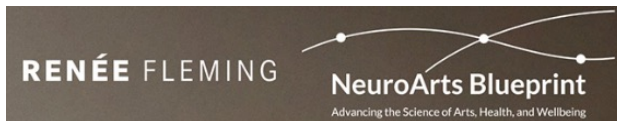


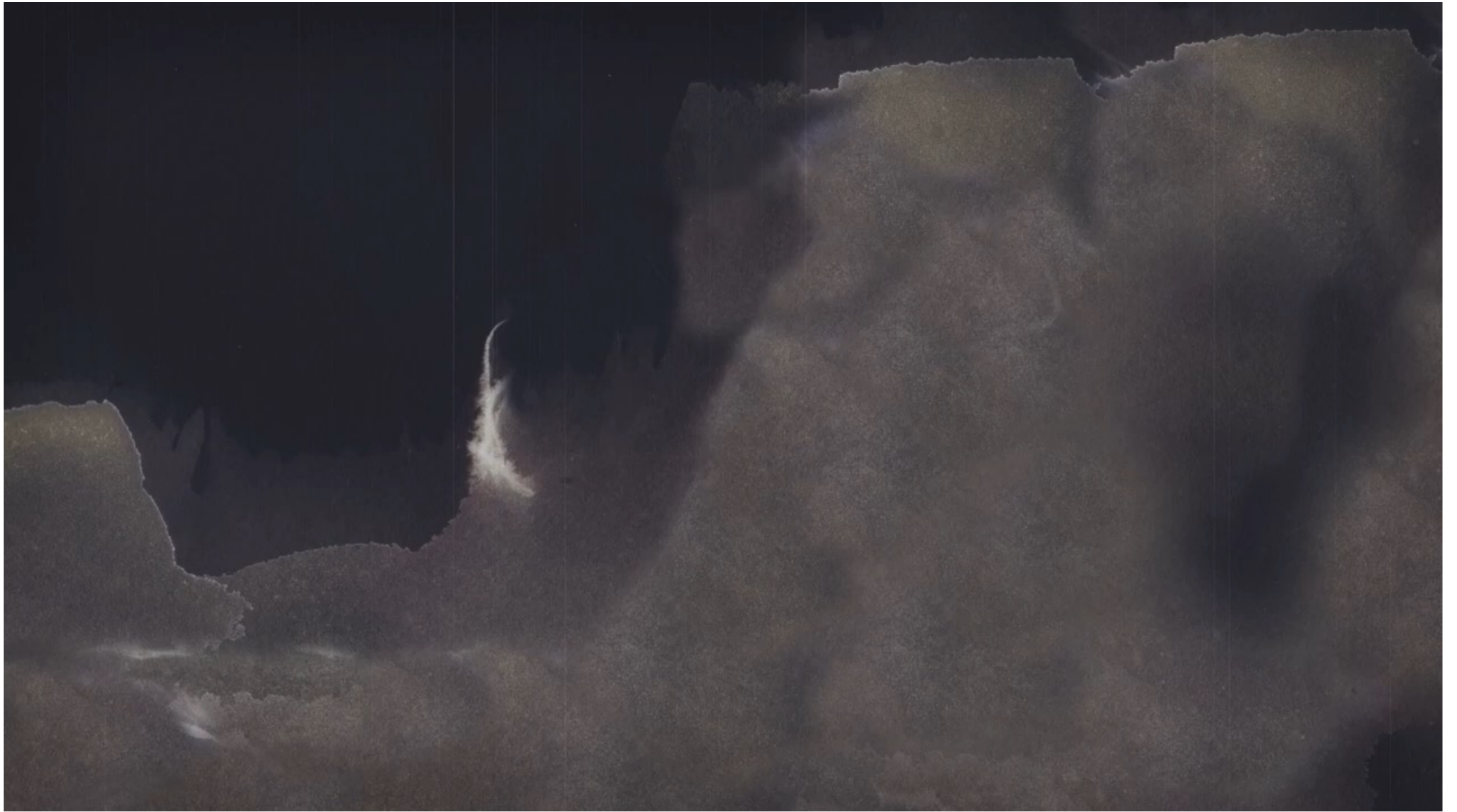


Integrating Drawing and Mindfulness to Reduce Anxiety: A Longitudinal Neurophysiological Study

