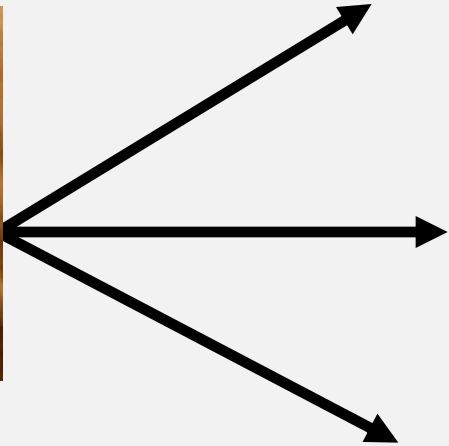


TUNING EMOTIONAL FACE PERCEPTION WITH FACIAL NEUROMUSCULAR ELECTRICAL STIMULATION (NMES)

T.EFTHIMIOU@ESSEX.AC.UK

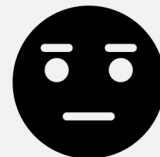
FACIAL FEEDBACK



Sel et al., (2015, 2016),
Hennenlotter et al., (2009)



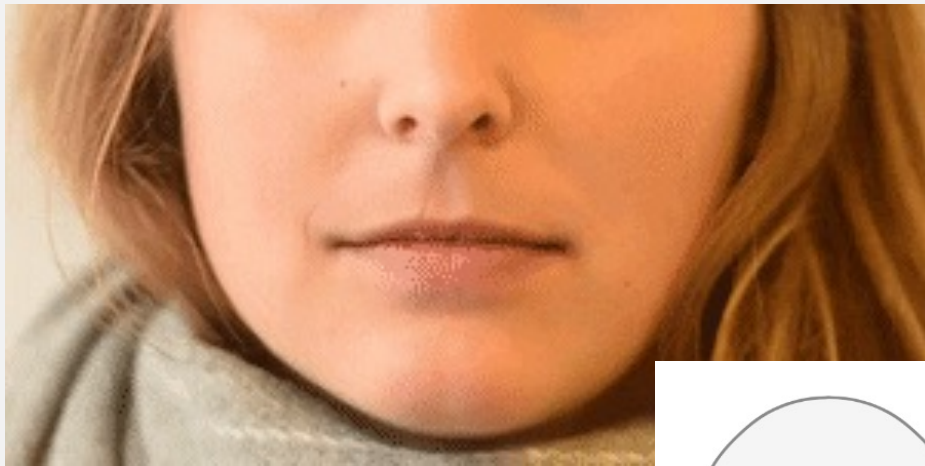
Davis et al., (2015),
Arias et al., (2018)



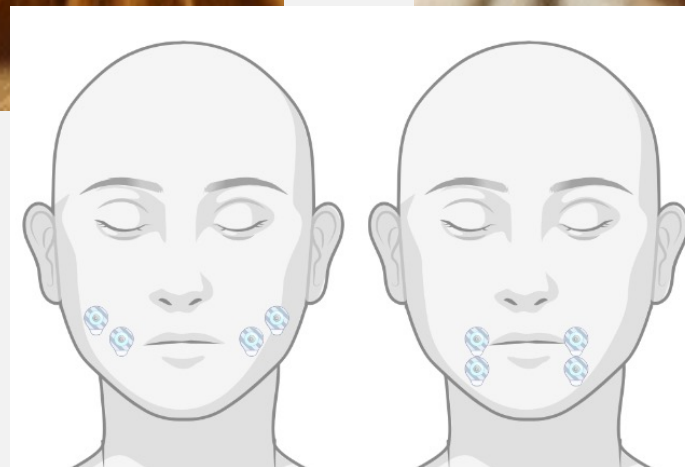
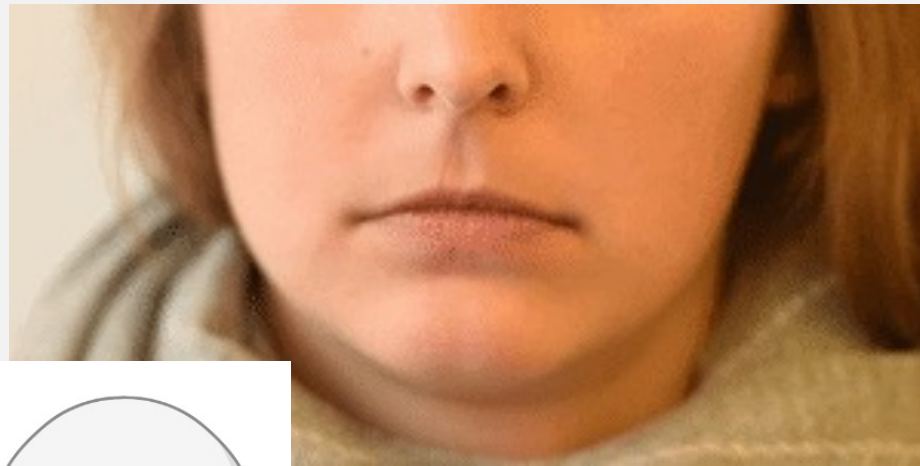
Wood et al., (2016),
Marmolejo-Ramos (2020)

FACTION ACTION CODING SYSTEM (FACS)

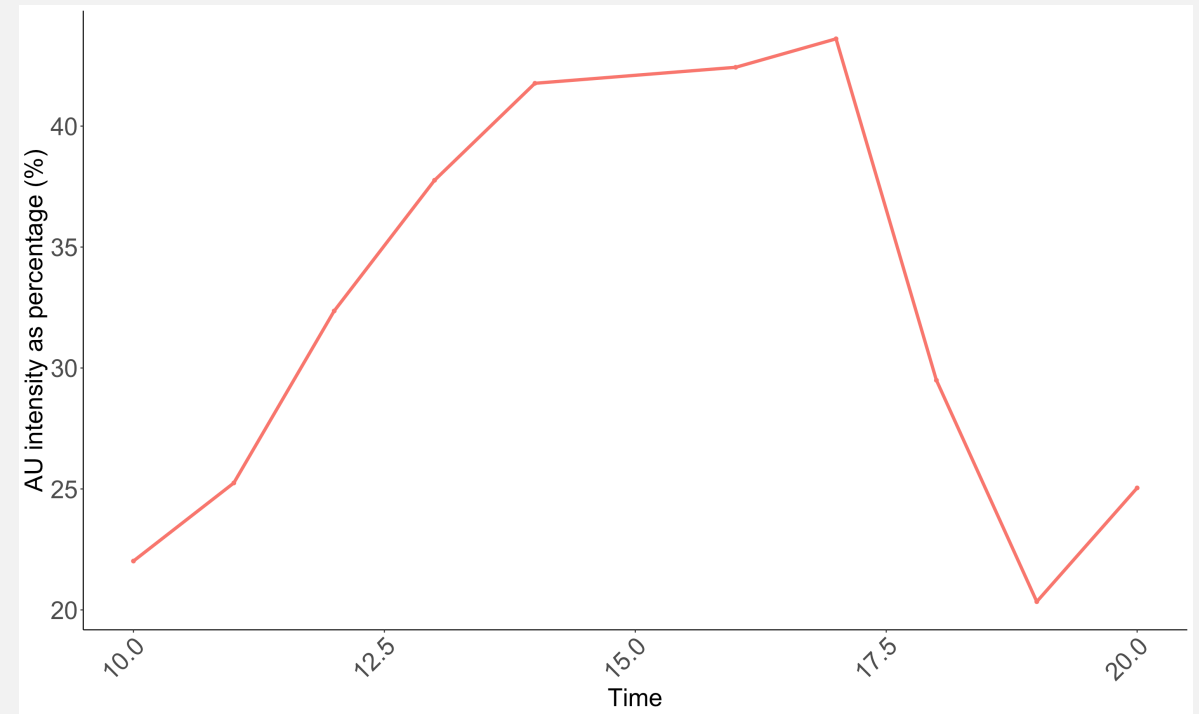
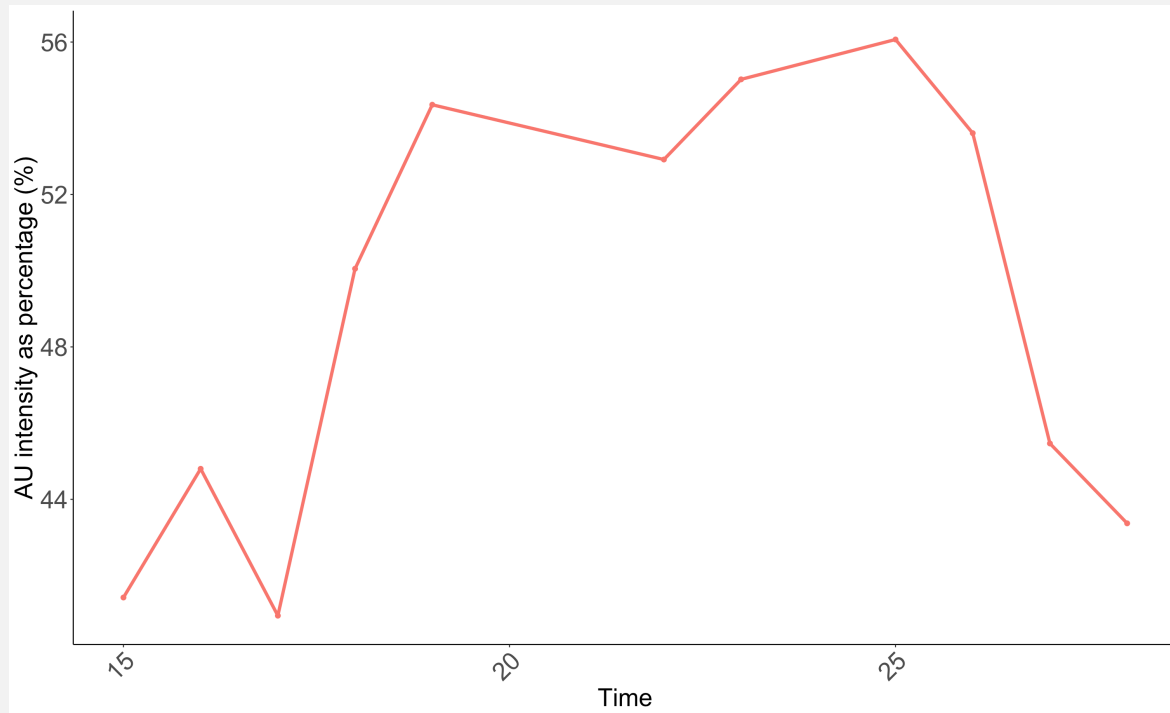
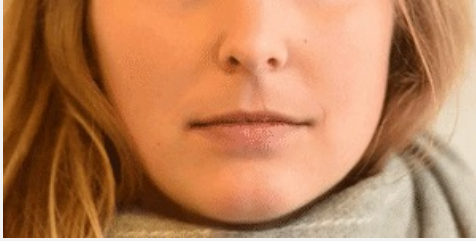
AUI2 - Zygomatic Major



