Altered stress responses in patients with alcohol use disorder

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BACKGROUND

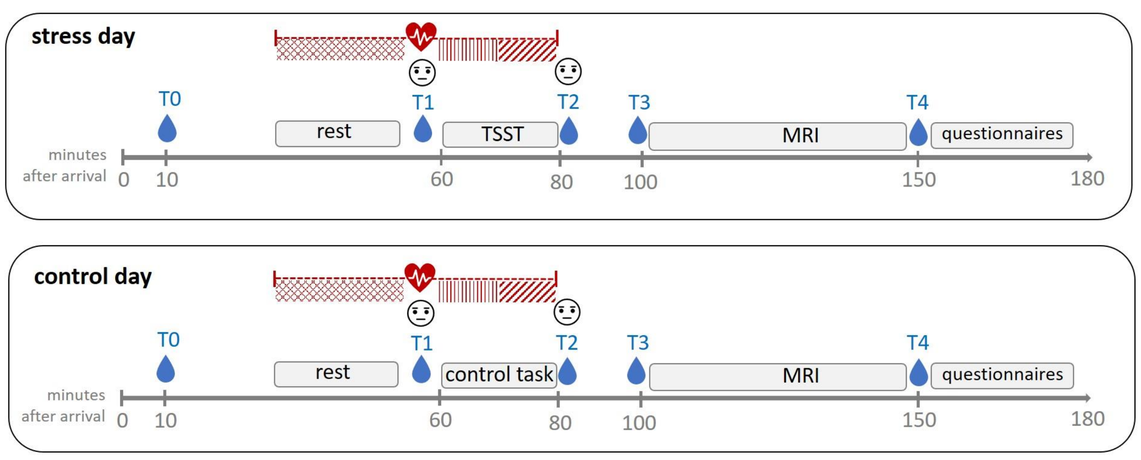
- **A dysregulation of physiological stress systems** has been observed in patients with a diagnosis of alcohol use disorder (AUD)[1].
- Functional connectivity (FC) of the brain was found to be disrupted in patients with AUD[2] and in individuals under stress[3]. However, **stress-associated changes in FC** have not been investigated **in patients with AUD** so far.

AIMS

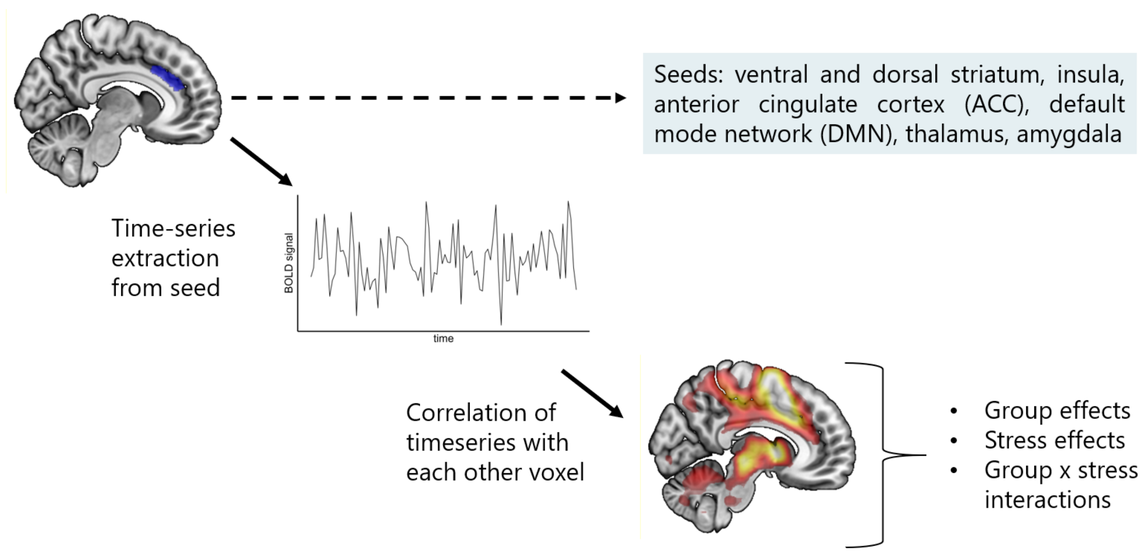
- To investigate the **effects of experimental stress induction on different stress parameters** (HPA and sympathetic nervous system activity, subjectively experienced distress) in patients with AUD in comparison to healthy controls.
- To investigate the **effects of experimental stress in FC** of several brain regions of interest in patients with AUD.