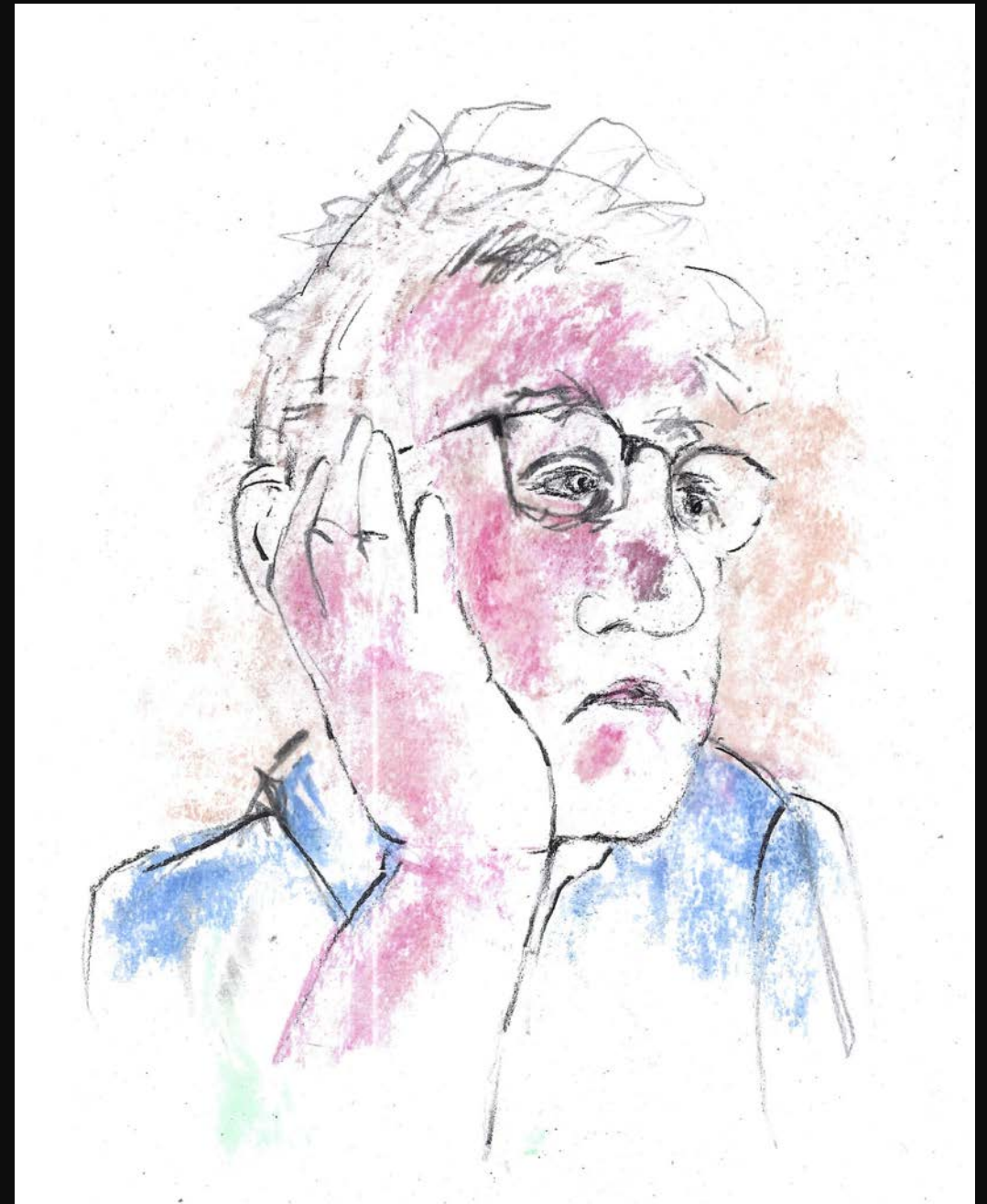
Sarah Myruski, William J. Doan, Kristin A. Buss,
and MiND Study Team Members
The Pennsylvania State University



Art by William J. Doan
MiND Logo by Aastha Soni



-
- For years, I filled sketchbooks with trembling lines, restless scribbles, spirals that tightened and unraveled. These were not simply drawings; they were visual echoes of how my nervous system felt—shaky, relentless, looping.
 - Those drawings gave form to my private struggles. They turned an invisible condition into something others could see, hear, and feel. But they also raised a question I couldn't ignore: was I only *expressing* anxiety, or could the very act of drawing and performing help *relieve*, disrupt, or interrupt it?
 - Could drawing be more than representation—could it be intervention for others? It worked for me.
 - That question, among others, led me to Dr. Sarah Myruski at Penn State's Emotion Development Lab.
-

