

Functional inactivation of accumbens disrupts context-induced reinstatement of alcohol seeking in rats

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Background

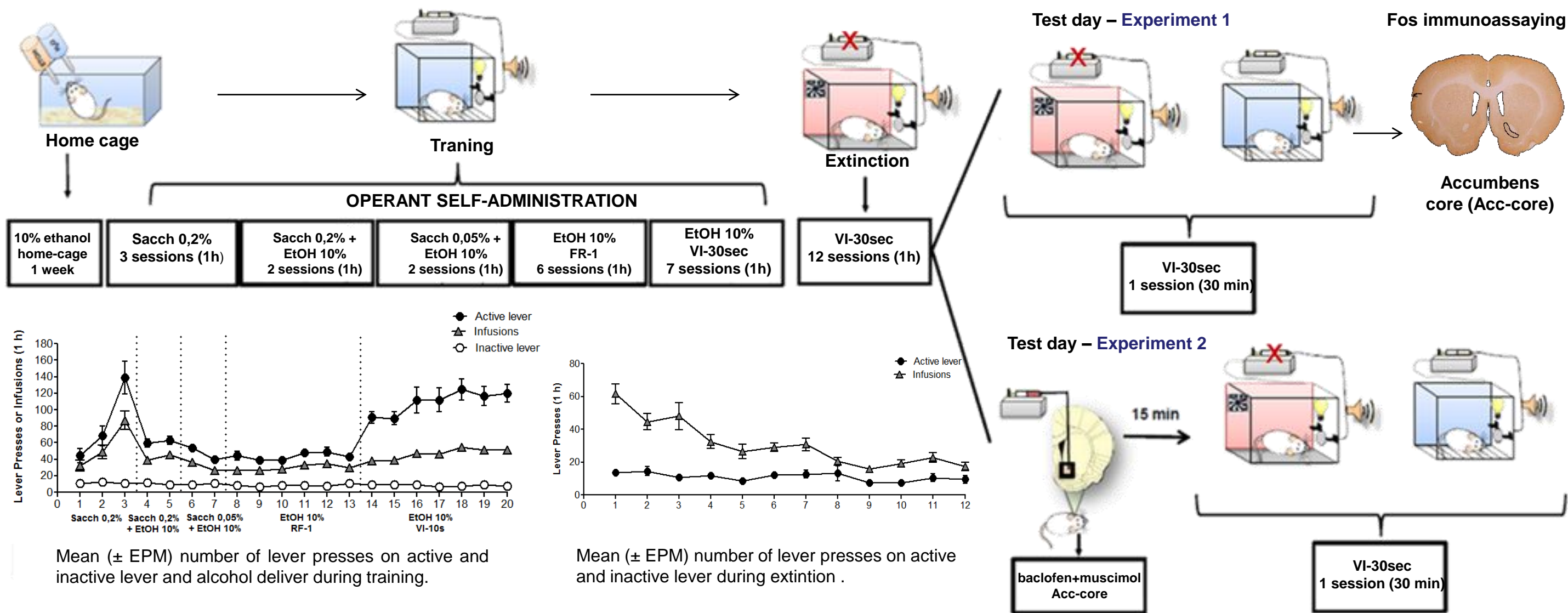
- Alcohol addiction is characterized by high rates of relapse.
- Relapse is the major problem for treating alcoholism.
- Environmental stimuli in contexts associated with previous drug use can provoke relapse to drug seeking.
- The ABA renewal procedure has been used as a preclinical animal model to study relapse to drug seeking induced by context.

Objective

Experiment 1: investigate the effect of context-induced reinstatement of alcohol-seeking on Fos expression in the accumbens core (Acc-core).

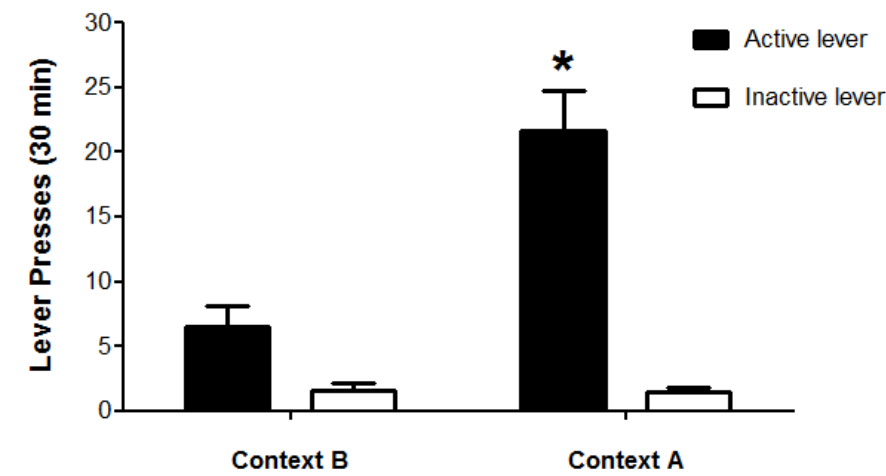
Experiment 2: evaluated whether reversible inactivation of accumbens core attenuated context-induced reinstatement of alcohol-seeking.