METHODS

- **Sample**: N = 34 individuals diagnosed with AUD in the phase of early abstinence (10-39 days) and N = 34 matched healthy controls
- **Procedure:** Two testing days with **stress induction** using the Trier Social Stress Test (TSST)[4] on one and a control task on the other day
- **Analysis of stress parameters:** ANOVAs for the comparison of *group* (patients vs. controls) and *stress* (pre vs. post stress)



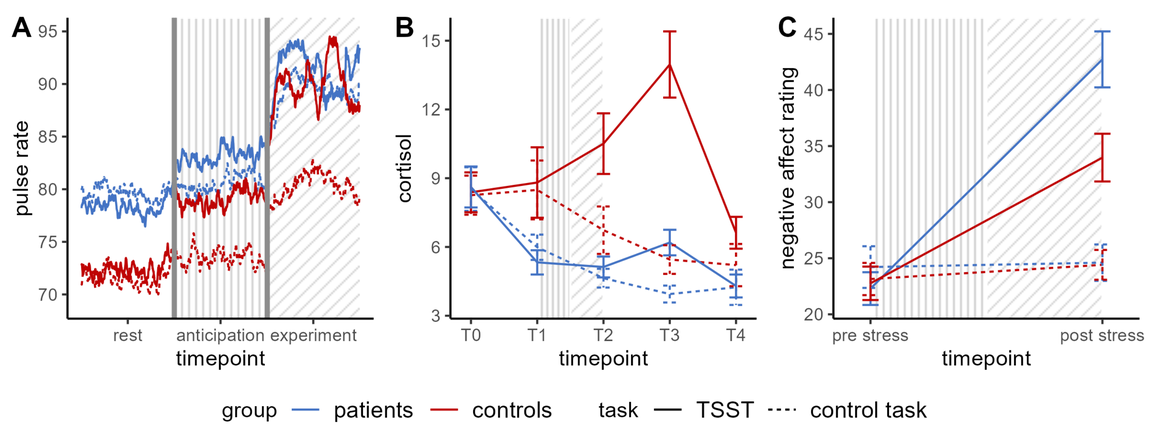
SEED-BASED FUNCTIONAL CONNECTIVITY ANALYSIS