AUI5 - Depressor Anguli Oris



VIDEO ANALYSIS

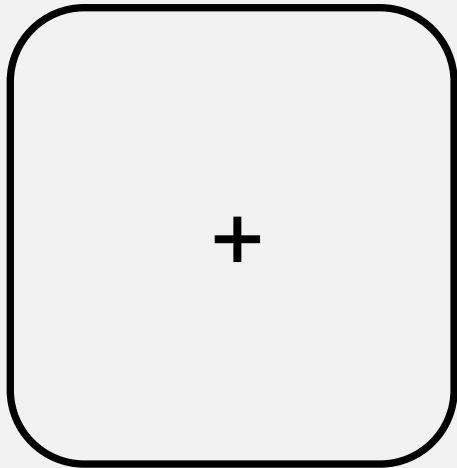


- Video analysis using the Python package Py-feat (Cheong et al., 2021)

TASK



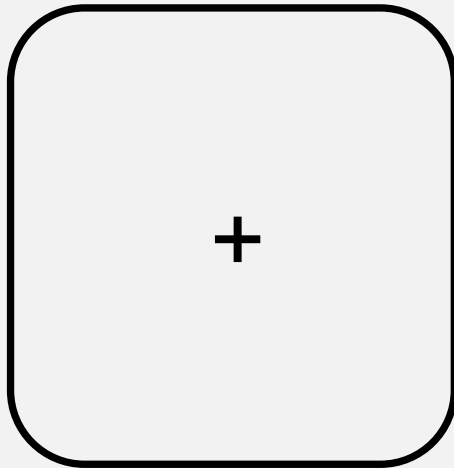
Before -750 ms



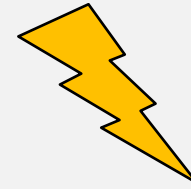
750 ms



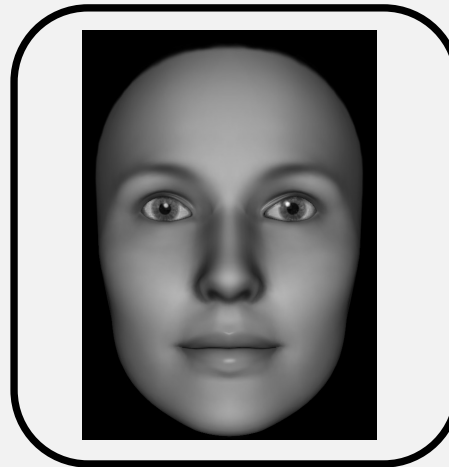
During 0 ms



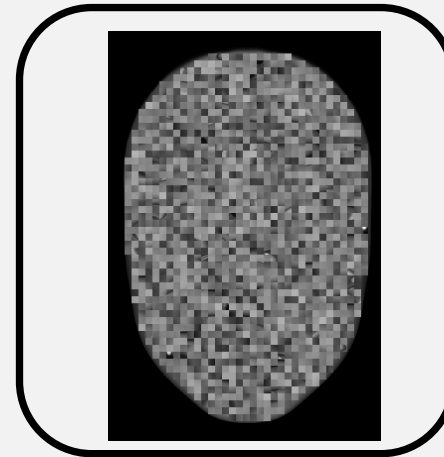
250 ms



After +500 ms



500 ms



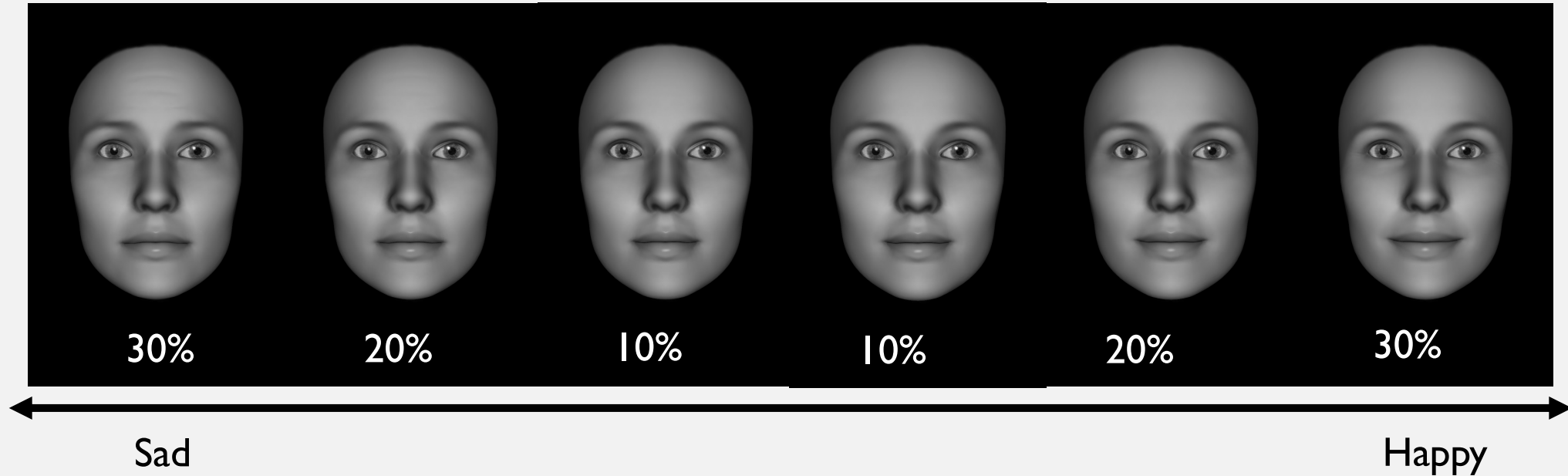
400 - 800 ms



Response or 3000 ms



STIMULI

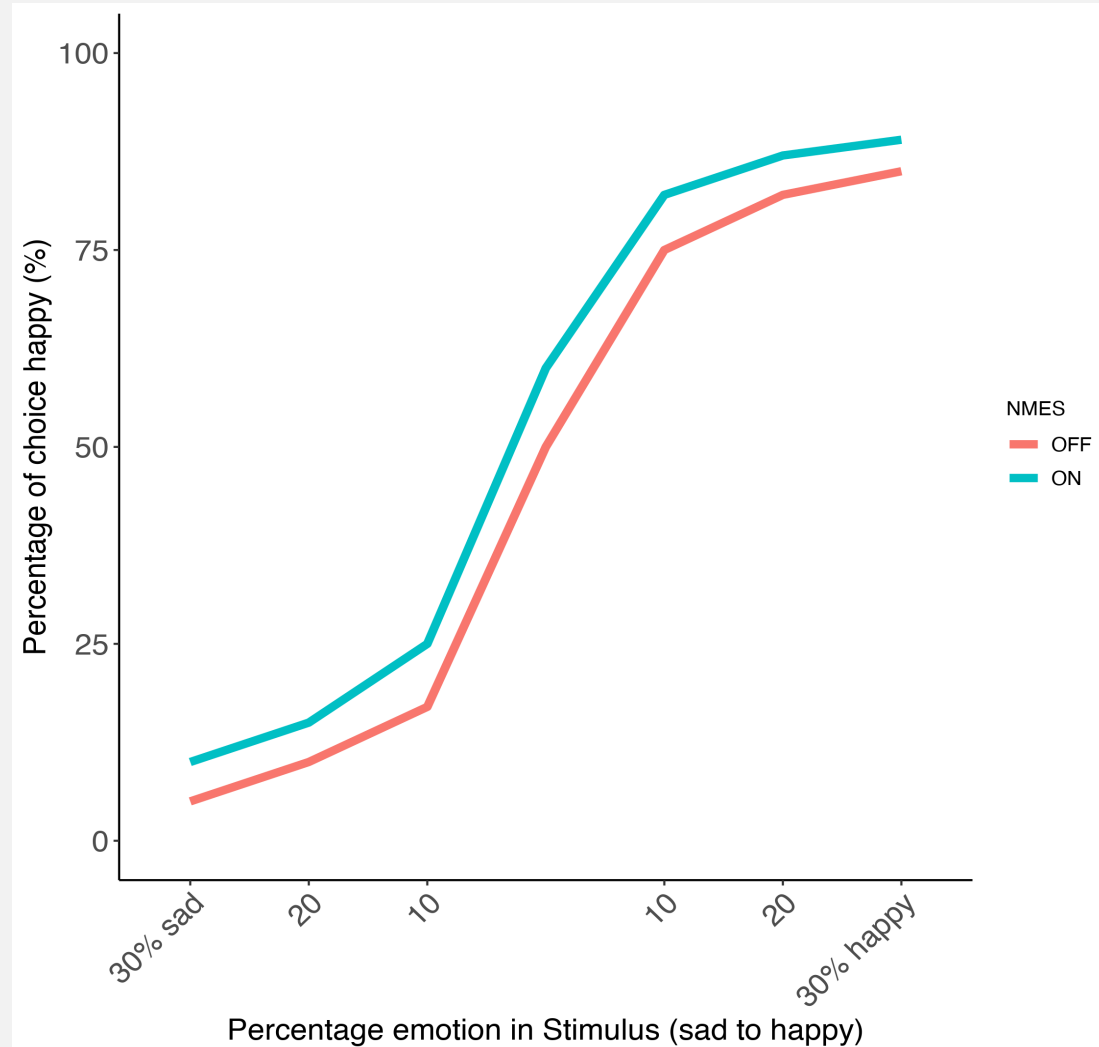


[1] Inner brow raiser
[4] Brow Lowerer
[7] Lids Tightener
[11] Nasolabial Deepener
[15] **Lip Corner Depressor**

[6] Cheek Raiser
[7] Lids Tightener
[12] **Lip Corner Puller**

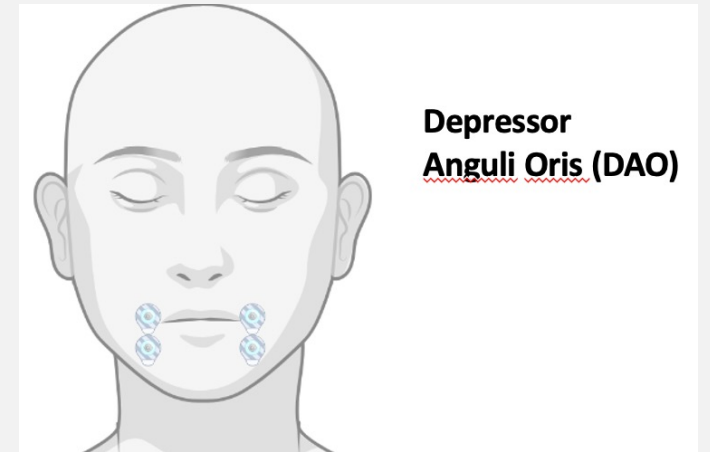
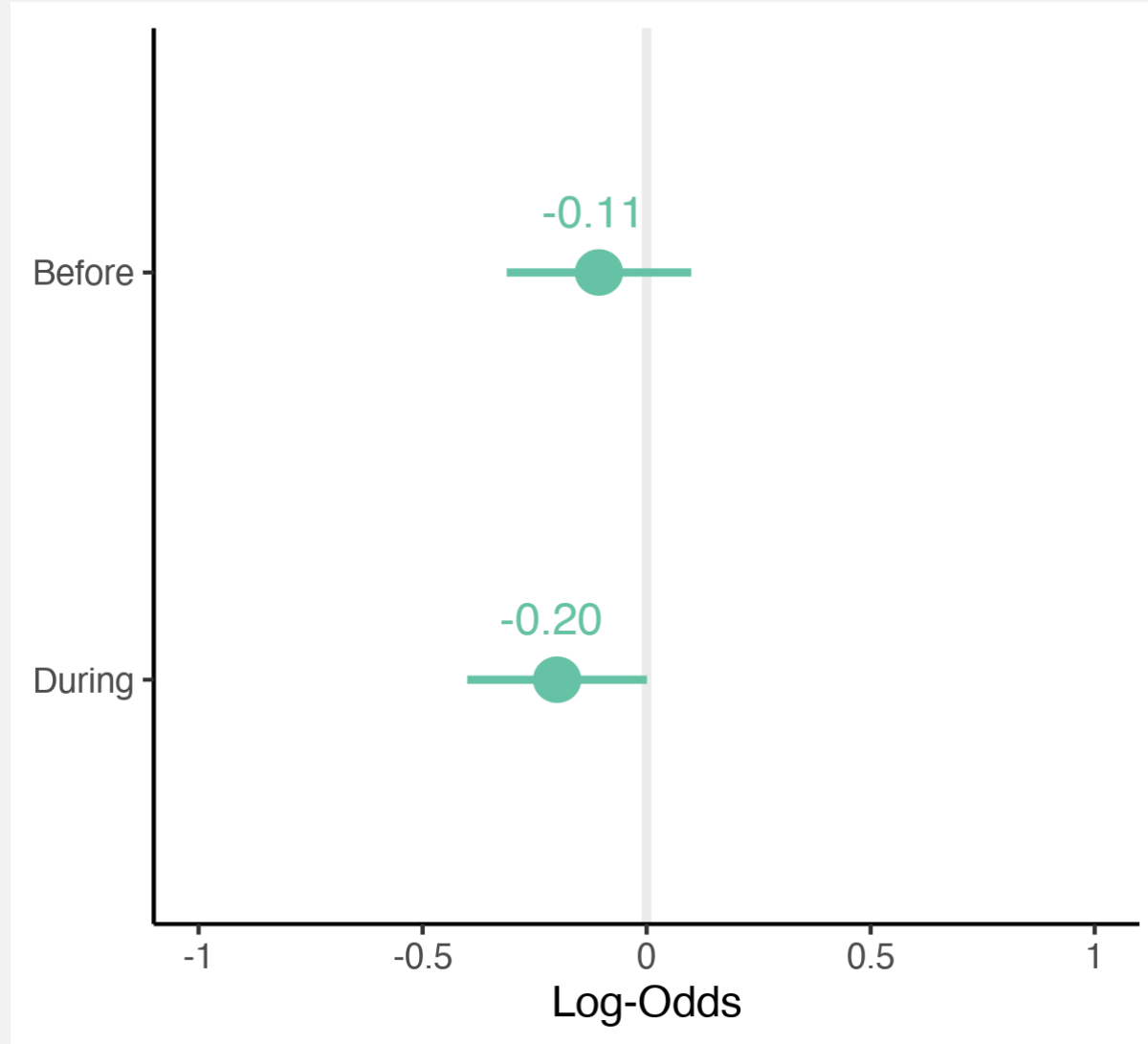
Three studies

1. NMES applied to the DAO
2. NMES applied to the ZM
3. Within subject design consisting of two sessions in which NMES was applied to the DAO and ZM