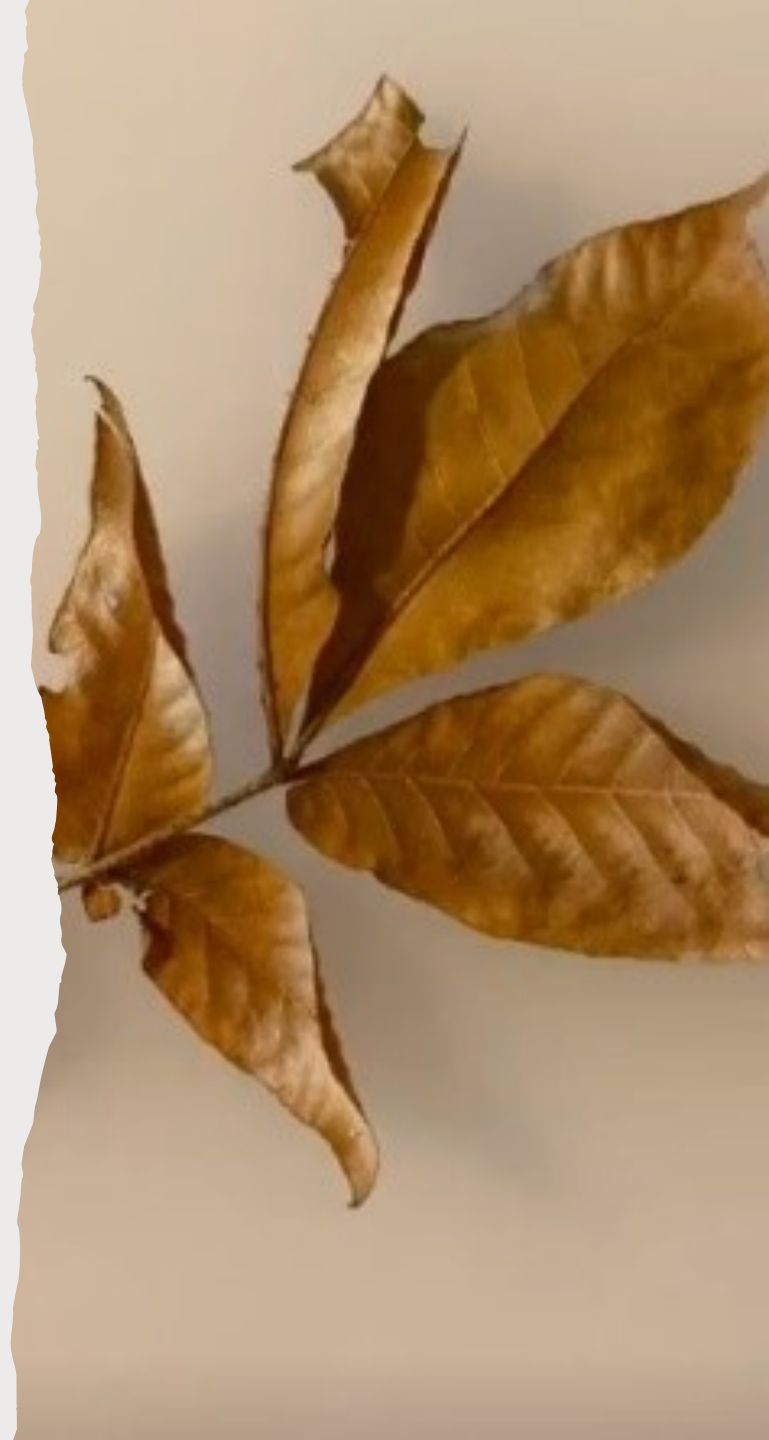




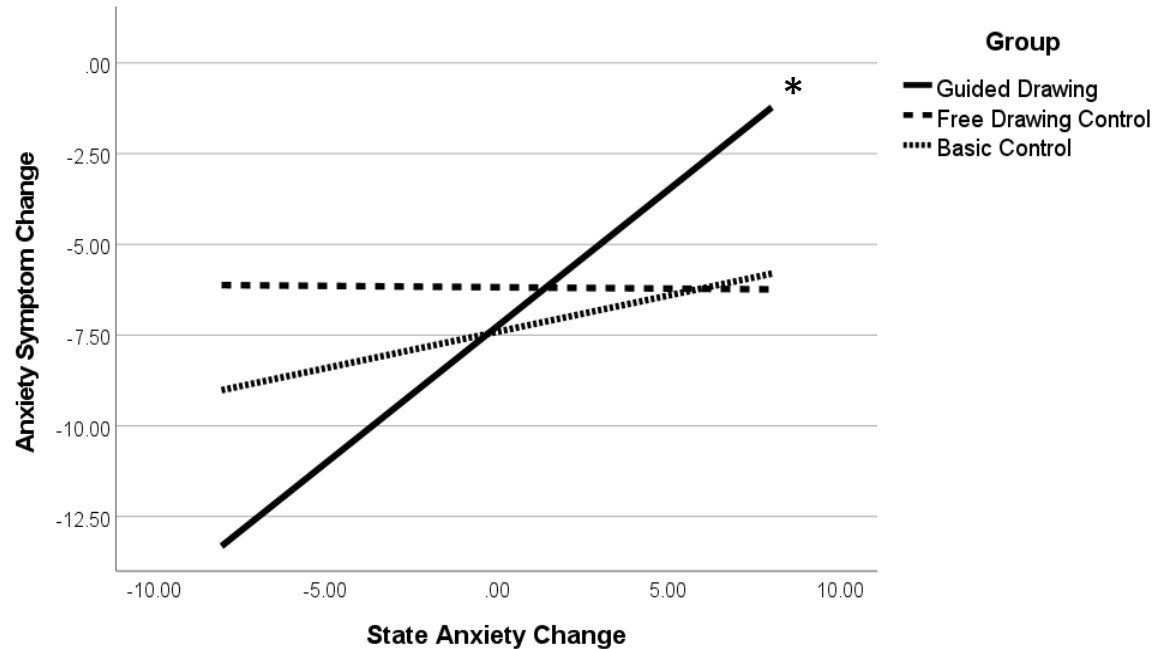
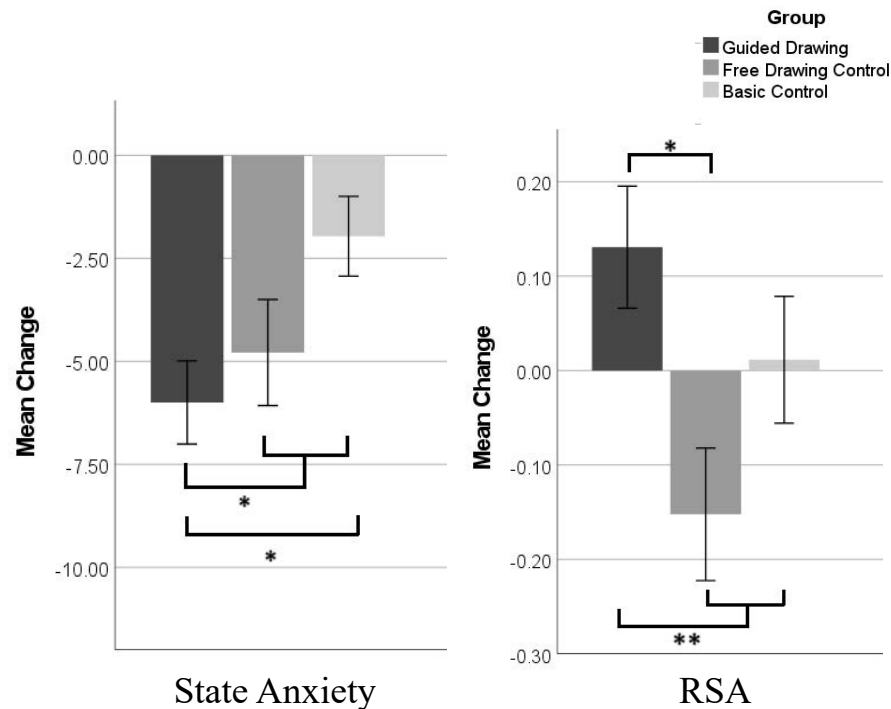
- **Anxiety symptoms** commonly emerge in adolescence and early adulthood
 - The majority of those experiencing elevated symptoms do not receive treatment
- **Mindfulness meditation**
 - Empirical support for a range of wellness benefits (e.g., Keng et al., 2011)
 - Practical benefits may be diminished (e.g., Lymeus et al., 2019)
 - Intervention drop out
 - Difficulty establishing regular practice
- → Leverage **drawing** as an approachable, tangible way to engage in mindfulness



