

BRAIN FUNCTIONAL CHANGES FOLLOWING MINDFULNESS TRAINING IN ASTHMA

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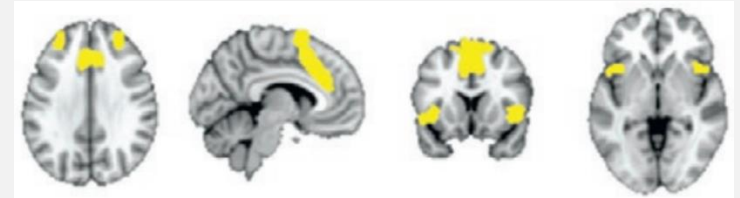
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BACKGROUND

- Psychological distress & asthma
- Neural networks: attention, emotion, salience
 - *PFC, dACC, amygdala, insula*
- Mindfulness-Based Stress Reduction (MBSR)

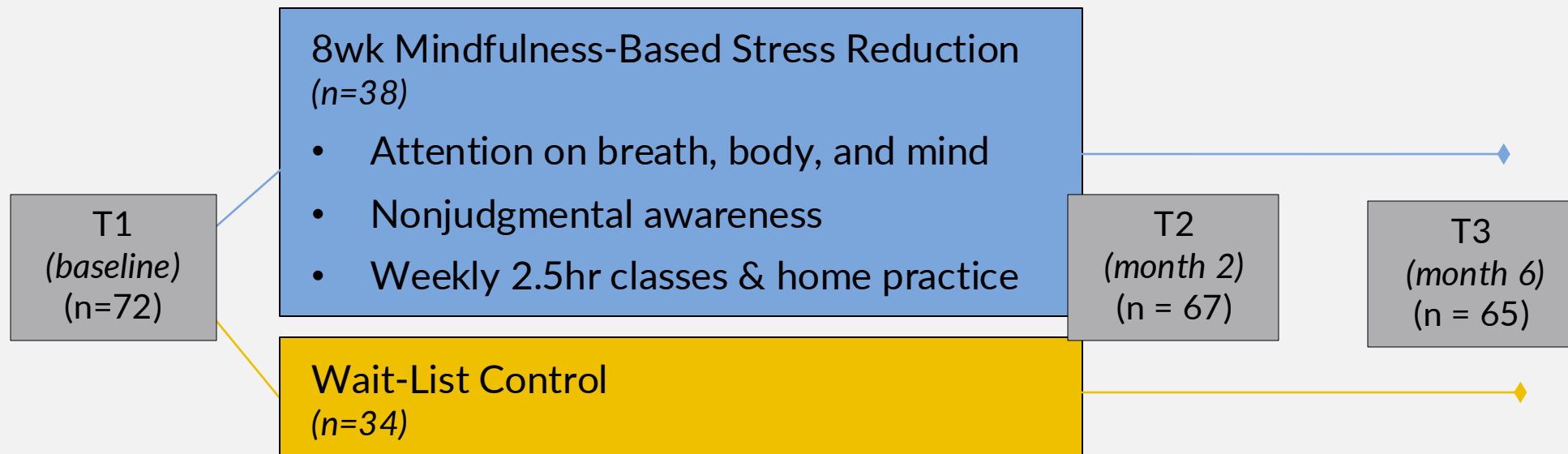


(Menon, 2015; *Brain Mapping: An Encyclopedic Reference*)

- ***Does activity in these neural regions underlie MBSR's impact on disease-related outcomes in asthma?***

METHODS

- **Type 2 Inflammation:** blood & sputum eosinophils, FeNO
- **Self-Report:** asthma control (ACQ-6), mindfulness (FFMQ), distress (SCL90R), depression (BDI), anxiety (BAI)
- **Task-Based fMRI:** Asthma Stroop

