

# EXPERIENTIAL UNCERTAINTY: INDIVIDUAL DIFFERENCES IN AFFECTIVE AND PHYSIOLOGICAL RESPONDING

## INTRODUCTION

- Individual differences in intolerance of uncertainty (IU) are associated with mental health and well-being<sup>1,2</sup>.
- Prior work has primarily relied on retrospective self-report measures and decision-making tasks to examine responses to uncertainty<sup>3</sup>.
- Here, we use a novel task designed to induce uncertainty, allowing for the examination of affective responding while participants are experiencing uncertainty.

## METHODS

### UNCERTAINTY TASK

- Participants were asked to put their hand into an opaque box and feel an unknown object.
- Measured subjective and physiological activity immediately before placing hand in box.



ANTICIPATORY PERIOD (30S)



GUESSING PERIOD

### STUDY ONE

Intolerance of Uncertainty Scale (short version; IUS-12)<sup>3</sup>

#### Outcome Variables:

- Physiological reactivity scores (change from baseline):
  - Respiratory sinus arrhythmia (RSA) reactivity
  - Interbeat interval (IBI) reactivity
  - Skin conductance level (SCL) reactivity
- Self-reported affect

### STUDY TWO

Affect ratings replaced with ratings of six discrete emotion terms (i.e., nervous, stressed, worried, curious, excited, neutral)