Guided Drawing Activity

- ~20-minute recording led by Bill
 - Draw natural objects
 - Mindfulness elements
 - Focused breathing
 - Non-judgmental
 - Embodied movement
 - Process over product
- 

Guided drawing reduced anxiety and increased physiological relaxation



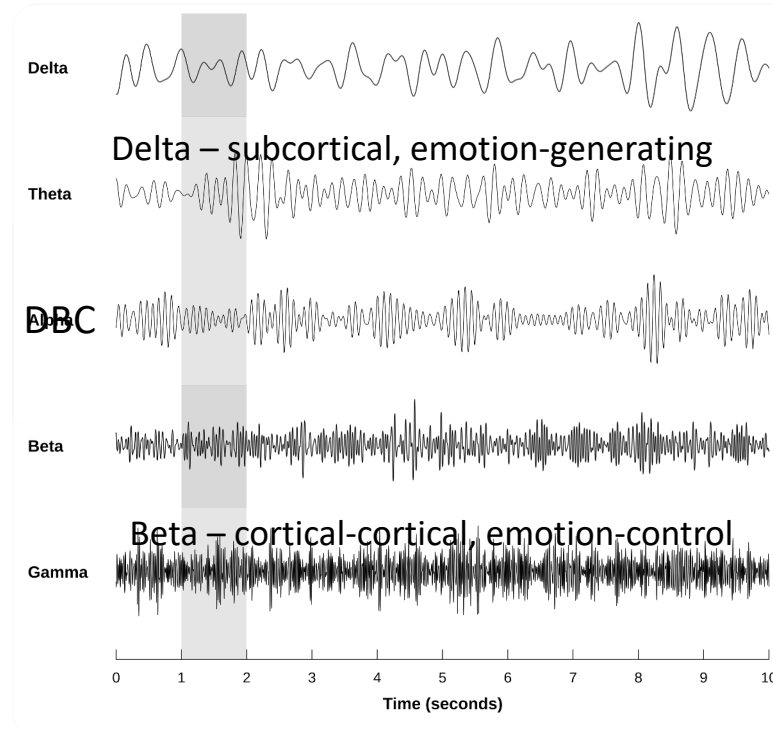
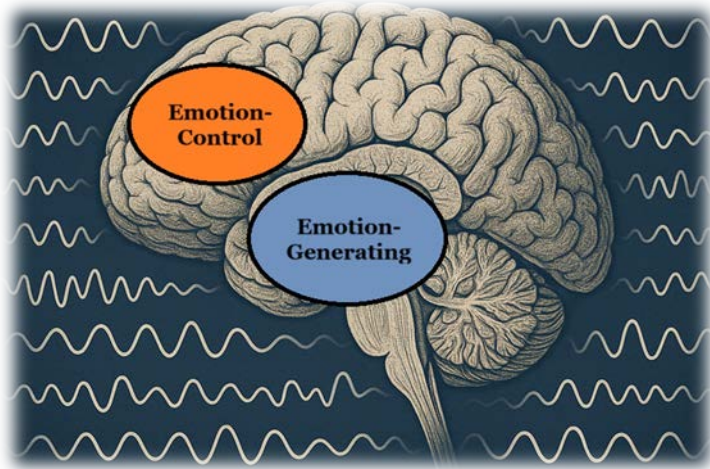
* $p < .05$; ** $p < .01$; *** $p < .05$

(Myruski, Penner, Buss & Doan, under review)

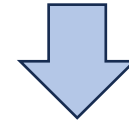
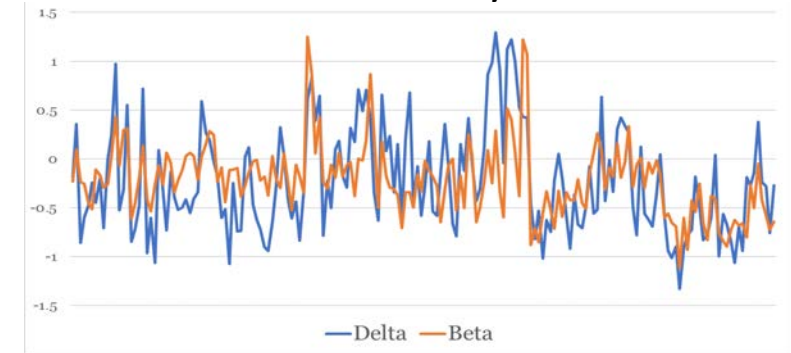
NeuroArts Investigator Award:

Does guided drawing change neurophysiological regulation?