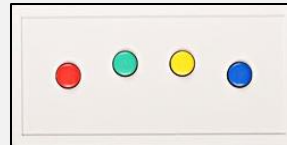


TASK-BASED fMRI: ASTHMA STROOP

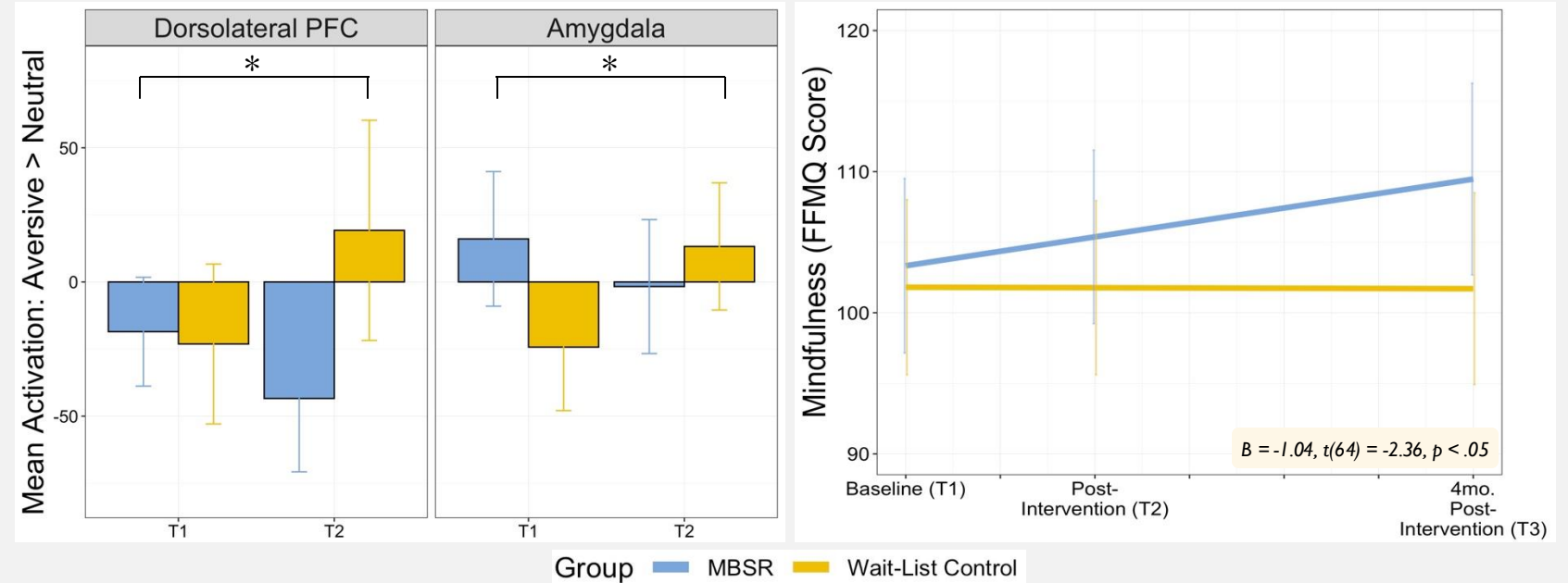
wheeze

lonely

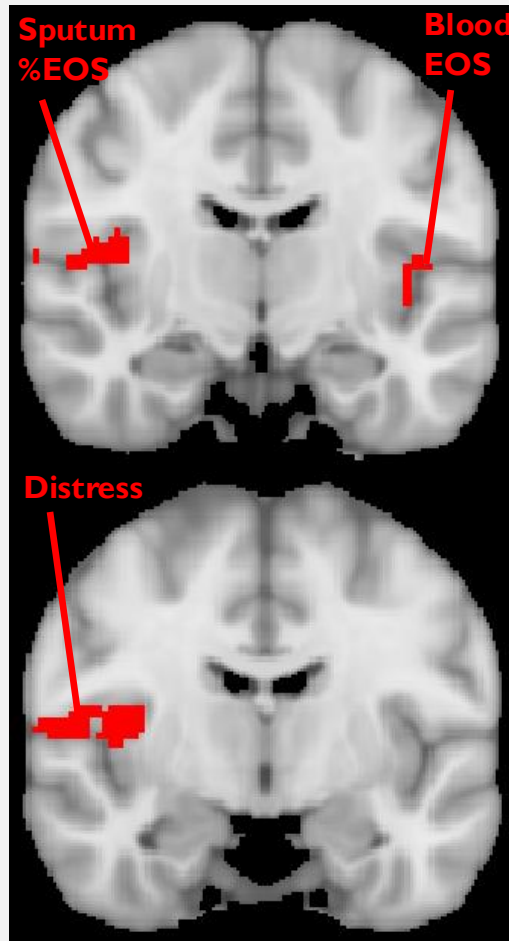
curtains



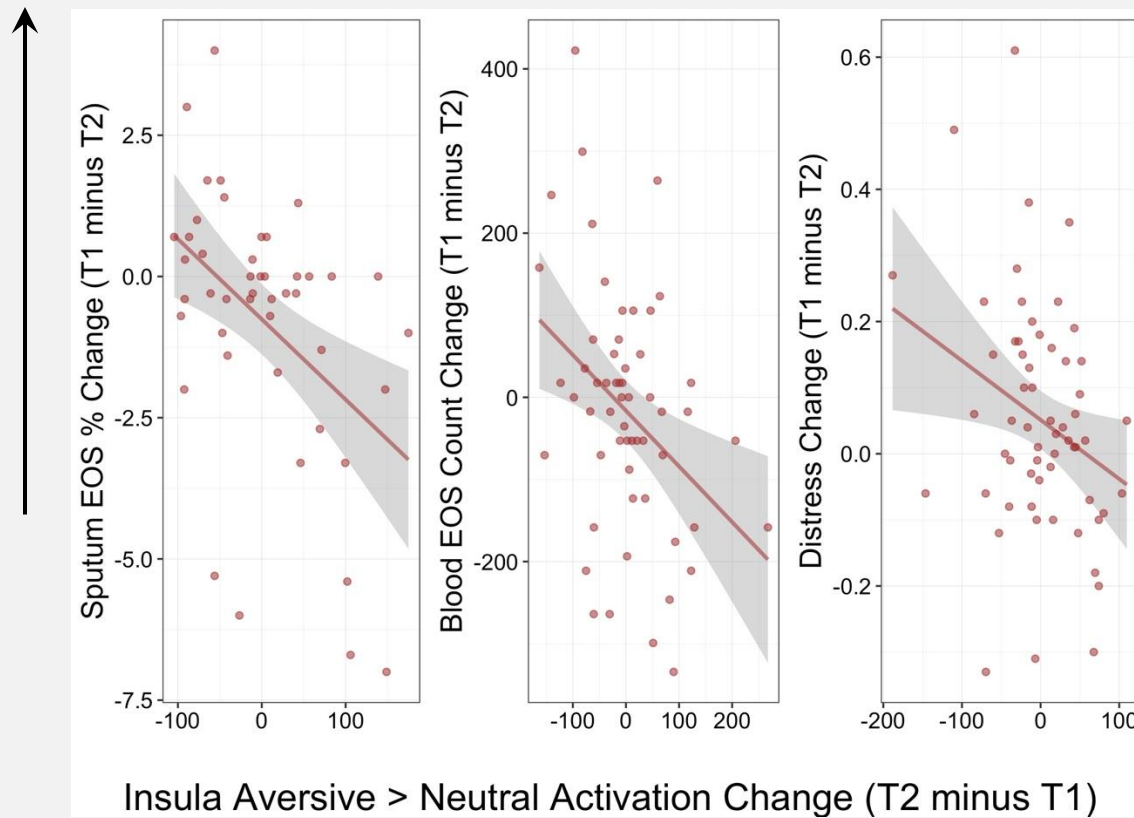
MBSR decreases **dIPFC** and **AMYG** response to aversive cues at T2, relative to wait-list controls, which correlates with increased mindfulness



Across groups, decreased inflammation and distress ~
reduced **insula** response to aversive cues at T2

