

Is intake of caffeine via a oral film as effective as an espresso?

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Caffeine is the most consumed psychoactive drug in the world



Safe consumption of up to 400mg/day
(Toxic at 10 g)



Mostly consumed in drinks

Coffee consumption (kg per person per year):

Finland 12.0

Portugal 4.3

U.S.A 4.2

U.K. 1.7 (Jan 2018)

“Appetitive” outcomes



↑ **physical performance**
(endurance sports)



↑ **burn calories and fat**
(short-term effects)



↑ **cognitive performance**
(e.g., sustained attention)



↓ **sleepiness and fatigue**

Disadvantageous outcomes



Rapid gut absorption
99% in 45 min after intake



Unknown concentrations
Most consumers not aware of amount ingested



Risks of overconsumption
Nervousness, gastrointestinal and cardiac alterations



Addiction
and withdrawal effects
(addiction pathways)



Carbonated and/or sugary
Problem to diabetics, obese, people on diets



Unavailable to some
Dysphagia, geriatric and mental patients

CBQF's Orodispersible Film (OF) for delivery of caffeine



In vitro tests

Sustained delivery of caffeine within a customized period

↑ stability and residence time of caffeine in contact with the buccal mucosa (↓ ↓ 1st-pass hepatic metabolism)



Psych. Study (experiment with human participants): psychophysiology of this OF

(1) Characterize the psychophysiology of caffeine intake via our novel OF

- Physiological correlates: Respiratory, Electrodermal and Cardiac activity (BIOPAC)
- Mood and cognitive performance

(2) Compare its effects with a traditional intake modality (espresso coffee) during $\Delta t=45'$ post-intake

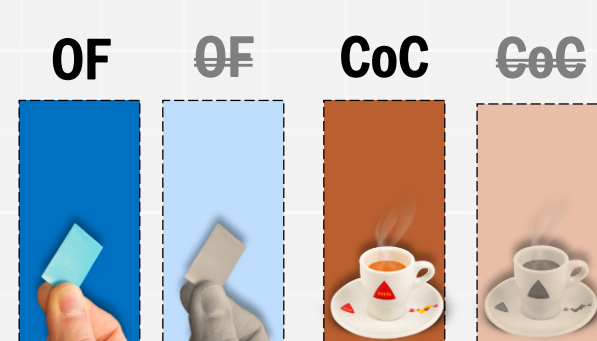


Methods

- Estimated $N = 20$ adults, moderate caffeine-consumers (as of yet, $N = 9$)
- Intra-subject, randomized, 4x4 Latin square counterbalanced, double-blind, controlled study

