



Link between Threat Sensitivity and Reward Activation: Relations with Alcohol Sensitivity



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Introduction

- Individuals with low sensitivity (low AS) to alcohol's effects have greater risk for harmful alcohol use¹
- Low AS (vs. high sensitivity [high AS]) drinkers have enhanced brain responses to alcohol cues, suggesting greater motivational value²
- The reward positivity (RewP) brain response—which indexes hedonic “liking”—has inconsistent associations with drinking severity; alcohol sensitivity may clarify mixed findings^{3,4}
- Increased threat sensitivity/fearfulness relates to larger RewP and alcohol use levels⁵

The Current Study

- Clarify connections between self-reported threat sensitivity and RewP from choice-based gain/loss task, among college students with low AS and high AS

Hypotheses

- Low AS drinkers will have a smaller RewP, compared to high AS peers
- Group differences in RewP will vary depending on one's threat sensitivity level

Method

- 56 FSU students (36 female) aged 18 – 28
 - Low AS ($N = 26$; 15 female), High AS ($N = 30$; 21 female)
 - Alcohol Sensitivity Questionnaire⁶
 - “Do you ever feel that your driving would be affected after drinking alcohol?”
 - Self-report measures during EEG setup, before tasks - Reversed boldness⁷ (i.e., threat sensitivity) scale from Triarchic Psychopathy Measure⁸
 - “I get scared easily”
- The ‘Doors task’ to elicit RewP
 - Choice-based monetary gain/loss task; participants guess which door has money behind it, feedback after each trial
 - RewP scored as mean amplitude difference between average gain and loss response, 250-to-350 ms post-feedback, at Cz

Results

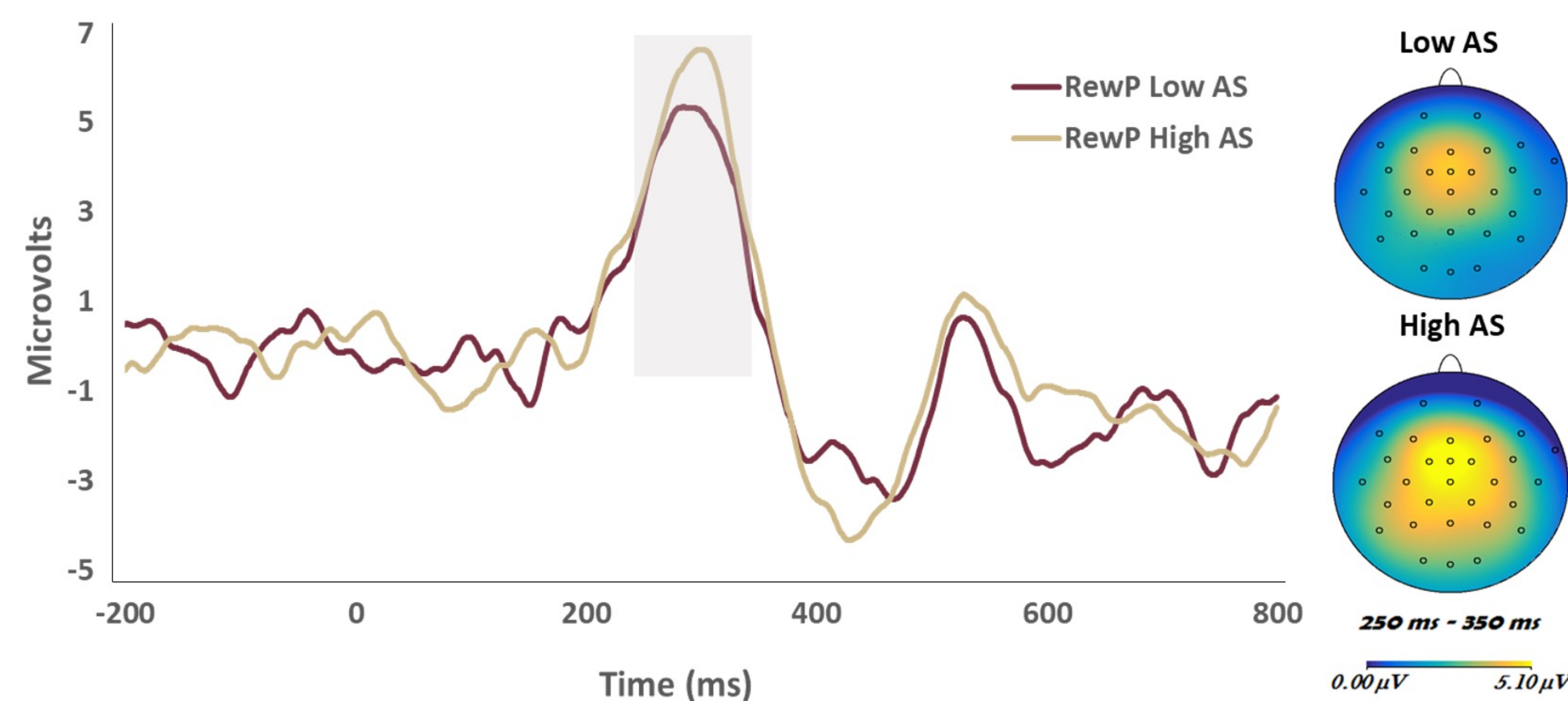
Descriptive Statistics for Study Variables Between High and Low AS Groups

	M		SD		Min		Max	
	Low	High	Low	High	Low	High	Low	High
Age	19.31	19.10	2.13	1.19	18.00	18.00	28.00	22.00
Threat Sensitivity	15.31	17.67	7.49	8.95	3.00	1.00	31.00	36.00
RewP	4.20	5.03	4.72	4.98	-4.66	-7.29	14.44	15.42

RewP Amplitude Predicted by Threat Sensitivity, AS Group, and Their Interaction

				R^2	F	p
Overall Model				.02	.27	.85
Predictor	b	SE	Lower	Upper	t	p
Intercept	4.59	.67	3.25	5.93	6.86	< .001
Group (High AS – Low AS)	.96	1.34	-1.73	3.64	.71	.478
Threat Sensitivity	-.45	.69	-1.84	.95	-.64	.523
Group X Threat Sensitivity	.25	1.39	-2.54	3.03	.18	.860

Win and Loss Feedback ERP at Site Cz



Discussion

- RewP differences were not observed between those with low and high AS
- Threat sensitivity did not predict RewP amplitude
- AS group differences in RewP were not dependent on one's threat sensitivity
- Null findings may be due to:
 - Smaller number of participants
 - Low proportion of males
 - Lack of statistical relationship

Future directions

- Continue recruiting to increase current sample size and statistical power
- Examine behavioral indices of reward responsiveness
- Incorporate other measures of threat sensitivity, such as startle response to unexpected noises
- Include level of drinking severity as another predictor variable

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