ALCOHOL DAMPENS STRESS REACTIVITY BUT NOT PERCEPTION TO VISUALLY UNCERTAIN STRESSORS IN A STIMULUS GENERALIZATION PARADIGM

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Background and Significance

Stress reactivity is an important marker for both recreational and problematic alcohol use. Over three decades of research have tested the preclinical mechanisms and boundary conditions for alcohol stress response dampening (SRD). Our laboratory has programmatically demonstrated greater alcohol SRD during uncertain relative to certain stressors across multiple dimensions of unpreparedness and measures of distress1. The mechanisms for greater alcohol SRD during uncertain stressors are largely unknown and may partly result from the alcohol induced cognitive deterioration and perceptual changes.

We explored these mechanisms by testing alcohol SRD during stressors which were uncertain in the visual domain using a stimulus generalization procedure which included rings of various sizes serving as a CS+, CS-, and Generalization Stimulus.

General Procedures

This included a final sample of 68 participants (M age = 21.56, SD = 1.58) from the university community.

We randomly assigned participants to No-alcohol (N = 22), Placebo (N = 16), and Alcohol (N = 22) groups. Placebo and No-alcohol groups were combined for the current analysis.

Participants in the Alcohol condition drank beverages consisting of alcohol and juice in a 3:1 ratio mixture. Placebo and No-Alcohol groups were combined for the current analysis.

General Procedures

The current paradigm was adapted from paradigms recently used to show increased stimulus generalization among individuals suffering from some anxiety disorders11. In recognition of the high co-morbidity between PTSD and alcohol dependence, the current results may have interesting implications for the "self medication" theories of alcohol use in anxiety disorders.

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Acquisition

We observed significant effects for Beverage Group, Ring Type, or their interaction during the Same/Different Assessment, suggesting that alcohol did not affect participants’ ability to visually discriminate between the various ring types.

Reference and Support


References and Support


Discussion

Alcohol did not affect stress responding during the acquisition phase when the stressor (CS+) was relatively certain. However, alcohol had impact effects during the stimulus generalization phase when increased visual uncertainty about the stressors existed.

These results are consistent with a growing body of evidence from our laboratory and others demonstrating greater SRD when stressors are uncertain in various ways10. Previous research in this area has used instructed threat paradigms to establish stressors. This study is the first to extend these findings to a true conditioning paradigm.

A moderate dose of alcohol dampened stress reactivity across uncertain stressors in the current study while strengthening participants’ perception of risk only during Stimulus Generalization. However, alcohol appeared to have no effect on participants’ ability to visually discriminate potential stressors from another in the Same/Different assessment.

This suggests that alcohol’s SRD effects may be partially dependent on alcohol affecting participants’ cognitive ability to recognize risk as visual stimuli become less certain. However, this effect was not visually documented from stimulus to another while intoxicated.

The current paradigm was adapted from paradigms recently used to show increased stimulus generalization among individuals suffering from some anxiety disorders. By recognizing the high co-morbidity between PTSD and alcohol dependence, the current results may have interesting implications for the “self medication” theories of alcohol use in anxiety disorders.

Better understanding of the mechanisms and boundary conditions of alcohol stress response dampening generated from studies such as the present one may help to support healthy, adaptive use and lead to better informed alcohol policies for many decades to come.