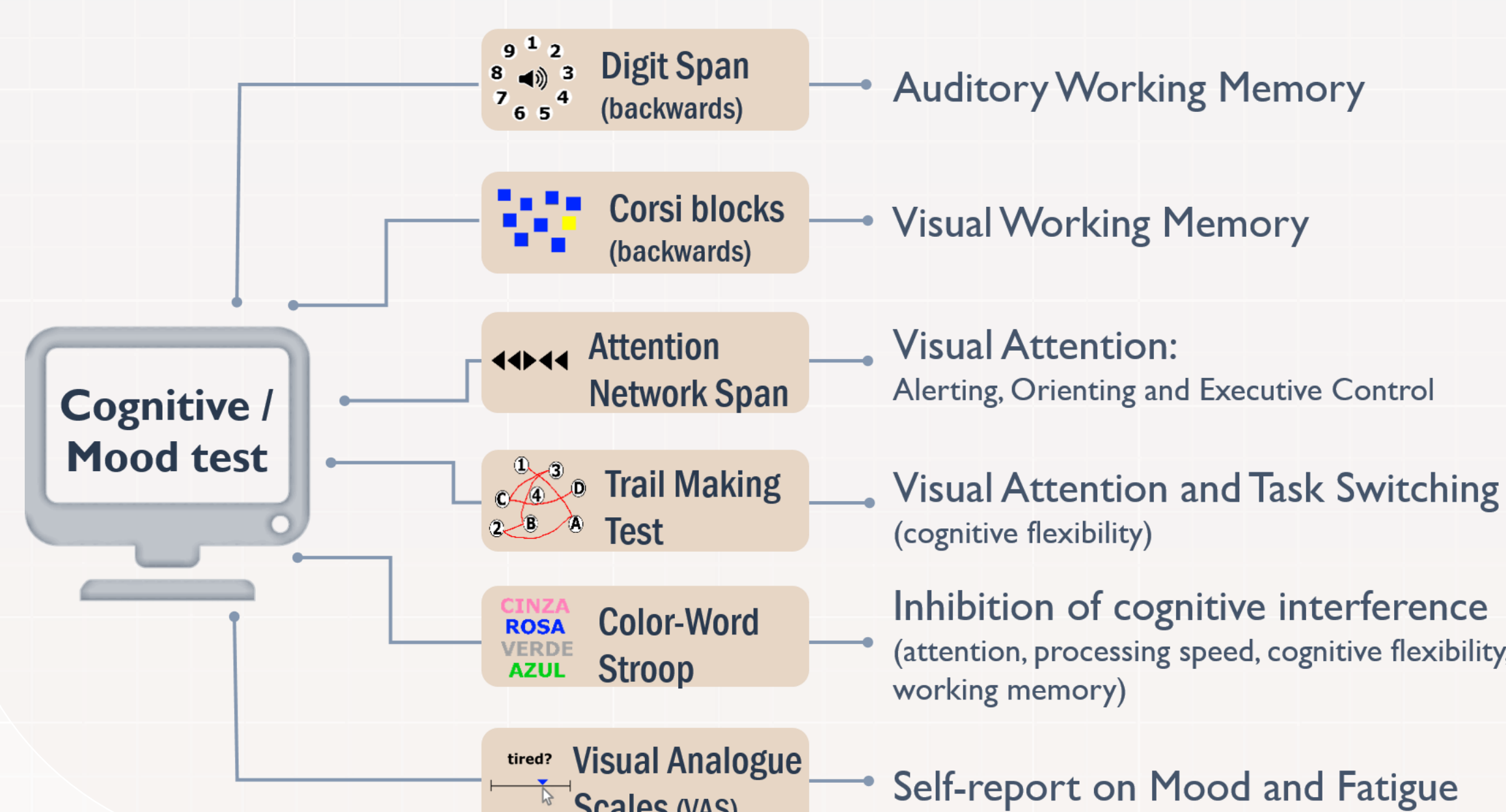
