

Cue-Elicited Heart Rate Variability and Attentional Bias Predict Alcohol Relapse Following Treatment*

SIGNIFICANCE

As addiction science advances, more progress is made towards identifying malleable predictors of relapse among alcohol dependent individuals. Recent multi-systems conceptualizations have mapped interrelated neurocognitive functions underlying the acquisition, maintenance, and reinstatement of addictive behaviors. Two important candidate variables are alcohol cue-reactivity and alcohol attentional bias.

Reactivity to alcohol cues may be indexed by cue-elicited high-frequency heart rate variability (HFHRV), the beat-to-beat modulation of heart rate by the central autonomic network. Through the parasympathetic nervous system activation, the prefrontal cortex regulates perturbations to visceral homeostasis, such as those evoked in abstinent alcohol dependent individuals exposed to stress and alcohol cues. Homeostatic regulation of such perturbations may be reflected in HFHRV.

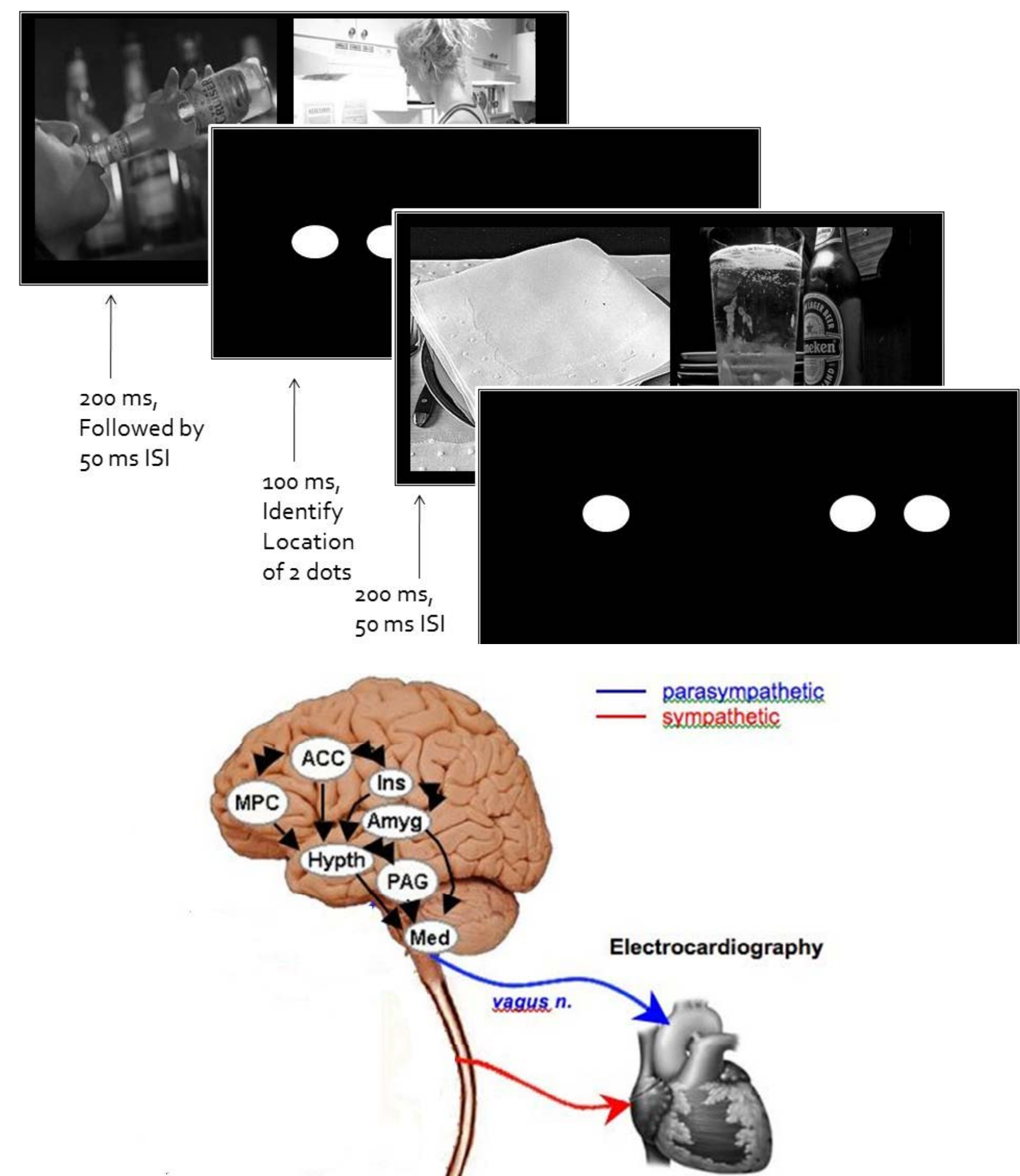
Furthermore, alcohol dependent individuals automatically orient their attention to alcohol cues (e.g., a beer bottle) and have difficulty disengaging attention from such cues. This phenomenon, known as the alcohol attentional bias (AB), may indicate appetitive responding and signal future relapse risk. Prior observational and experimental studies indicate that alcohol AB may be amplified by stress, induce craving, and increase alcohol consumption.

METHODS

53 alcohol dependent patients in long-term residential treatment who had participated in Mindfulness-Oriented Recovery Enhancement or an addiction support group completed a spatial cueing task as a measure of alcohol AB and an stress-primed alcohol cue-reactivity protocol while HFHRV was assessed.

