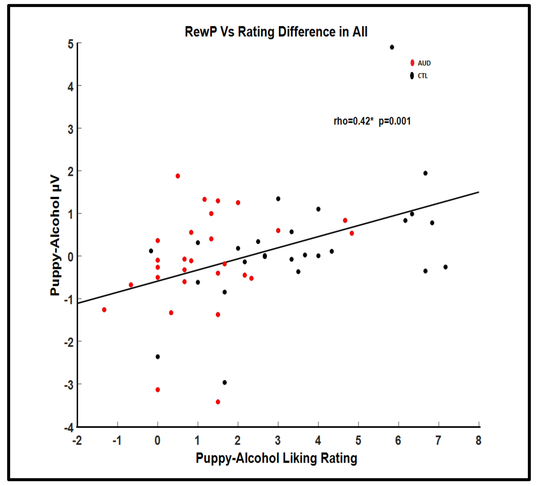
- The rating score showed that affective images of alcohol was rated more pleasant by the AUD group and both the groups learned the task similarly



ERP Results

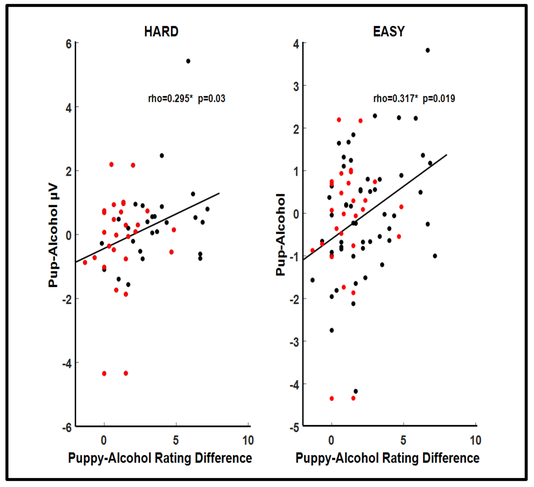


RewP Vs Liking Difference in All



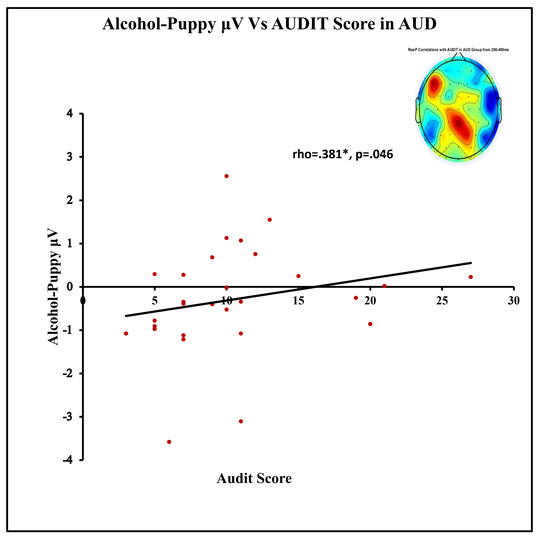
- The correlation between difference in ratings vs difference in RewP amplitudes for puppy and alcohol cues was significant

RewP Vs Liking Difference across Conditions



- The correlation between difference in ratings vs difference in RewP amplitudes for puppy and alcohol cues across easy and hard conditions was significant

RewP Vs Audit In AUD Group



- This is a novel study because aberrant salience to alcohol imagery has never been used to boost this intrinsic reward signal in AUD population.
- Our findings suggest that alcohol imagery boosts the reward positivity in individuals with AUD, thus demonstrating a mechanism for linking biased attention with reward integration for addiction-specific stimuli.

Contact: garimasingh@unm.edu

*This Research has been funded by Grand Challenge Award to Dr. James F. Cavanagh