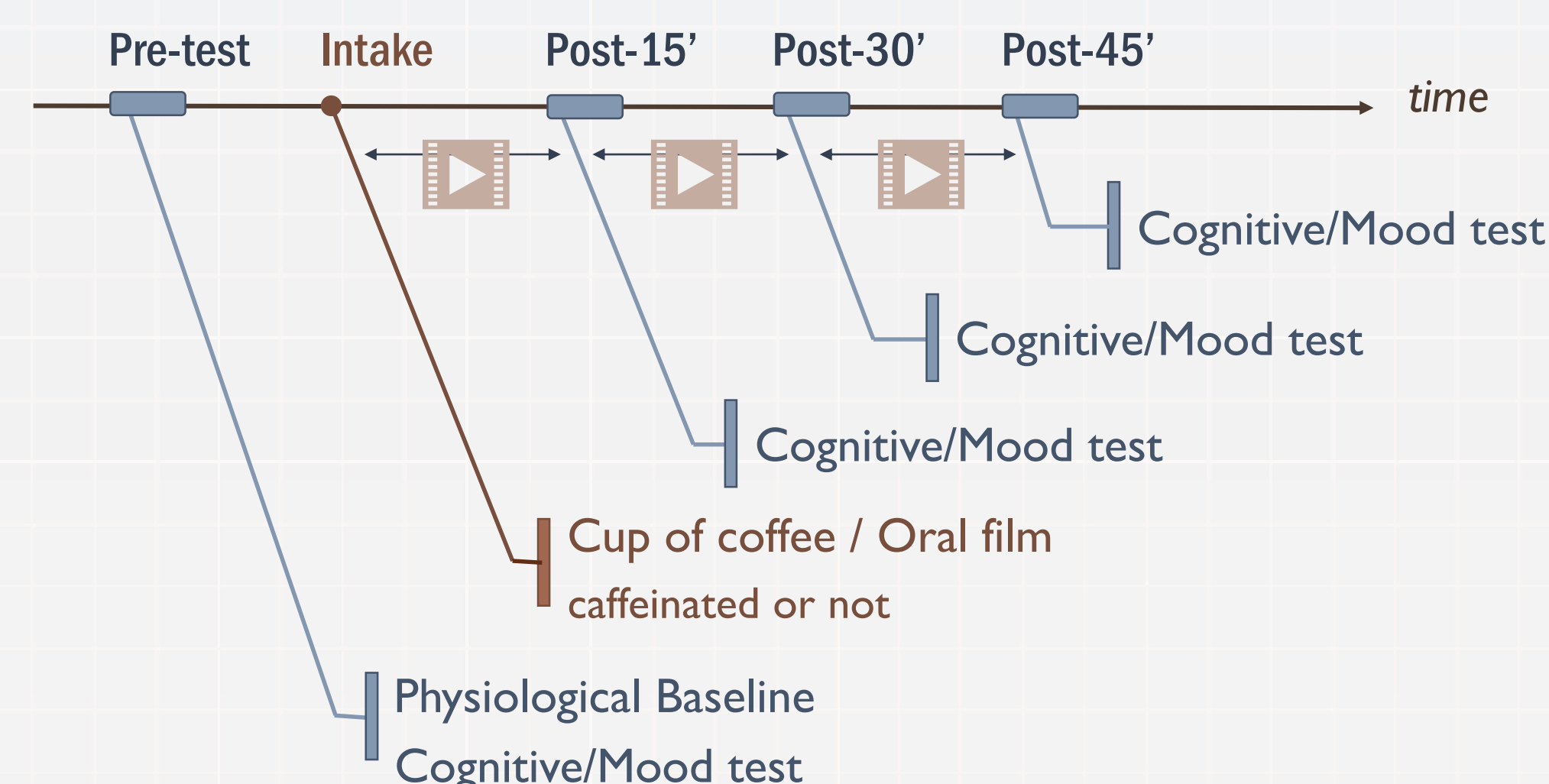
- 4 exp. days per participant:

OF: Orodispersible Film with caffeine
OF: Orodispersible Film without caffeine
CoC: Cup of coffee (1 espresso)
CoC: Cup of decaffeinated coffee



- Procedure on each experimental day/session:

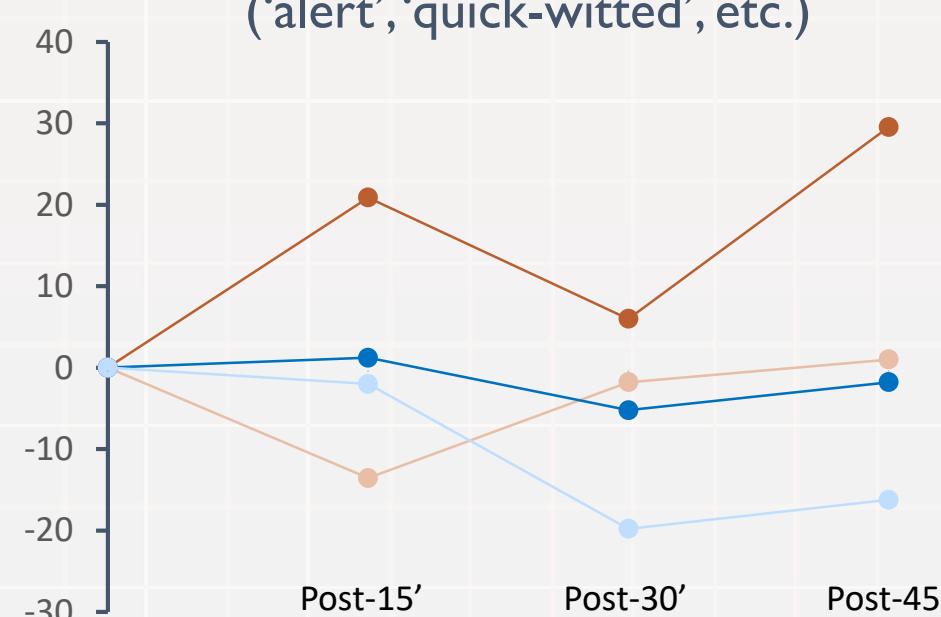
Continuous physiological recording



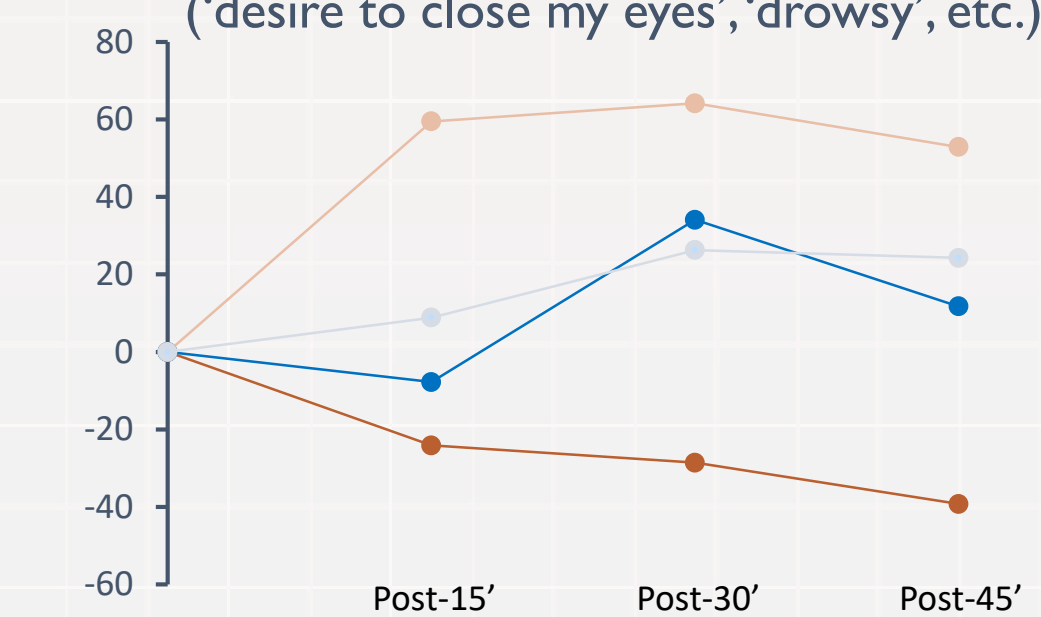
Preliminary Results

- VAS self-report (score change from pre-test)

Mental sedation
(‘alert’, ‘quick-witted’, etc.)

