ASSESSMENT OF SPONTANEOUS REGULATION DURING FOOD CHOICE USING NEURAL SIGNATURES DERIVED FROM INDEPENDENT DATA

Danielle Cosme, Dagmar Zeithamova, Eric Stice, & Elliot T. Berkman University of Oregon / Department of Psychology

INTRODUCTION & METHODS

BACKGROUND

- Cognitive reappraisal is an effective regulatory strategy and modulates subjective value
- It is challenging to measure regulation in ecologically valid, unstructured contexts, but doing so may improve the ability to predict relevant behavior

AIMS

- 1. Develop and validate a neural signature of food craving regulation
- 2. Apply the neural signature to measure of spontaneous regulation during food choice



UO SAN LAB

CR task

3. Assess individual differences in task performance



RESULTS

1. FOOD CRAVING REGULATION NEURAL SIGNATURE VALIDATION

>> NEURAL SIGNATURES DISTINGUISH CRAVING REGULATION FROM PASSIVE VIEWING AND GENERALIZE TO NEW DATA

>> THE MULTIVARIATE MACHINE LEARNING SIGNATURE WAS MORE EFFECTIVE

2. SPONTANEOUS REGULATION DURING FOOD CHOICE

>> EVIDENCE OF SPONTANEOUS REGULATION WAS HIGHER FOR UNHEALTHY FOODS AND WAS ASSOCIATED WITH LOWER BIDS VALUES

>> MULTIVARIATE AND UNIVARIATE SIGNATURE EFFECTS WERE IN OPPOSITE DIRECTIONS





3. INDIVIDUAL DIFFERENCES

>> AVERAGE NEURAL SIGNATURE EXPRESSION WAS RELATED TO INDIVIDUAL DIFFERENCES IN TASK OUTCOMES

>> THE MULTIVARIATE SIGNATURE WAS MOST RELIABLE ACROSS TASKS

>> EFFECTS WERE STRONGEST IN THE PARTIAL VALIDATION SAMPLE

>> MULTIVARIATE SIGNATURE EXPRESSION TRACKS WITH SUBJECTIVE CRAVING ACROSS CONDITIONS, BUT NOT WITHIN CONDITION



CONCLUSIONS

- It is possible to use neural signatures of food craving regulation to assess spontaneous regulation during food choice
- Overall, the neural signature derived using multivariate machine learning was the most effective and related to outcomes in expected ways



DANIELLE COSME / UNIVERSITY OF OREGON / DEPARTMENT OF PSYCHOLOGY DCOSME@UOREGON.EDU

PAPER: https://doi.org/10.1093/scan/nsz068