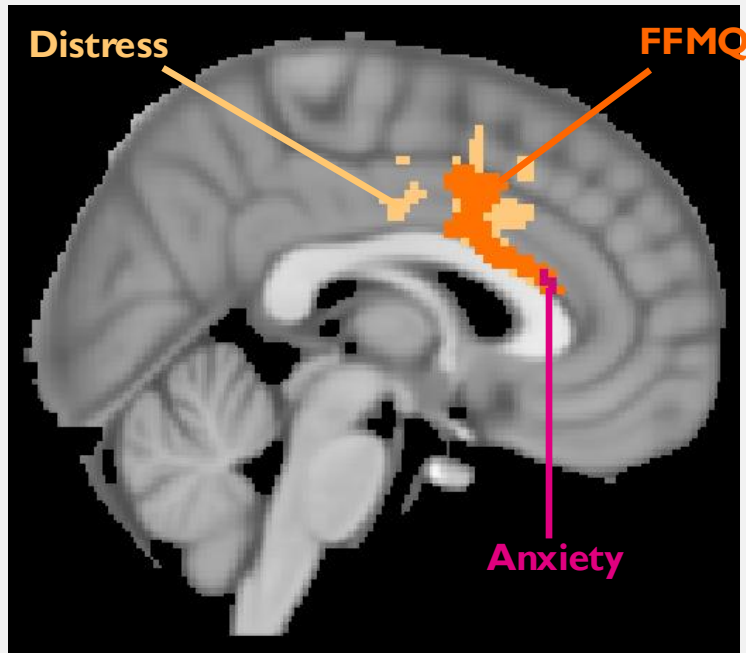


Improved symptoms

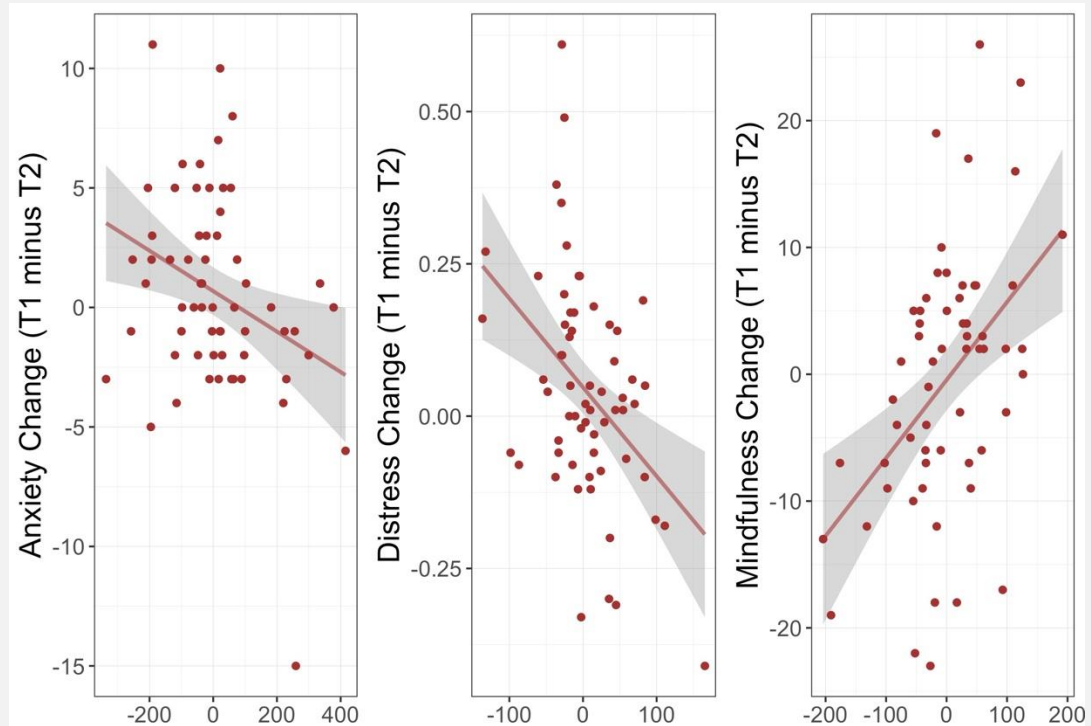


Reduced aversive > neutral
insula activation over time

Across groups, increased mindfulness and decreased distress ~ reduced **dACC** response to aversive cues at T2