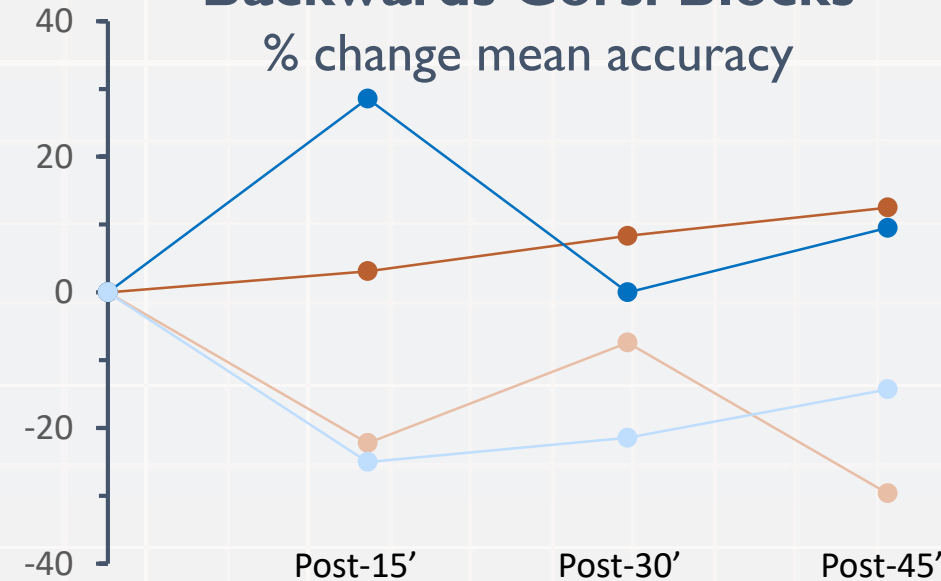


Fatigue
(‘desire to close my eyes’, ‘drowsy’, etc.)



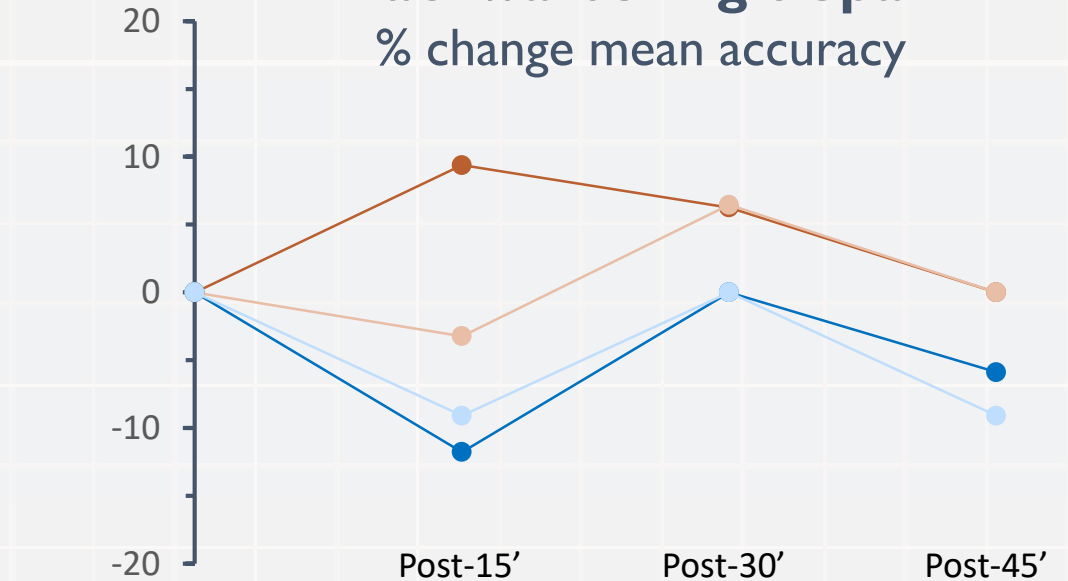
- Visual Working Memory (% change)

