



Zentralinstitut
für Seelische
Gesundheit

Clinical studies, results and conclusions

Mannheim, 08 October 2026

International Day of Applied Chess

Àlvar Farré-Colomés, PhD student

RG Neuroimaging of Addictive Behaviour



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1. Study design

2. Adolescents with mental disorders

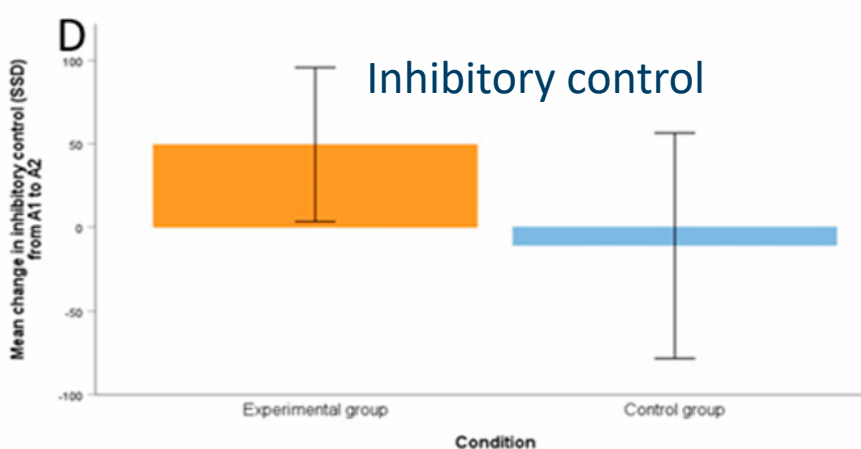
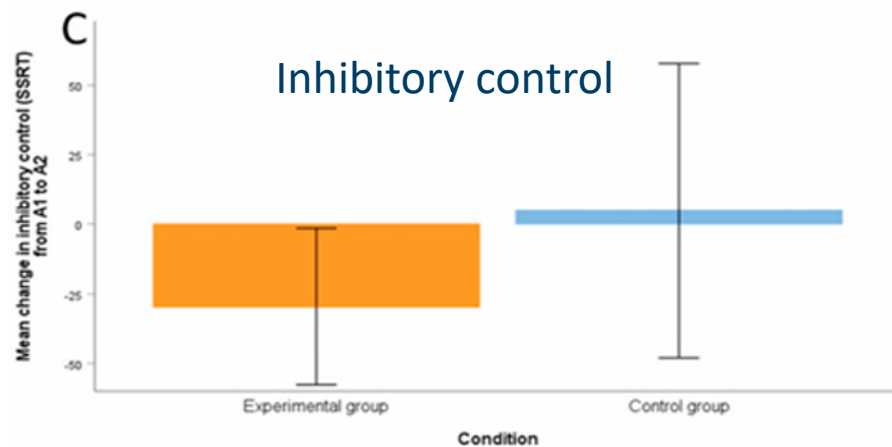
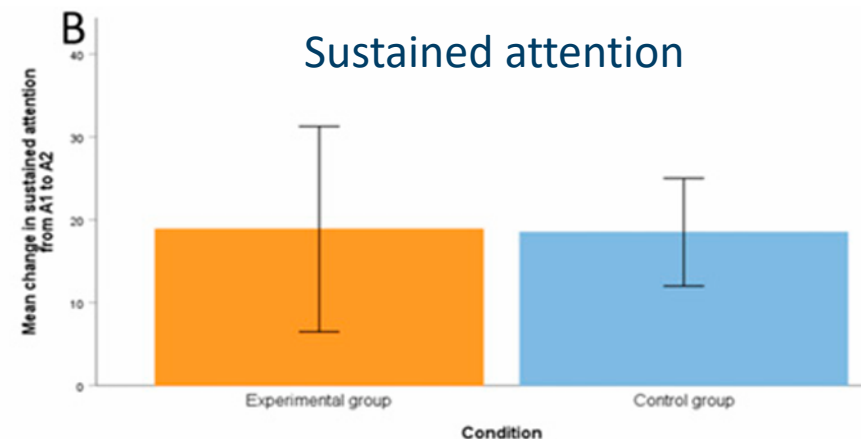
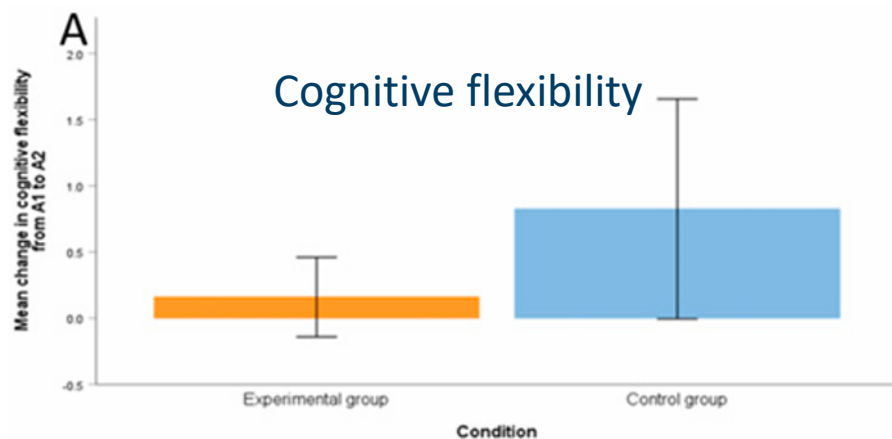
3. Alcohol Use Disorder