RESULTS

N = 18



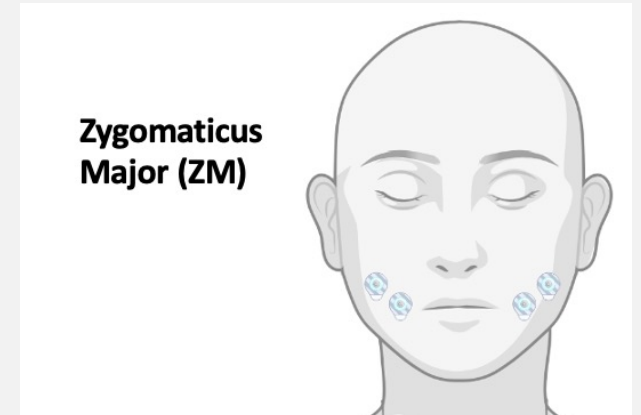
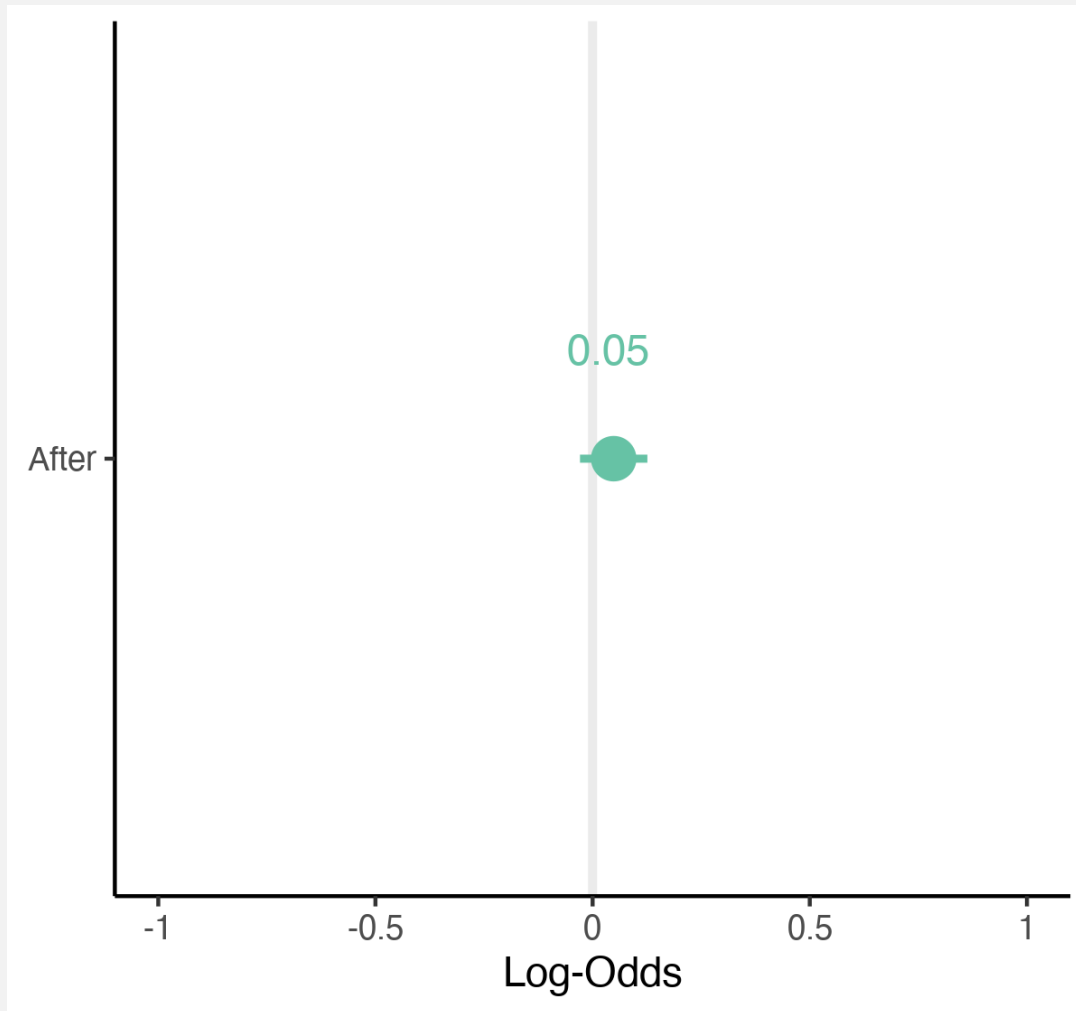
Increased odds of choosing sad