Backwards Corsi Blocks
% change mean accuracy



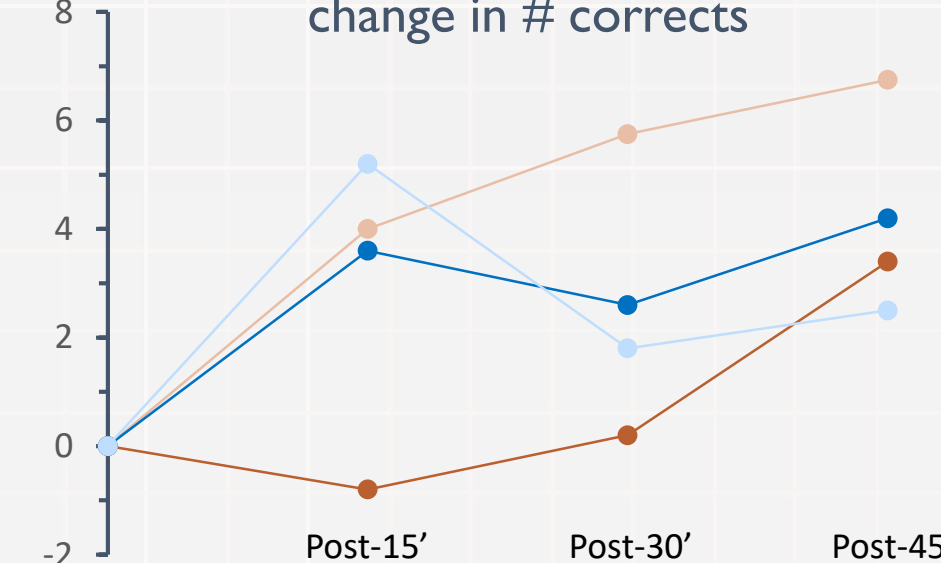
- Auditory Working Memory (% change)

Backwards Digit Span
% change mean accuracy



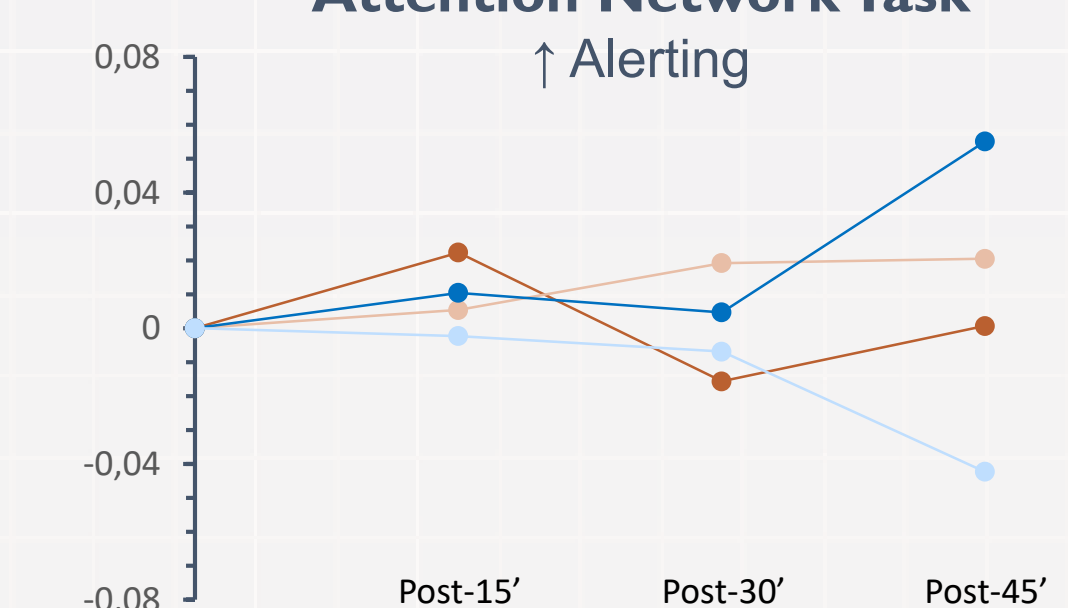
- Task Switching (change from Pre-test)

Trail Making Test
change in # corrects



- Alerting (change from Pre-test)

Attention Network Task
↑ Alerting



- Physiological data

☒ Pre-processing (visual inspection, triggers, filtering, smoothing...)

☐ Currently creating the cardiac, respiratory and electrodermal analysis templates (AcqKnowledge)

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Contact
Information



HNL

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