4. Tobacco Use Disorder





Adolescents with mental disorders



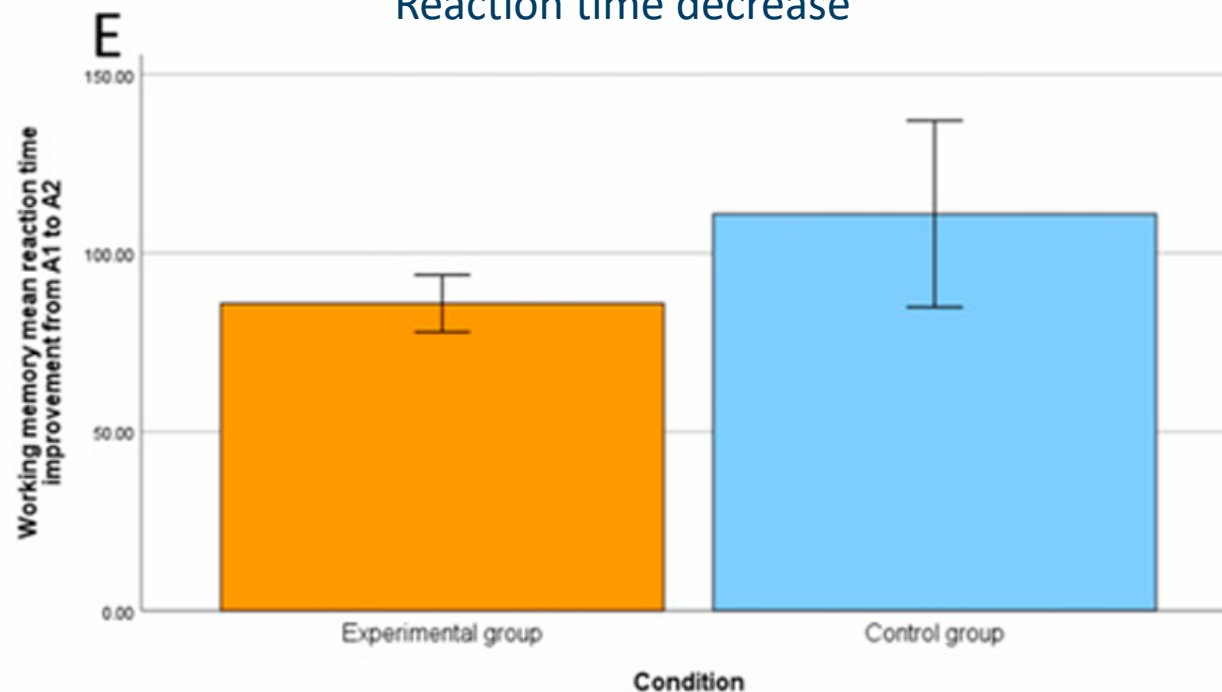
Gerhardt et al 2026 – *Clinical Child Psychology and Psychiatry*