Rat Model of Reinstatement (ABA Renewal)

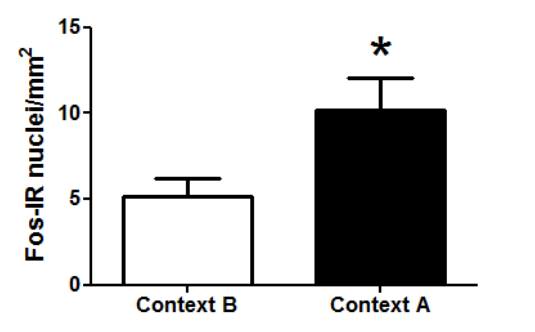
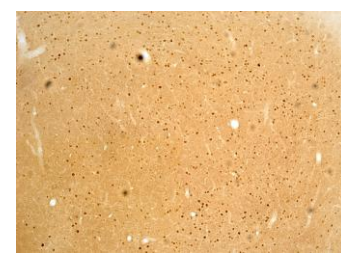


Results and Conclusions

Test day – Experiment 1

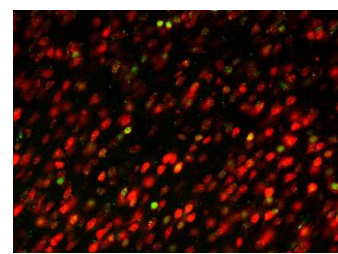


Fos Immunoassaying

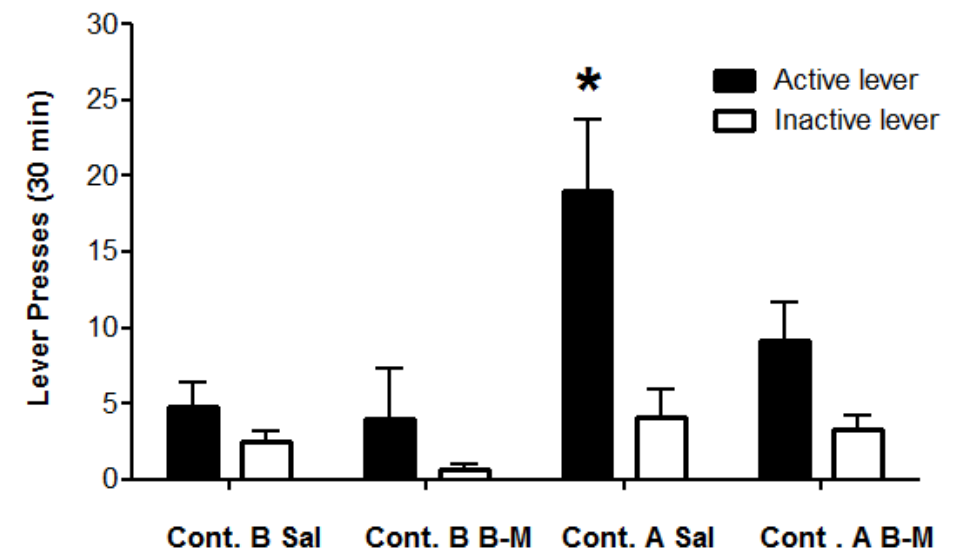


Mean (\pm SEM) percentage of Fos/NeuN double-labeled cells.

Groups	Acc – core (%)
Context B	4.2 (\pm 0.4)
Context A	10.0 (\pm 0.1)



Test day – Experiment 2



- Reexposure to ethanol-associated context reinstated alcohol seeking and increased expression of neural activity marker Fos in the Acc-core.
- Double-labeling for Fos and NeuN indicated that only a small proportion of neurons (neuronal ensembles) were activated in the Acc-core on context-induced ethanol seeking.
- Reversible inactivation of Acc-core attenuated context-induced reinstatement of alcohol seeking.
- Our results show a causal role for Acc-core in context-induced reinstatement of alcohol seeking.

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