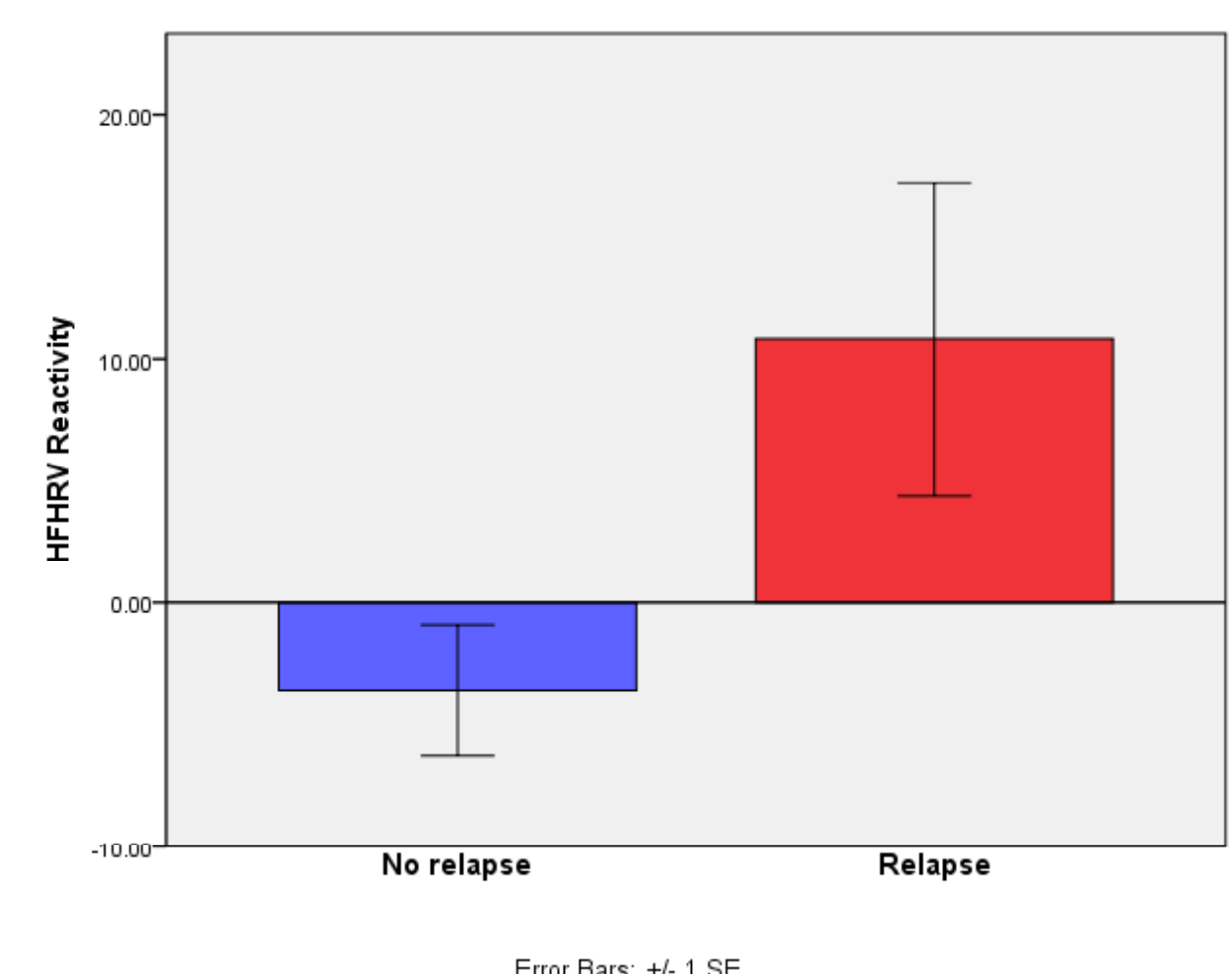
AIM

In light of evidence suggesting that greater addiction AB and psychophysiological cue-reactivity foreshadow a return to substance use among abstinent patients, the primary aim of the present study was to examine whether post-treatment HFHRV cue-reactivity and/or alcohol AB predict the occurrence and timing of relapse in detoxified, alcohol-dependent individuals.



RESULTS

Post-treatment **HFHRV cue-reactivity and alcohol AB significantly predicted the occurrence and timing of relapse by 6-month follow-up**, independent of treatment condition and after controlling for alcohol dependence severity. Alcohol dependent patients who relapsed exhibited a significantly greater HFHRV reactivity to stress-primed alcohol cues than patients who did not relapse.



Logistic regression analysis examining predictors of relapse up to 6-months post-treatment among a sample of treated alcohol dependent adults

Variable	B	SE	OR (95% CI)
Step 1			
Alcohol Use Disorder Severity	.07	.08	1.07 (.92, 1.25)
Treatment Group	-.12	.81	.89 (.18, 4.33)
Step 2			
Alcohol use Disorder Severity	.05	.10	1.05 (.87, 1.26)
Treatment Group	-1.11	1.20	.33 (.03, 3.45)
Post-treatment Alcohol Attentional Bias	*.05	.03	1.05 (1.00, 1.11)
Post-treatment HFHRV Reactivity to Alcohol Cues	*.10	.05	1.10 (1.01, 1.20)

* $p < .05$

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* Published in *Psychopharmacology* (2012)