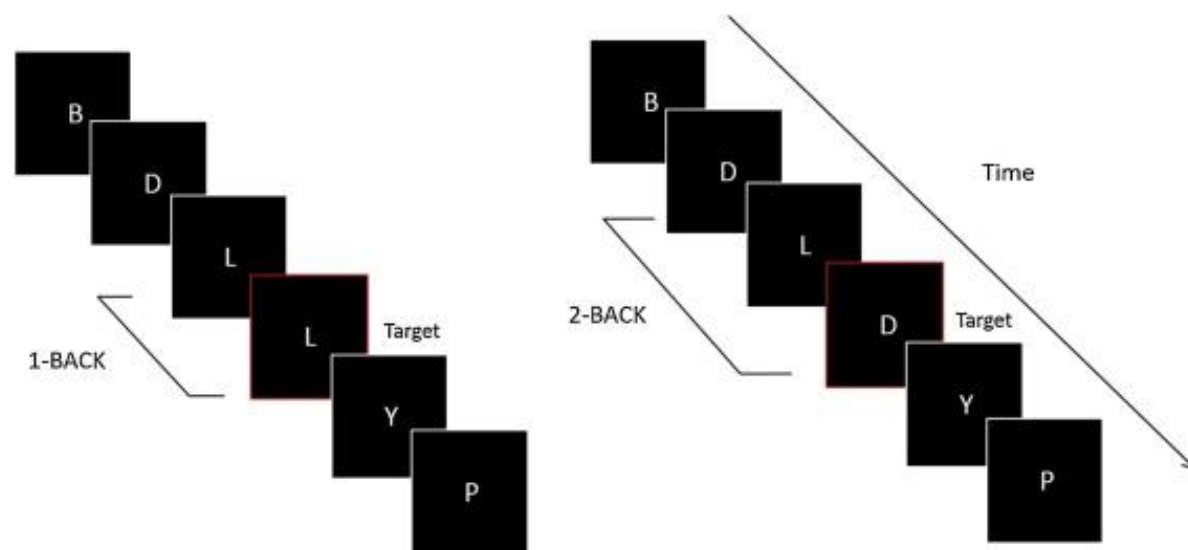
Adolescents with mental disorders



Reaction time decrease



N-BACK task

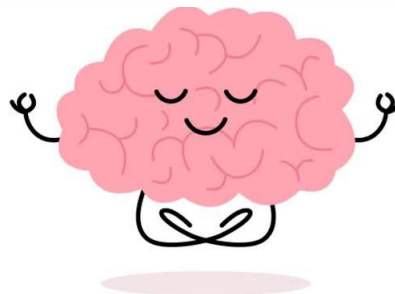
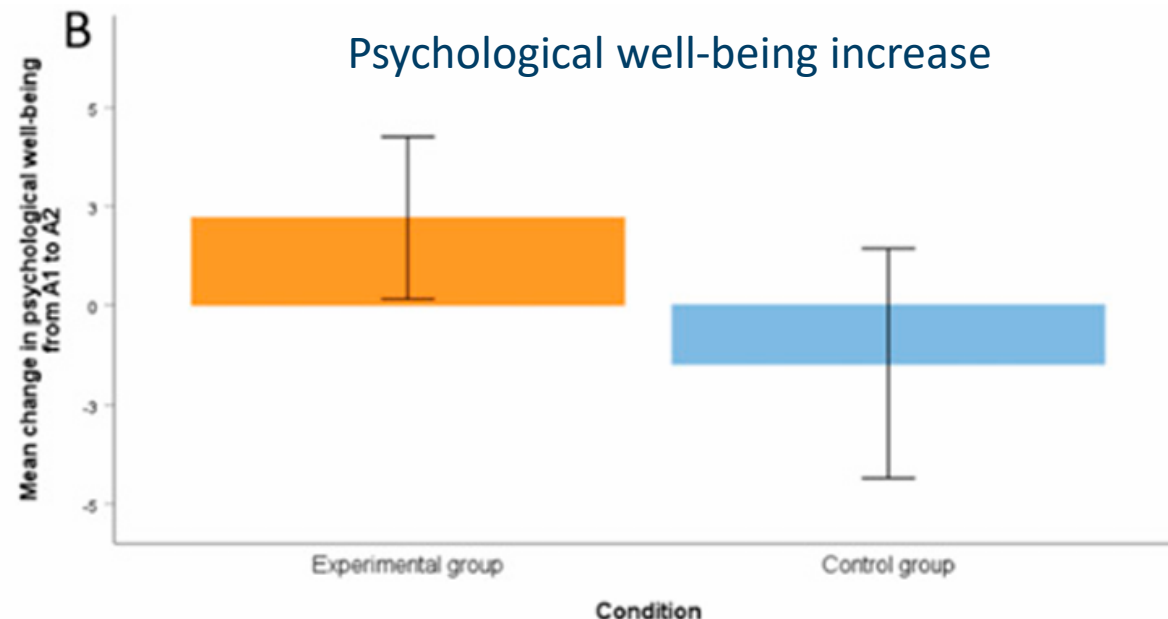
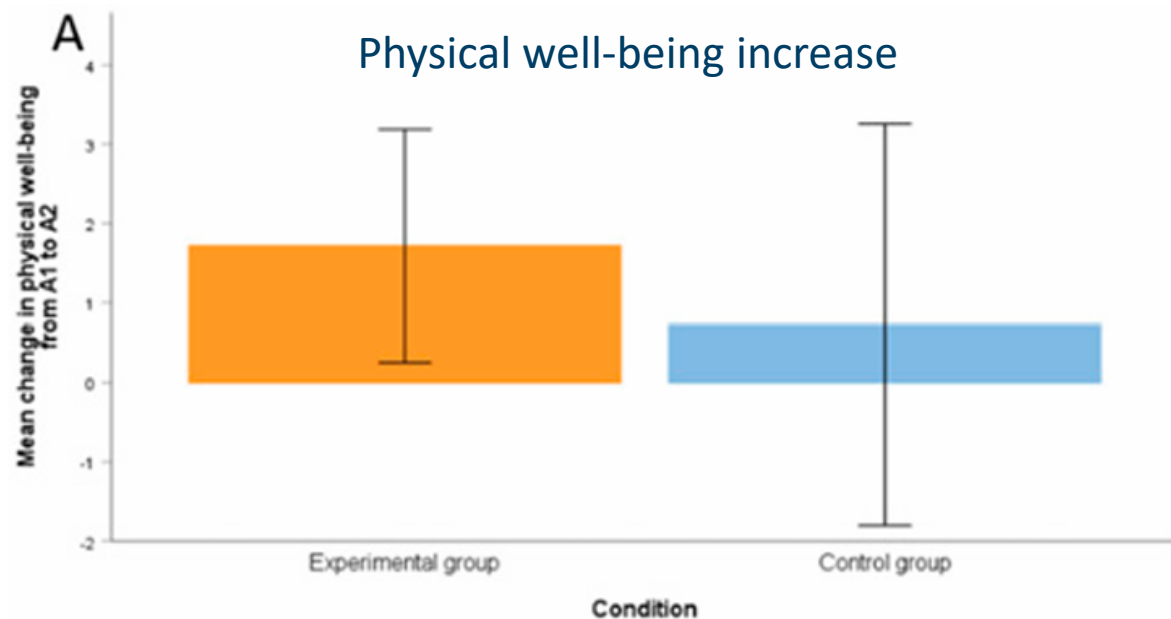