Increased odds of choosing happy



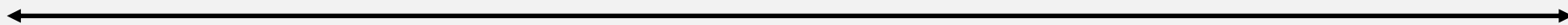
RESULTS

N = 24



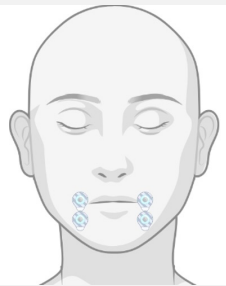
Increased odds of choosing sad

Increased odds of choosing happy

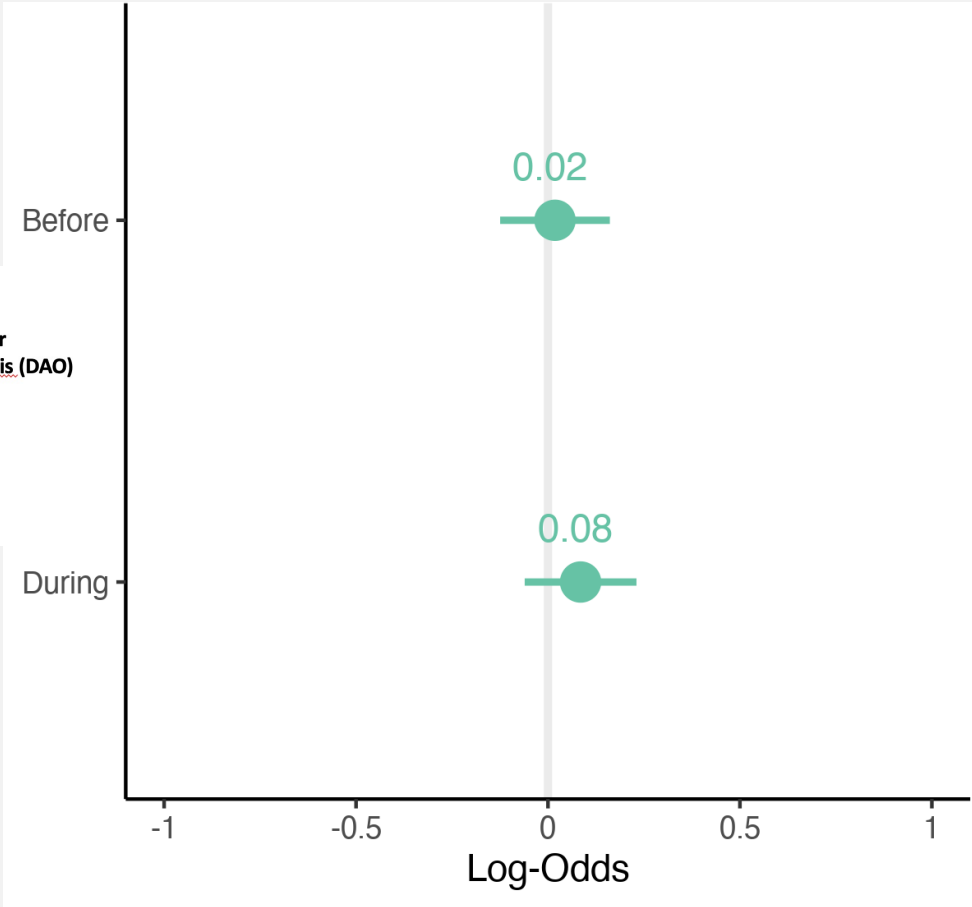


RESULTS

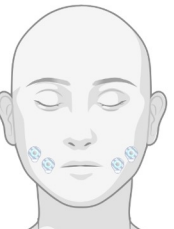
N = 22



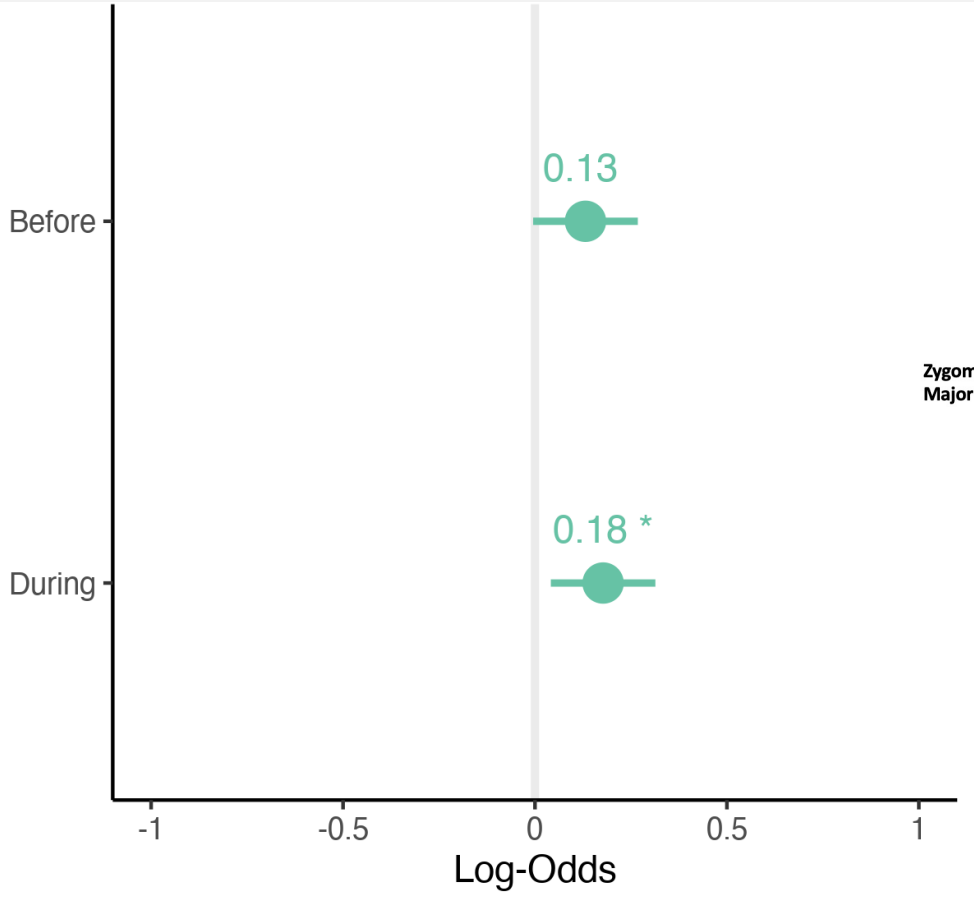
Depressor Anguli Oris (DAO)



Increased odds of choosing sad



Zygomaticus Major (ZM)



Increased odds of choosing happy



DISCUSSION

- Our initial pilots suggest stronger facial feedback effects when stimulation is delivered ‘during’ visual stimulus onset.
 - Both for DAO and ZM muscles
- However, we could not replicate our findings for the DAO which may be due to expressions of sadness containing more muscles/AUs than for happiness
- Based on our pilot studies, we aim to recruit 50 participants

THANKS TO



Dr Sebastian Korb



Dr Marc Mehu



Dr Arthur Elsenaar



Dr Reinhold Scherer



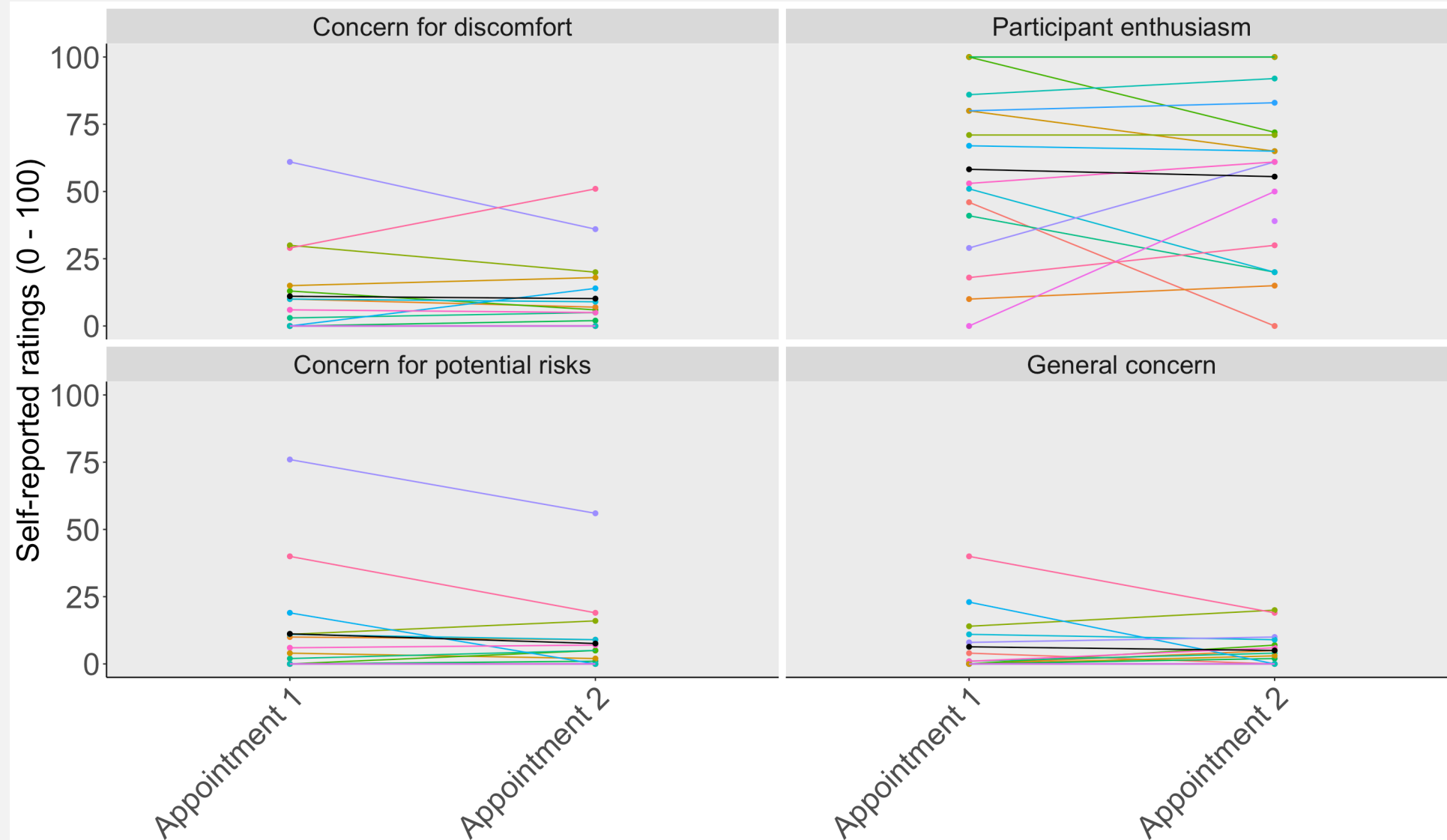
Dr Alex Sel



Dr Joshua Baker

FWF Der Wissenschaftsfonds.