Delta-Beta Coupling (DBC)



High coupling at rest →
neural overcontrol or
inefficiency



Expect to see lower resting-
state coupling after guided
drawing intervention

MIND

Mindfulness, Neuroscience, and Daily Life

Lab Visit 1

- Report recent anxiety symptoms and difficulties with emotion regulation

- *Report current anxiety



- *Guided Drawing Activity



- *Report current anxiety



4 weeks

At-Home Sessions 2x per week

- *Report current anxiety

- *Guided Drawing Activity

- *Report current anxiety

Lab Visit 2

- Report recent anxiety symptoms and difficulties with emotion regulation

- *Report current anxiety



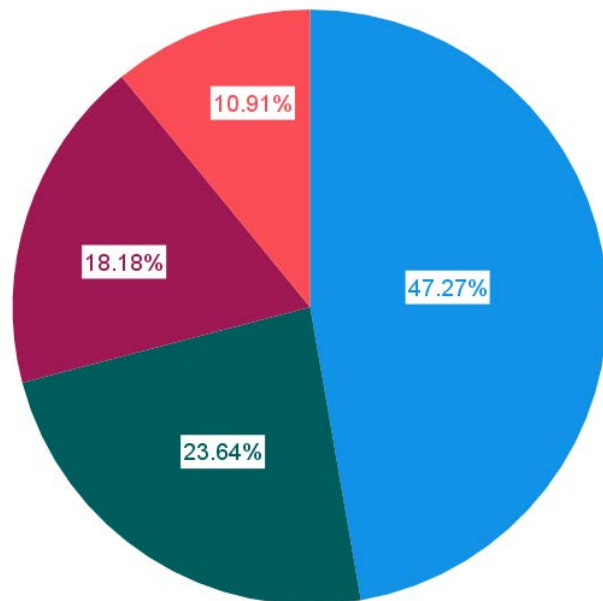
- *Guided Drawing Activity



- *Report current anxiety

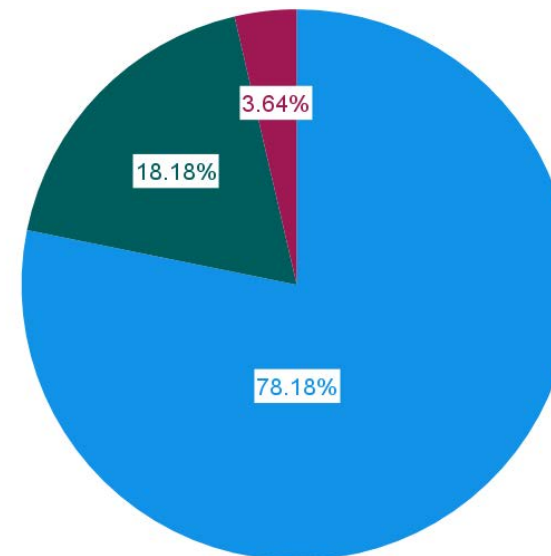


Does current anxiety decrease within sessions?
Does guided drawing change delta-beta coupling?
Do anxiety symptoms and emotion regulation difficulties decrease across the intervention?



On average, how often have you meditated in the past 6 months?

- Not at all
- Less than once per month
- 1 to 3 times per month
- 1 time per week or more

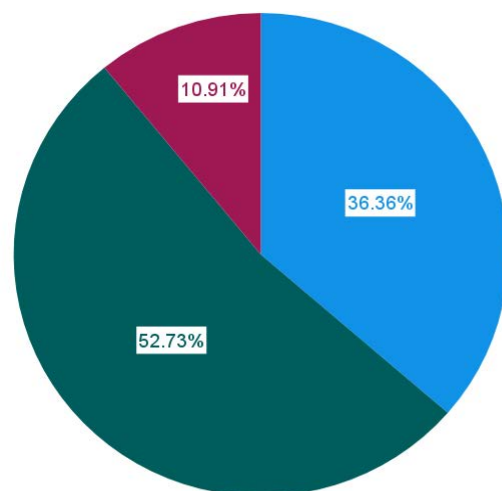


On average, how often have you set aside time to draw in the past 6 months?