Gerhardt et al 2026 – *Clinical Child Psychology and Psychiatry*

Image Credit:
cpsst.org / Gilmour et al. 2019



Adolescents with mental disorders

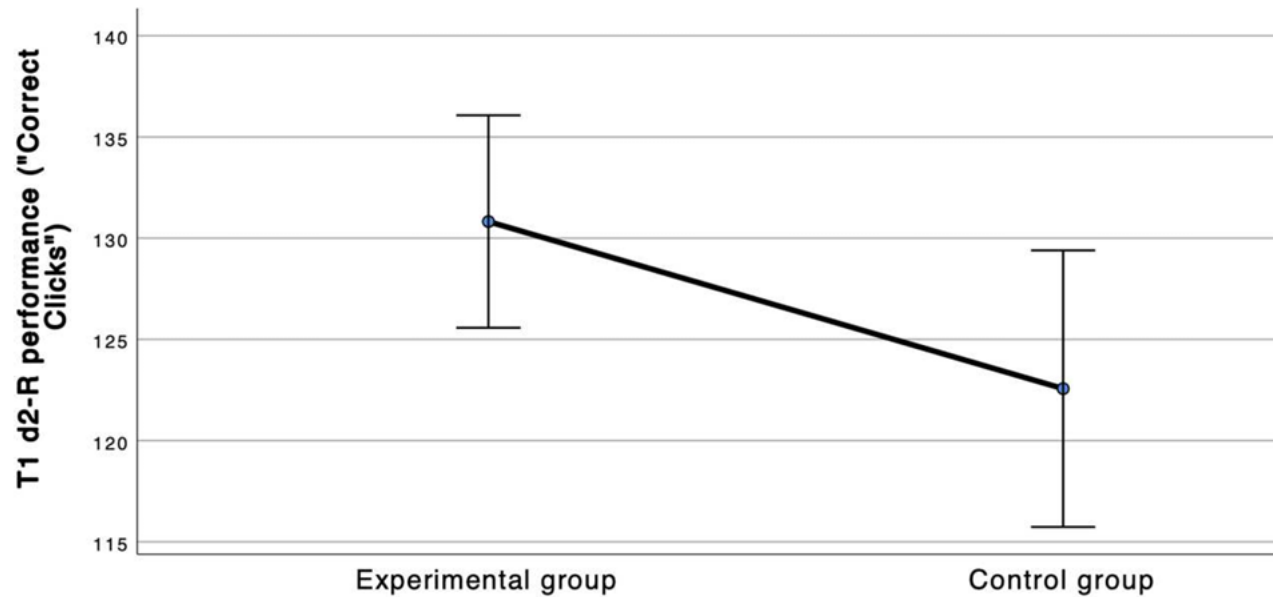


Gerhardt et al 2026 – *Clinical Child Psychology and Psychiatry*

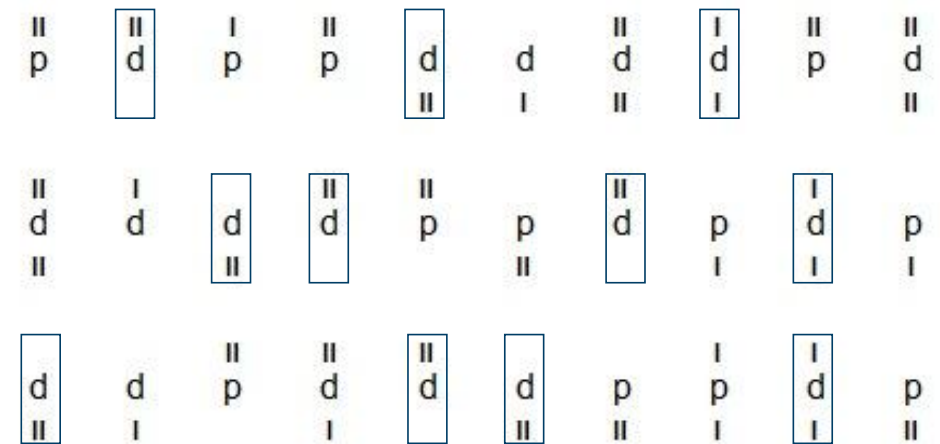


Alcoholism

Sustained attention



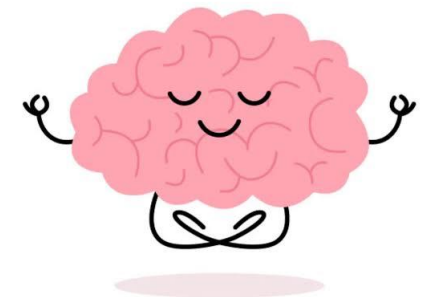
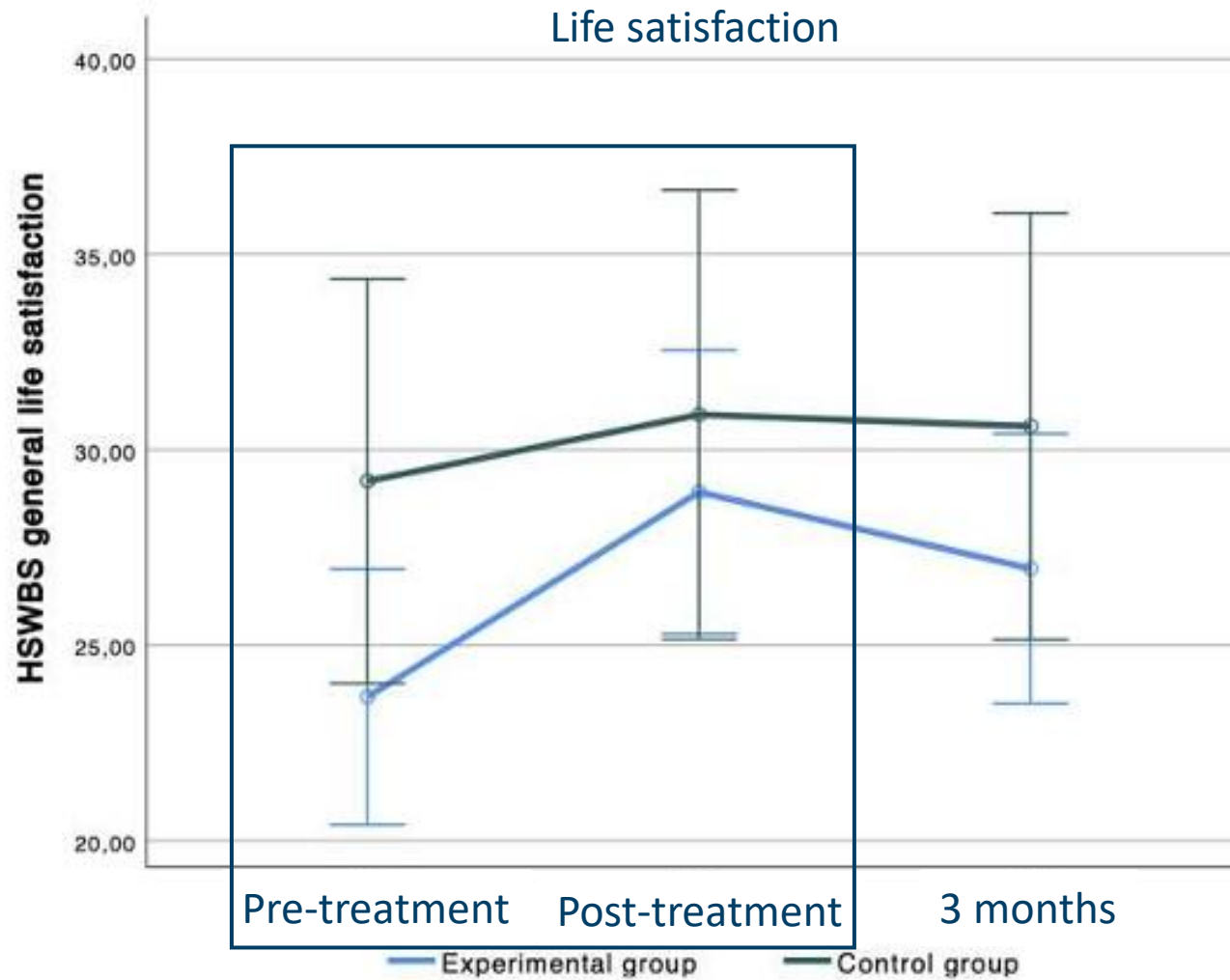
d2-R task