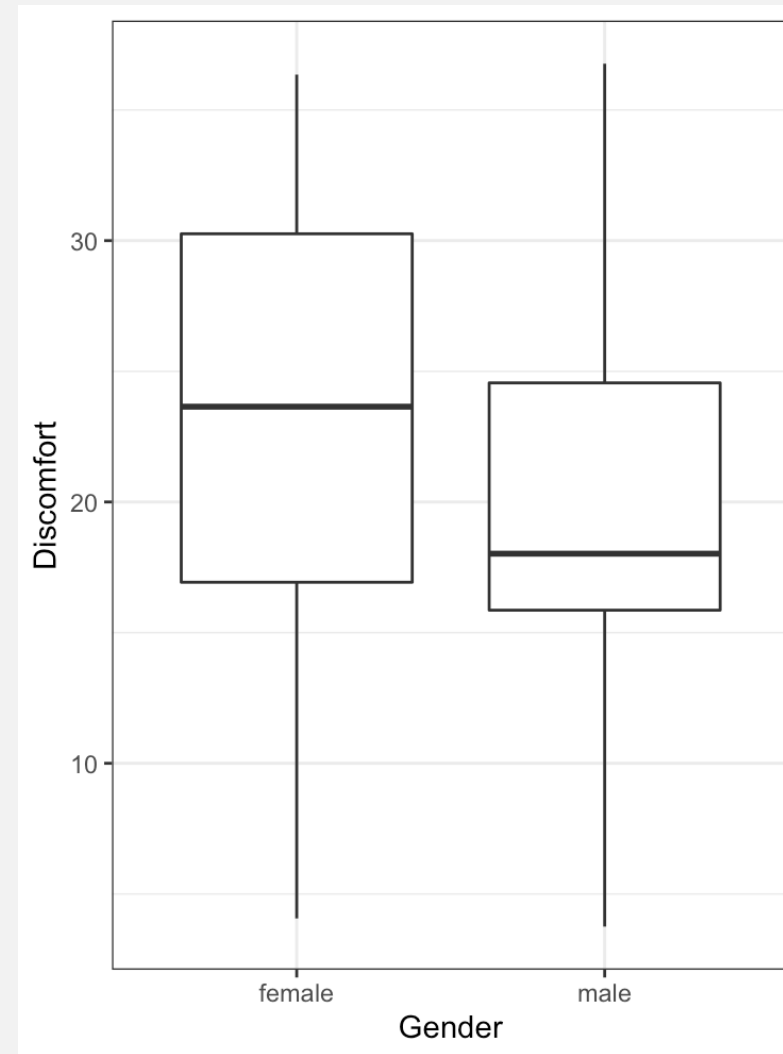
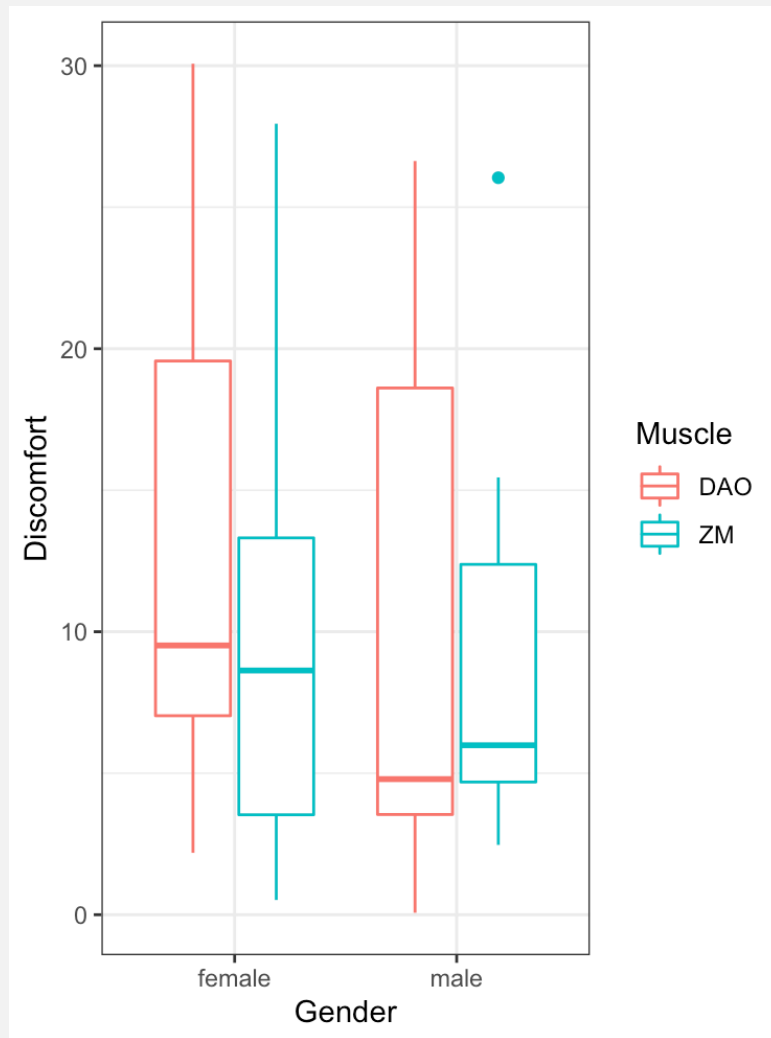
NMES