RESULTS

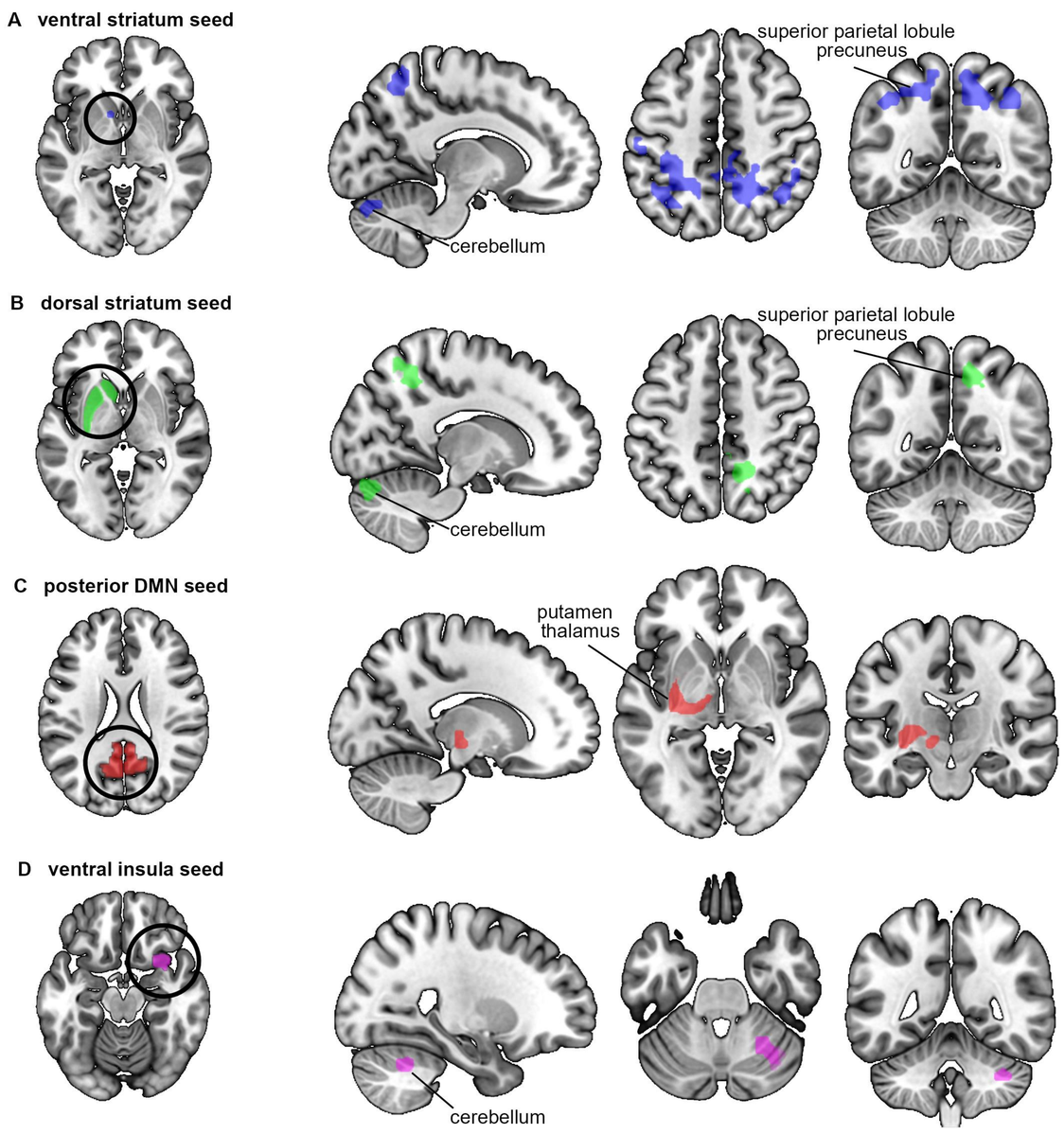
PULSE RATE, CORTISOL, AND SELF-REPORTED AFFECT

No main effect of group, but significant **main effects of stress** and **interaction effects group x stress**: Stronger increase in negative affect but less pronounced cortisol and pulse rate responses to stress induction in patients with AUD



FUNCTIONAL CONNECTIVITY

- Main effects of group: in ACC, left dorsal striatum and DMN
- No main effects of stress
- **Group x stress interactions**: increased FC in patients after stress induction and in controls after control task in the ventral (A) and dorsal striatum (B), posterior DMN (C), and in the right ventral insula (D)



DISCUSSION

- Altered stress responses in patients with AUD, manifested in various parameters.
- The data suggests **a dissociation of physiological and affective stress responses**.
- Increased FC of striatal and insula seeds with parietal lobe and cerebellum as well as of posterior DMN with putamen and thalamus in AUD patients after acute stress suggests **altered neural mechanisms**.

➢ More research is needed to better understand the mechanisms behind these altered stress responses and to potentially develop future treatment options.

References

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