Seeger et al 2026 – Neuropsychological Rehabilitation



Alcoholism



Seeger et al 2026 – Neuropsychological Rehabilitation



Tobacco

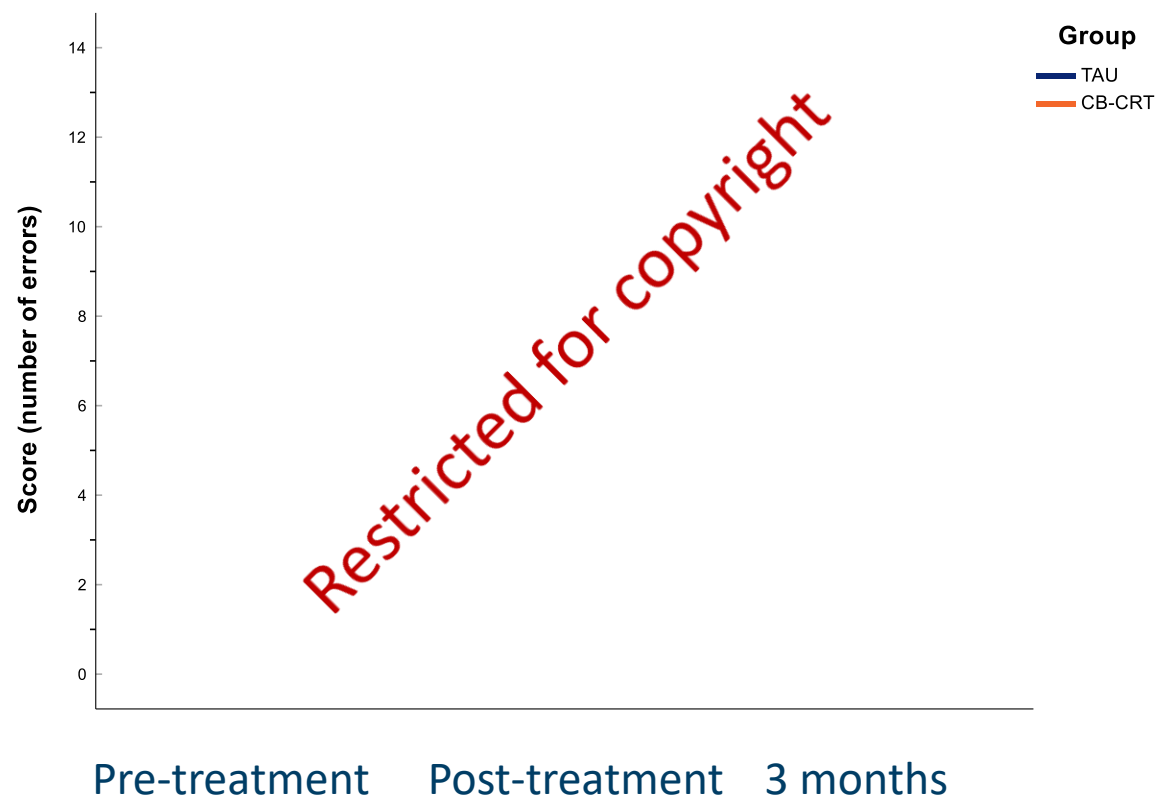
Percentage of days in abstinence



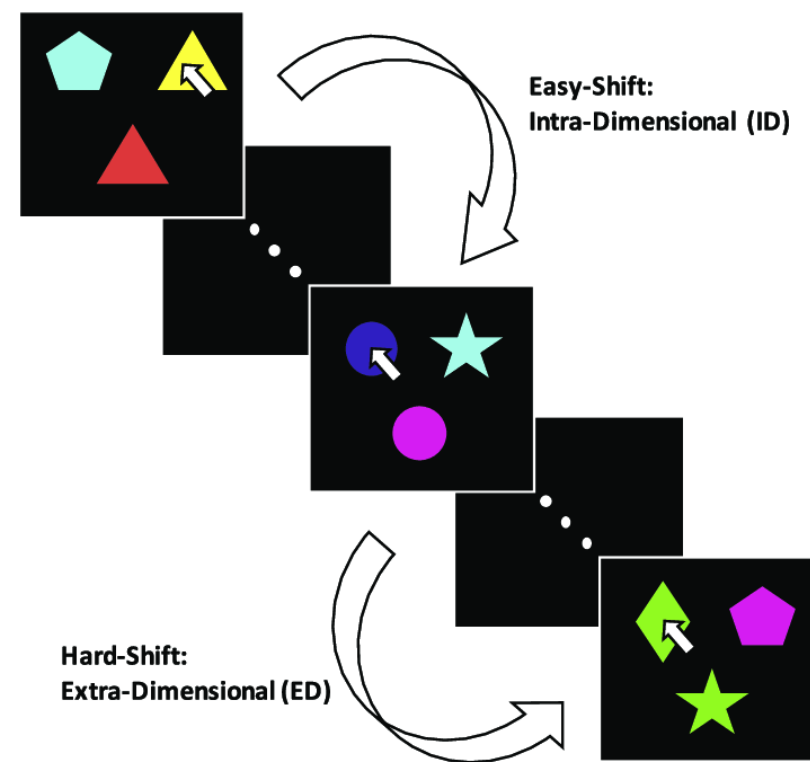
Farre-Colomes et al – Submitted



Tobacco



Learning and cognitive flexibility



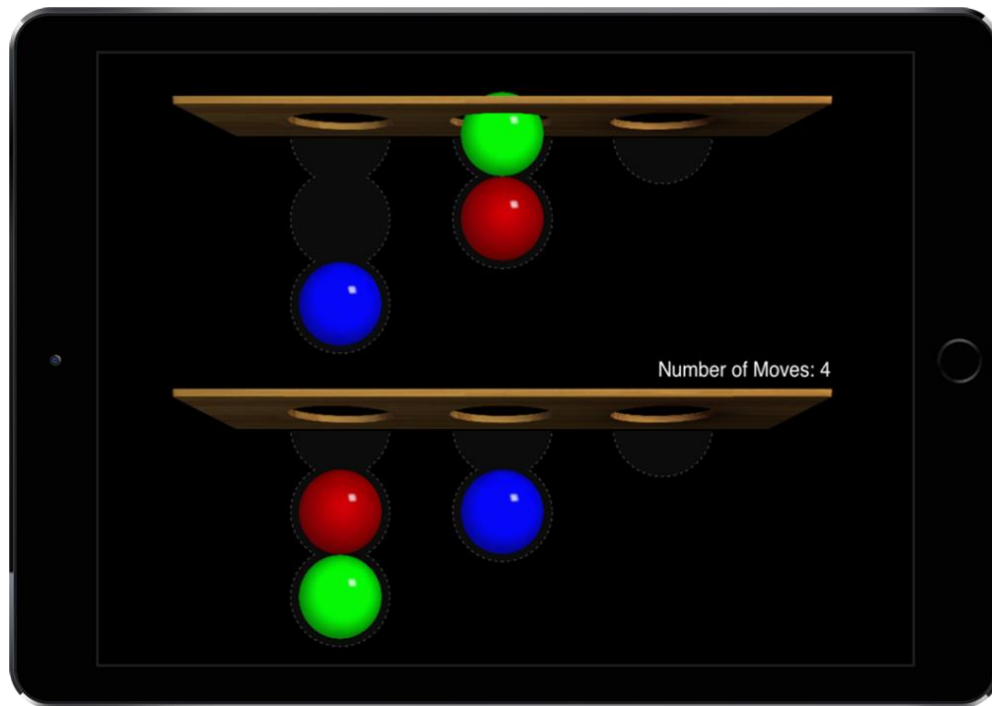
Farre-Colomes et al – Submitted



Tobacco



One touch stockings task

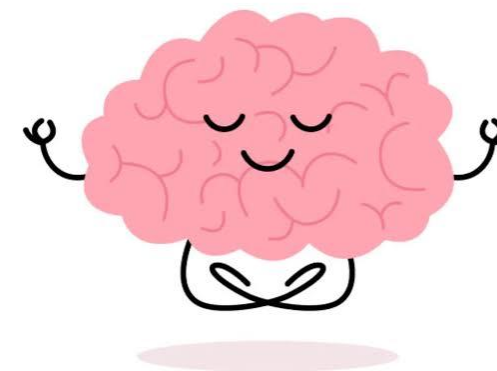