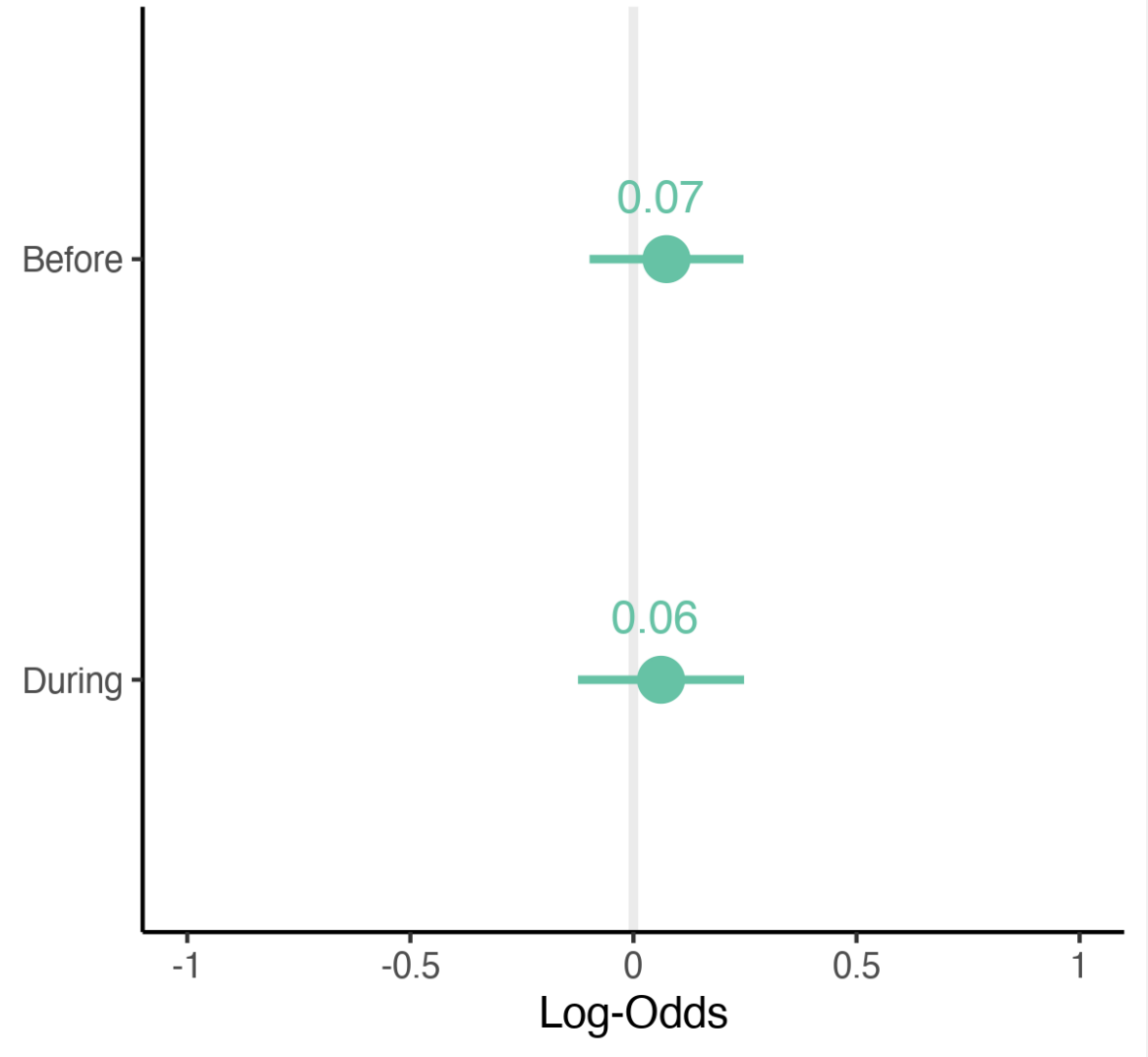
DISCOMFORT RATINGS

Pilot of ZM and DAO stimulation

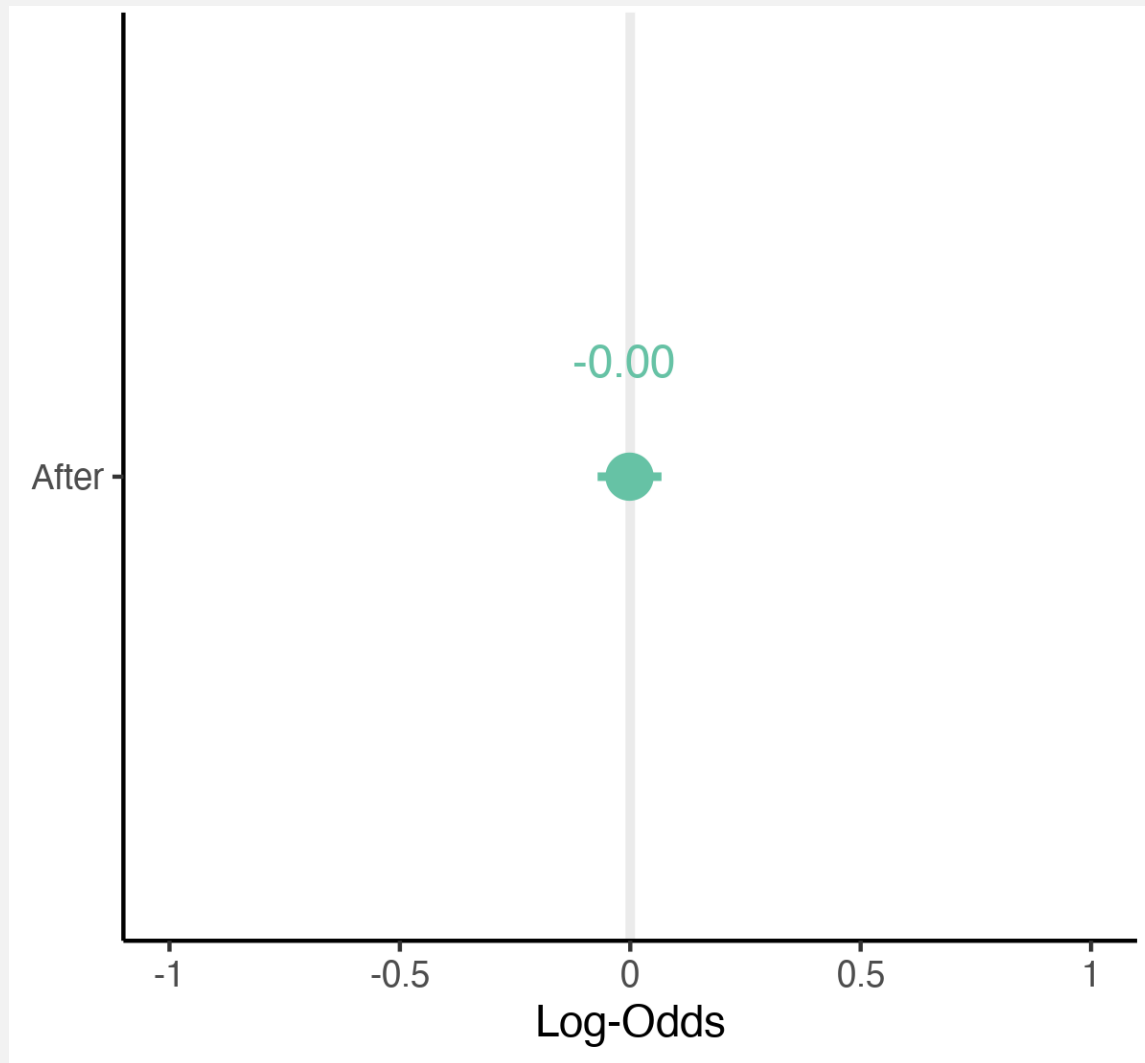