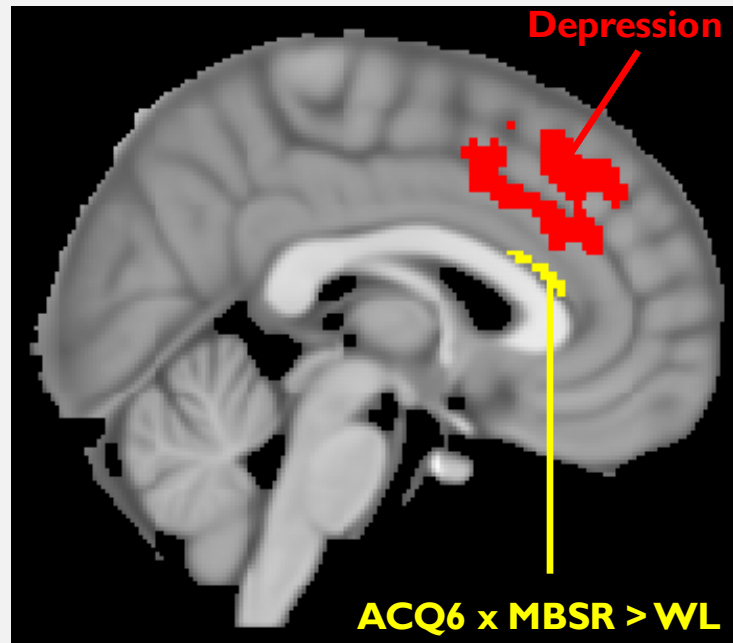
Improved symptoms



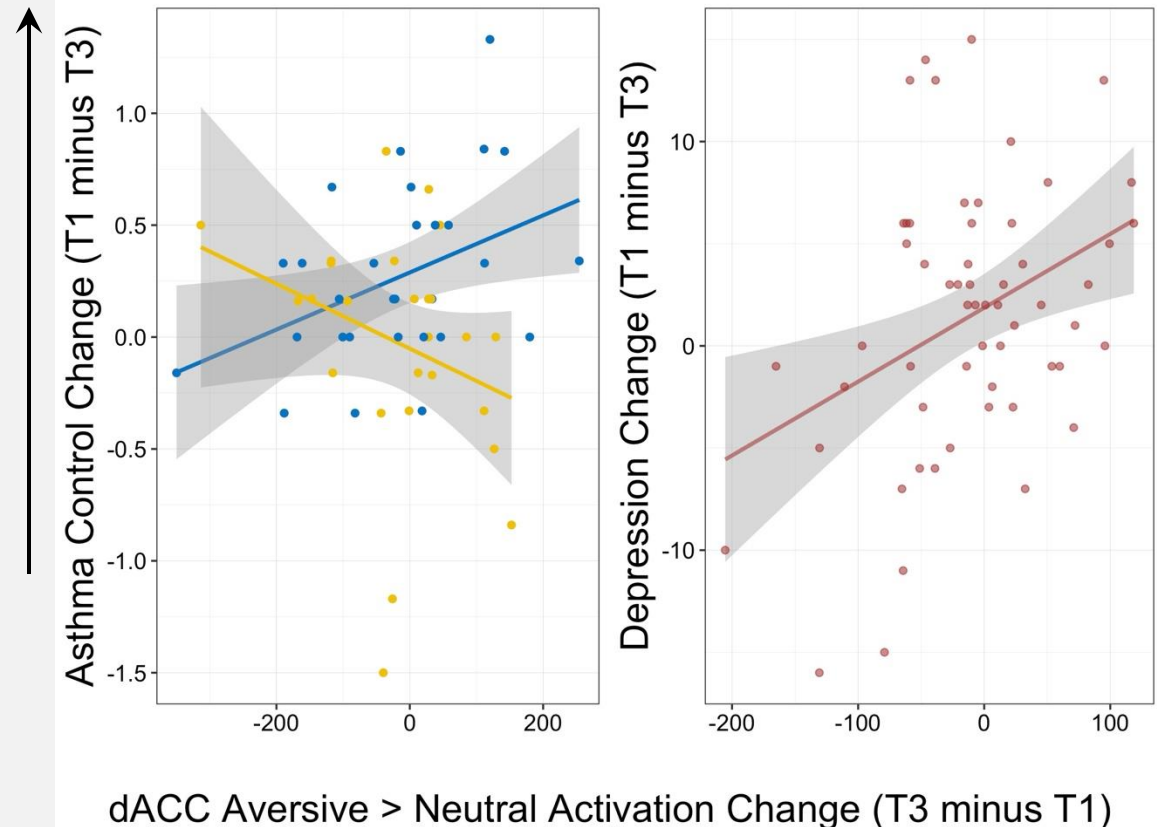
dACC Aversive > Neutral Activation Change (T2 minus T1)

More mindful

MBSR-related improved asthma control and overall decreased depression ~ *increased* **dACC** response to aversive cues at T3



Improved symptoms



CONCLUSIONS

- MBSR training alters neural processing of aversive cues
 - *Decreased reactivity, enhanced attention/emotion regulation*
- Decreased neural salience reactivity is associated with positive disease outcomes
- dACC's role in mindfulness, emotion, and asthma may become more regulatory over time
- Mind-body relationships in asthma treatment

THANK YOU



Melissa Rosenkranz, PhD



Richard Davidson, PhD



Bill Busse, PhD



... & many others!