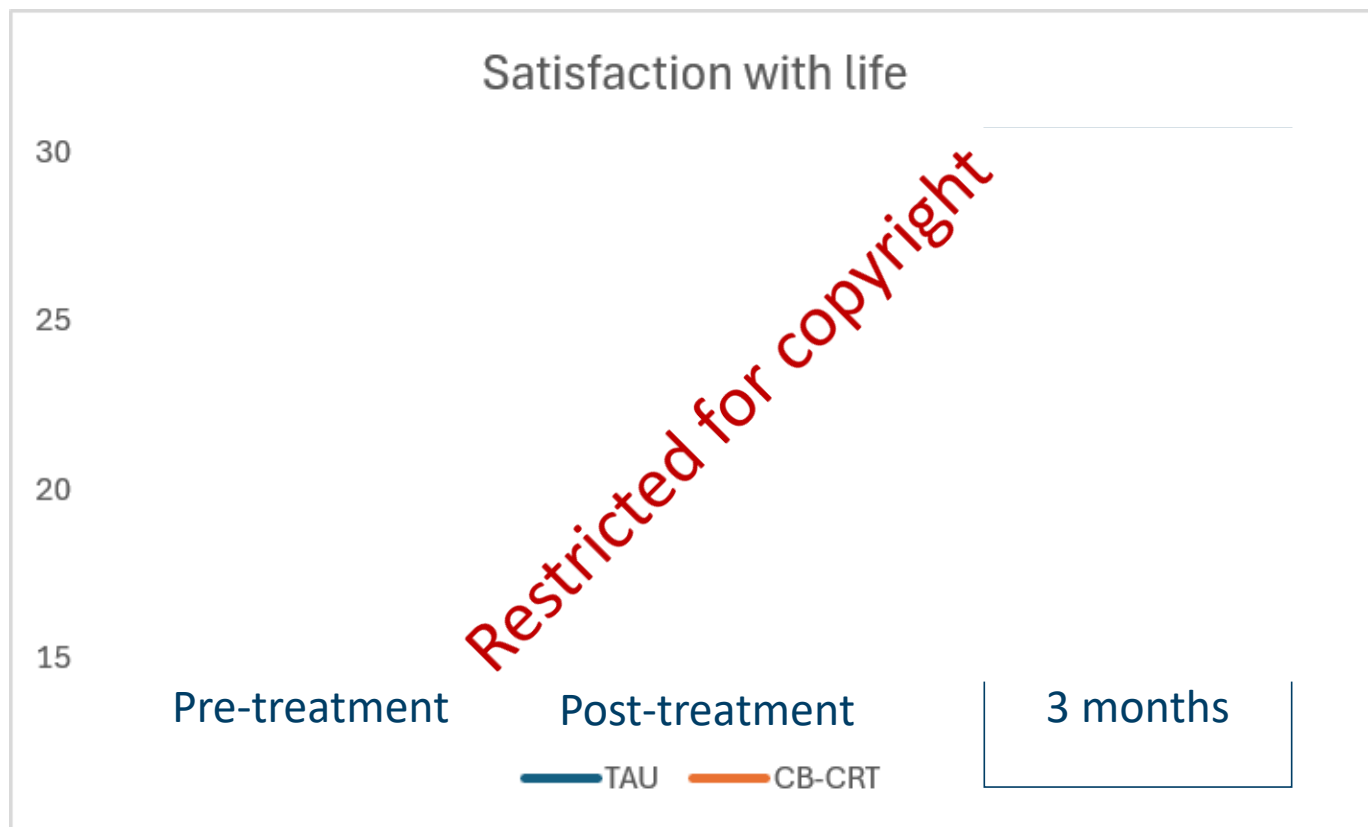


Planning and problem resolution

Farre-Colomes et al – Submitted



Tobacco



Farre-Colomes et al – Submitted



Tobacco

Craving: intention to smoke/positive smoking expectancies



- a. Smoking a cigarette would not be pleasant
- b. Smoking would make me feel very good right now
- c. I would not enjoy a cigarette right now
- d. Smoking would make me happier now
- e. I would not feel less stressed if I were smoking now