Pilot of DAO stimulation



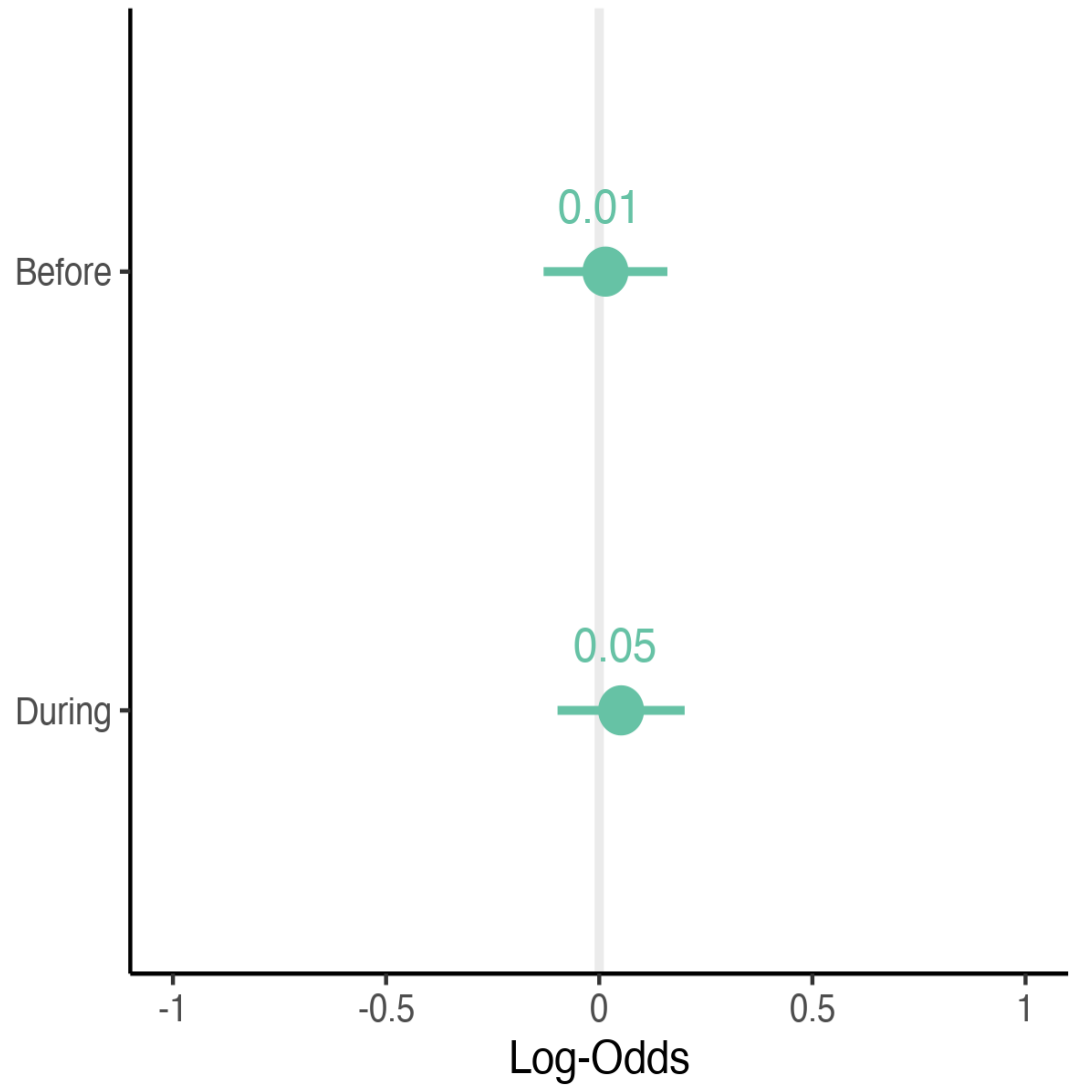
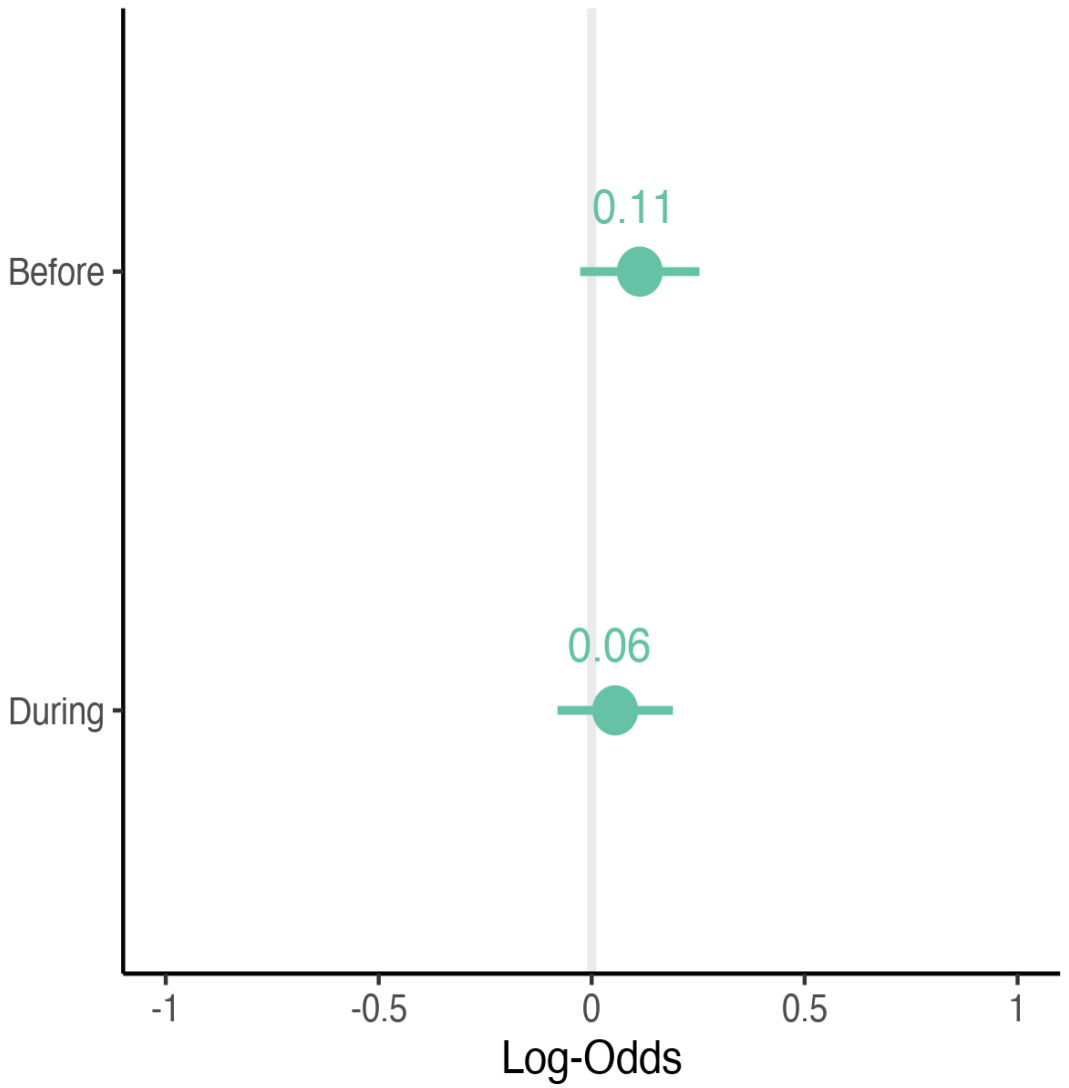
MODELS BY CORRECT RESPONSE