Added Biofeedback Manipulation (adapted from Hill et al., 2024)<sup>4</sup>

#### FALSE

Tones played at 125 bpm; participants' told it is their heartbeat

#### ACCURATE

Tones played in sync with participants' heartbeats

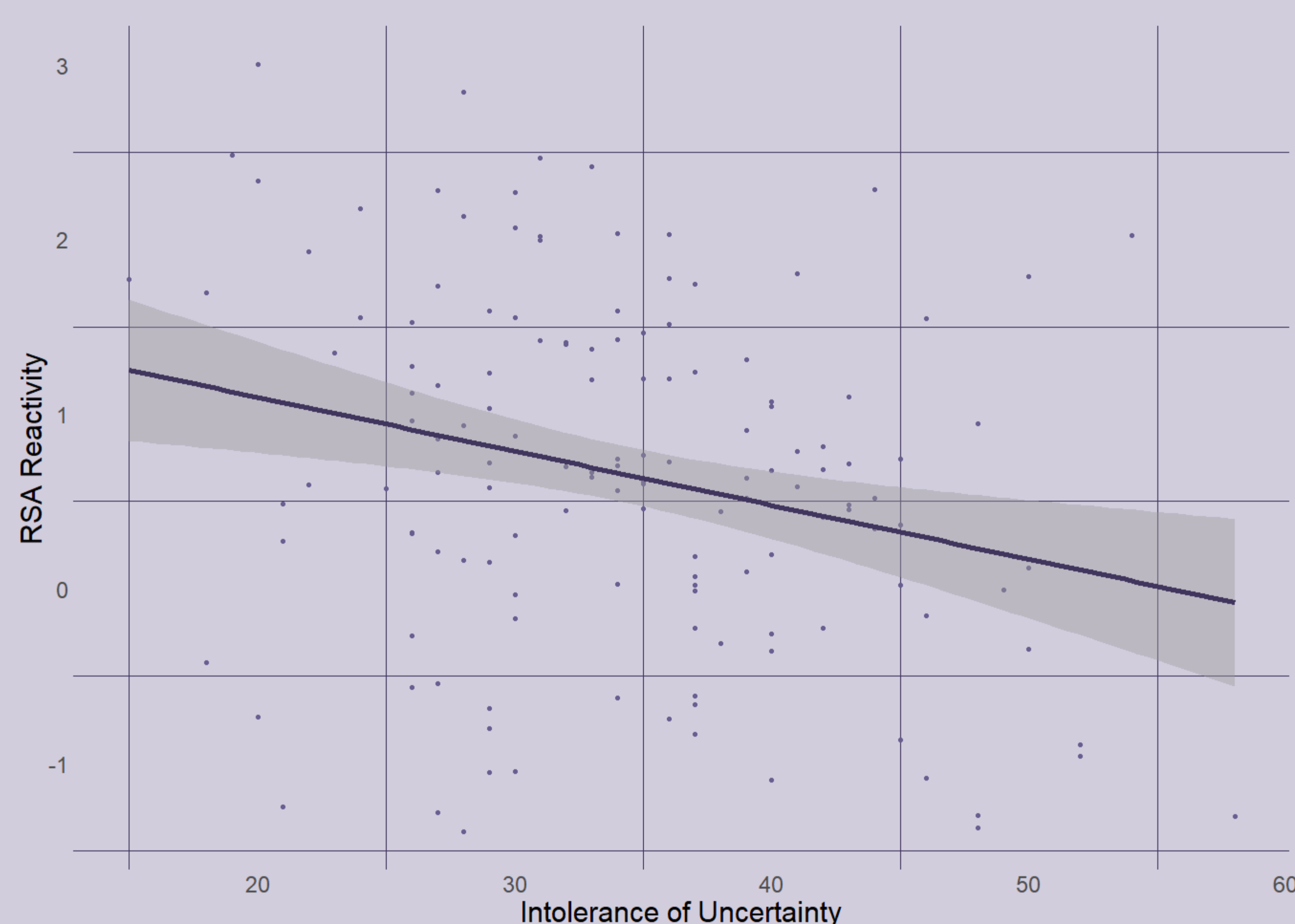
#### NONE

No tones played

## RESULTS

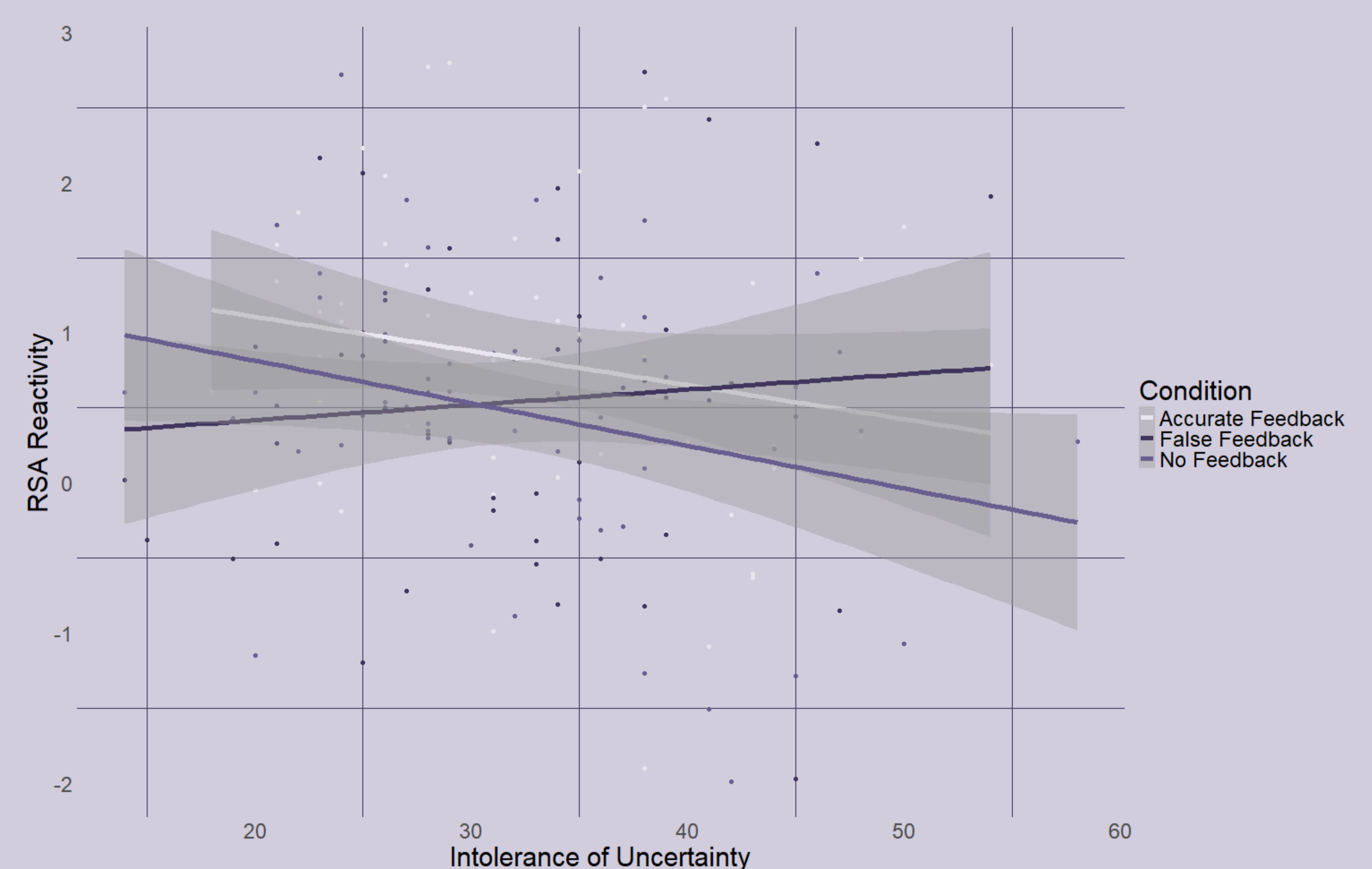
### STUDY ONE

- Individuals with higher IU exhibited reduced RSA reactivity in anticipation of the uncertainty task,  $\beta = -.20$ ,  $p = .008$ .
- No relation between IU and self-reported affect was observed.



### STUDY TWO

- Individuals with higher IU exhibited greater reductions in RSA in anticipation of the uncertainty task, but only in the no feedback condition,  $\beta = -.36$ ,  $p = .007$ .
- Those higher in IU also reported greater negative emotion prior to the task,  $\beta = .36$ ,  $p < .001$ .



## REFERENCES

- [1] Carleton, R. N. (2012). The intolerance of uncertainty construct in the context of anxiety disorders: Theoretical and practical perspectives. *Expert Review of Neurotherapeutics*, 12(8), 937–947. <https://doi.org/10.1586/ern.12.82>
- [2] Yook, K., Kim, K.-H., Suh, S. Y., & Lee, K. S. (2010). Intolerance of uncertainty, worry, and rumination in major depressive disorder and generalized anxiety disorder. *Journal of Anxiety Disorders*, 24(6), 623–628. <https://doi.org/10.1016/j.janxdis.2010.04.003>
- [3] Carleton, R. N., Norton, M. A. P. J., & Asmundson, G. J. G. (2007). Fearing the unknown: A short version of the Intolerance of Uncertainty Scale. *Journal of Anxiety Disorders*, 21(1), 105–117. <https://doi.org/10.1016/j.janxdis.2006.03.014>
- [4] Hill, M. W., Johnson, E., & Ellmers, T. J. (2024). The influence of false interoceptive feedback on emotional state and balance responses to height-induced postural threat. *Biological Psychology*, 189, 108803. <https://doi.org/10.1016/j.biopsycho.2024.108803>

**MAIN TAKEAWAY:** Intolerance of uncertainty is associated with reduced parasympathetic activity and heightened negative emotion during experiential uncertainty.