Farre-Colomes et al – Submitted

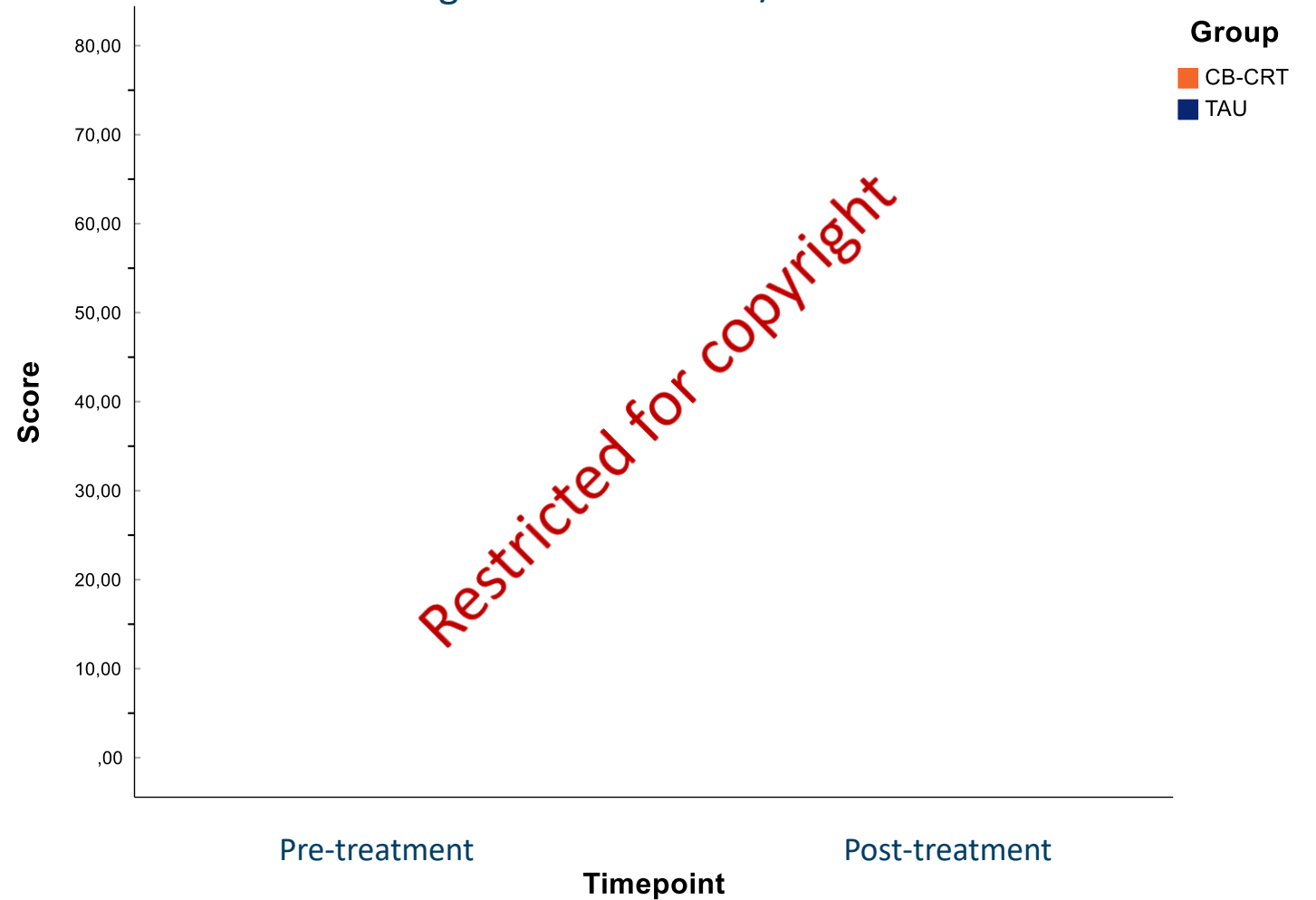


Tobacco



Craving: desire to smoke/withdrawal relief

- a. All I want right now is a cigarette
- b. My desire to smoke seems overpowering
- c. I would do almost anything for a cigarette now
- d. I would be less irritable if I were smoking now
- e. Smoking would make me less depressed



Farre-Colomes et al – Submitted

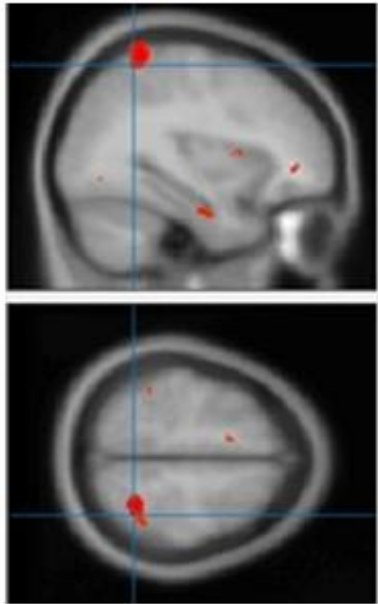


Tobacco

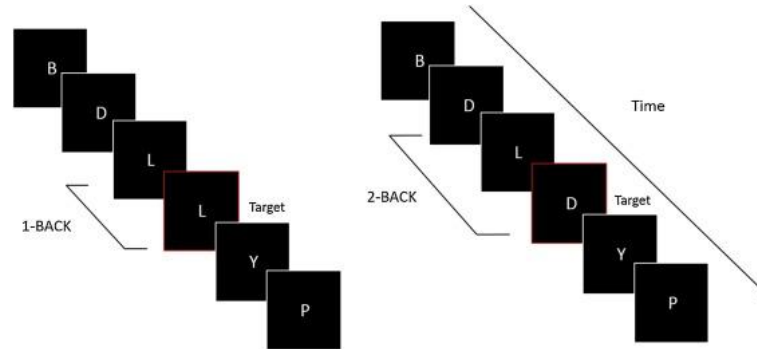




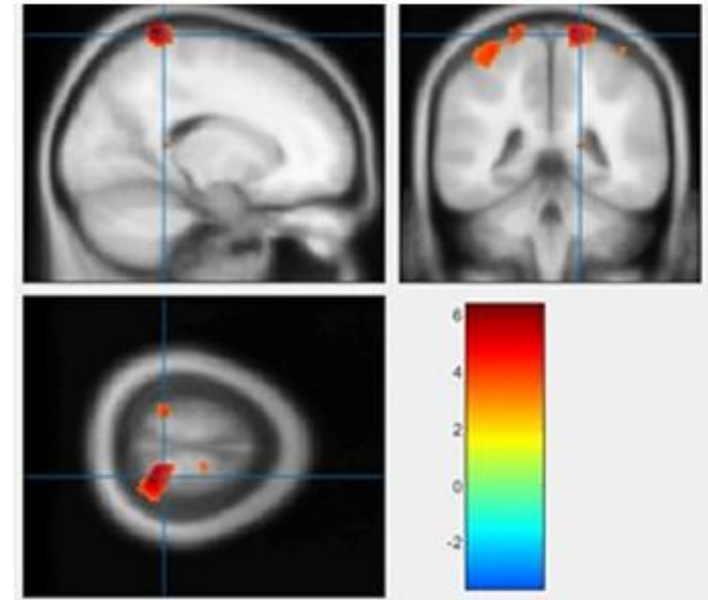
Tobacco



N-BACK task (working memory)



Less activation in the experimental group after the therapy



Negative correlation between activation and abstinence

Less activation → More abstinent days

Vollstädt-Klein et al – In preparation

Conclusions



- CB-CRT seems to improve the Quality of life in Alcohol and Tobacco participants, but also in adolescent psychiatric population
- CB-CRT could help keeping abstinence in Tobacco users
- CB-CRT may reduce craving in Tobacco users
- CB-CRT would enhance cognitive performance in psychiatric populations:
 - Sustained attention
 - Working memory
 - Cognitive flexibility
 - Planning & Problem resolution



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Thank you for your attention!



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- Glimour et al. 2019: *Relating constructs of attention and working memory to social withdrawal in Alzheimer's disease and schizophrenia: issues regarding paradigm selection.* [10.1016/j.neubiorev.2018.09.025](https://doi.org/10.1016/j.neubiorev.2018.09.025)
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- Gerhardt et al. 2023: *Effects of chess-based cognitive remediation training as therapy add-on in alcohol and tobacco use disorders: protocol of a randomised, controlled clinical fMRI trial.* [10.1136/bmjopen-2021-057707](https://doi.org/10.1136/bmjopen-2021-057707)
- Gerhardt et al. 2026: *Move by Move Towards Mental Health: A Quasi-Randomized Pilot Study on Chess as a Therapeutic Approach in Adolescents With Mental Disorders.* [10.1177/1359104526145397](https://doi.org/10.1177/1359104526145397)