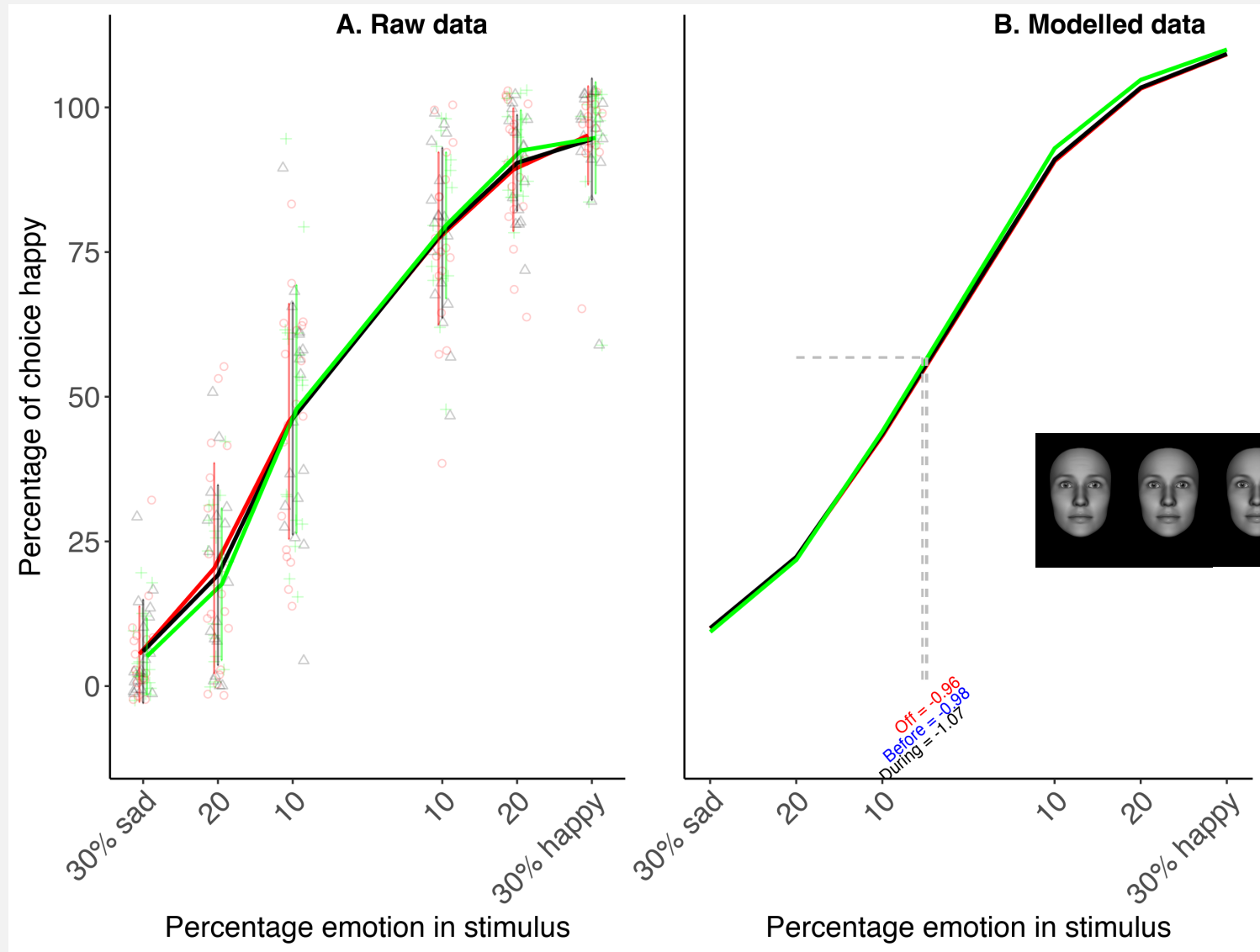
MODEL CORRECT RESPONSE



MODEL CORRECT RESPONSE

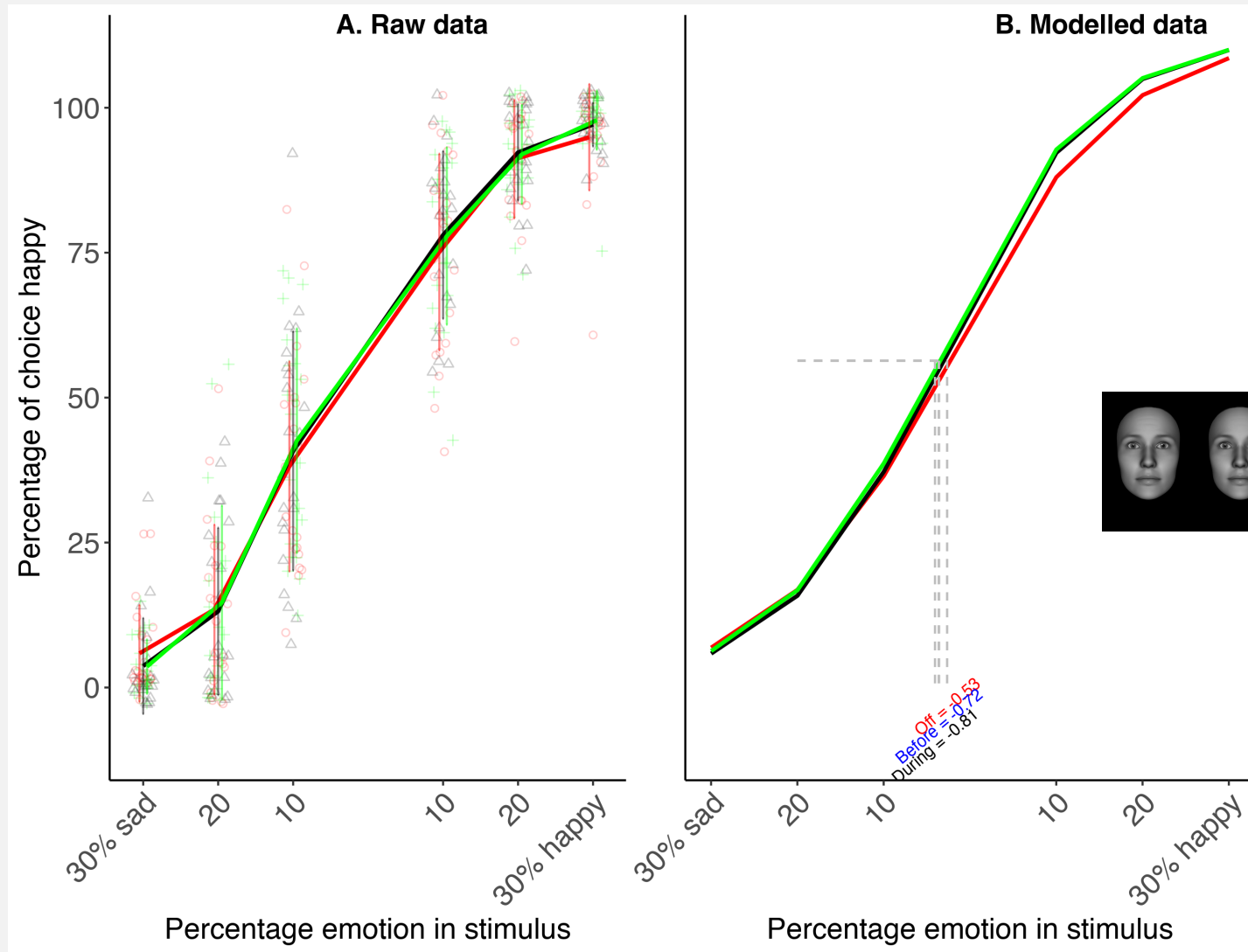


RESULTS – DAO



NMES — off — before — during

RESULTS – ZM



RESULTS – DAO