- Less than once per month
- 1 to 3 times per month
- About once per day or more

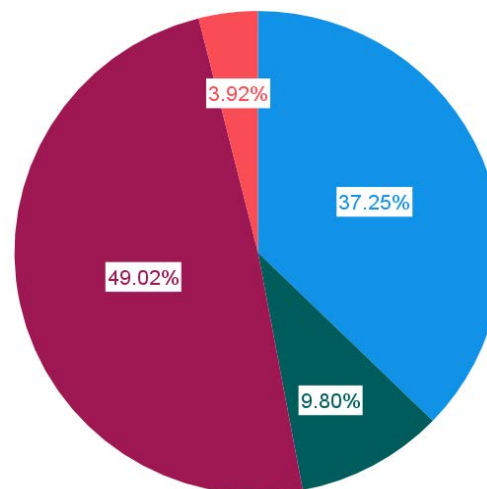
Participants

55 adults ages 18 – 25 years ($M = 21.55$, $SD = 2.12$)
recruited from central PA community



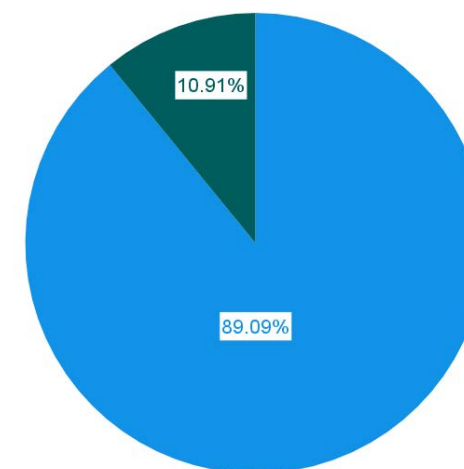
Gender

- Man
- Woman
- Non-binary individual



Race

- Asian
- Black or African American
- White
- More than one race

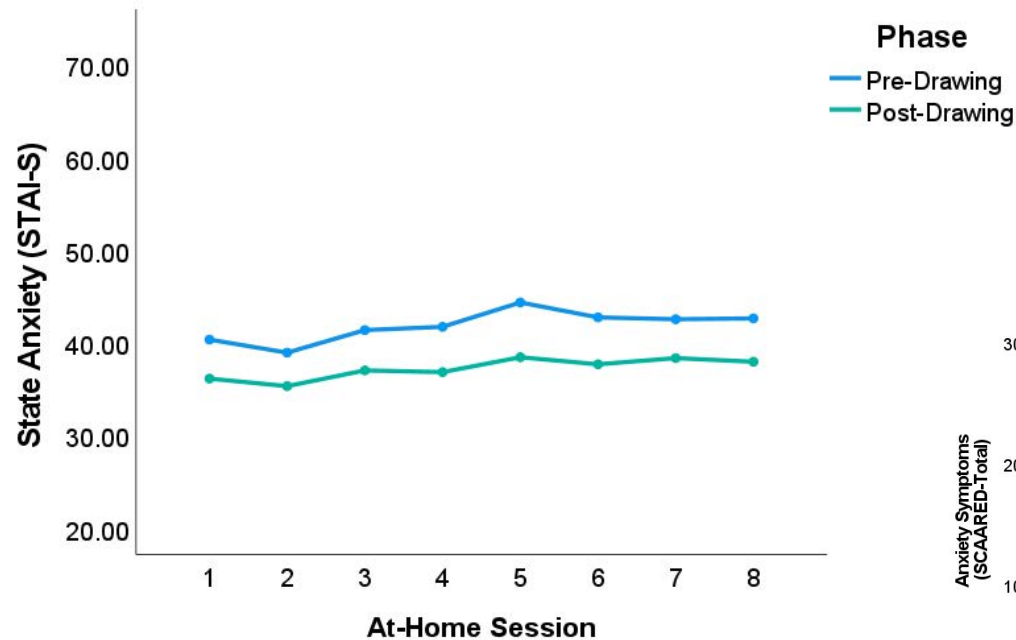


Ethnicity

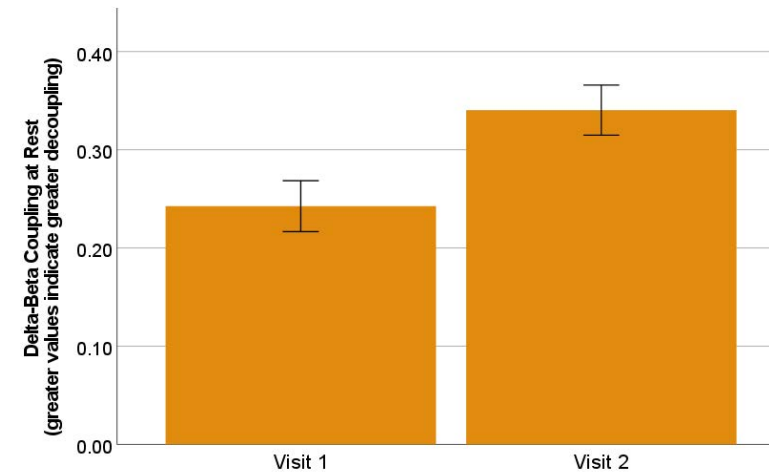
- Not Hispanic or Latinx
- Hispanic or Latinx

Preliminary Results

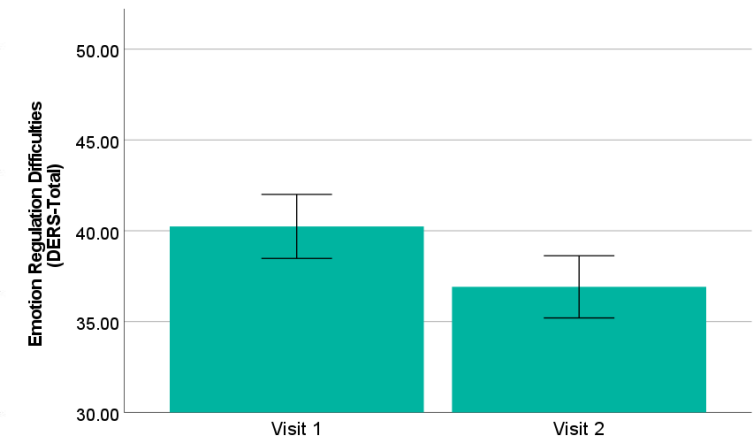
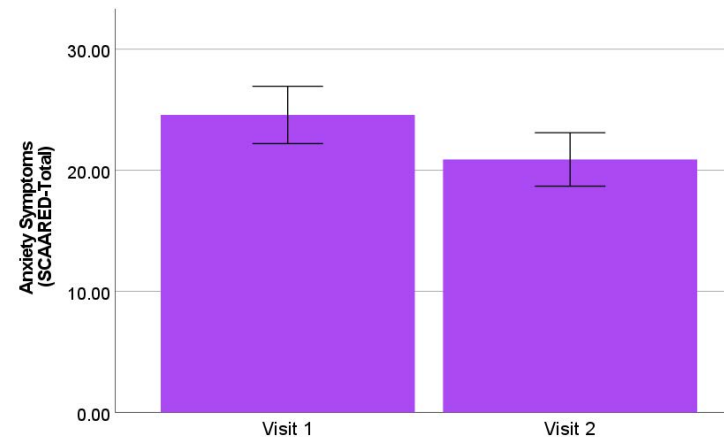
State anxiety significantly decreased *within* each at-home session ($p < .001$, $d = .43-.83$, $n = 54$), but the magnitude of decrease did not significantly change over time ($p = .670$).



Significant resting-state DBC decoupling between Visit 1 and Visit 2 ($p = .011$, $d = .48$, $n = 32$).



Between Visit 1 and Visit 2, anxiety symptoms ($p = .006$, $d = .42$) and emotion regulation difficulties ($p = .001$, $d = .50$) decreased ($n = 47$).



Next Steps

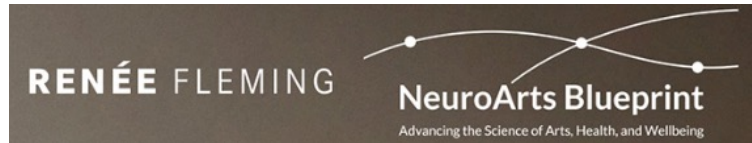
- Examine RSA and DBC dynamics *during drawing*.
 - Prior study established that guided drawing induced RSA augmentation
 - Few studies have examined DBC beyond resting-state
- Focus on habit formation
 - Does guided drawing induce greater habit formation compared to meditation without drawing?



Try the guided drawing
experience!



Thank You!



Study Team

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Bridget Cahill
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Maddie Politte-Corn
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Zoe Snitzer
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Veronica Emigh
Anjali Franklyn
Madeleine Abram



Art by William J. Doan & MiND participants