

1. Background

Introduction

- Interoception refers to the perception of the body's **internal state** [1], encompassing the recognition of both **physiological** and **emotional** shifts [2].
- It was shown that individuals with **heightened interoceptive abilities** experience **improved emotional regulation**, enabling them to effectively modulate their emotional responses to challenging circumstances [3].
- Primal world beliefs, referred to as "primals", play a pivotal role in shaping the **foundational perspectives** that influence our **everyday experiences** [4].
- A study during the COVID-19 pandemic revealed that individuals who held **optimistic views** about the world being a **good place** (vs. bad place), exhibited **post-traumatic growth** (vs. post-traumatic symptoms) after the pandemic [5].
- **While both concepts were associated with better emotional outcomes in the face of aversive events, the direct correlation between them has yet to be studied.**

Hypothesis

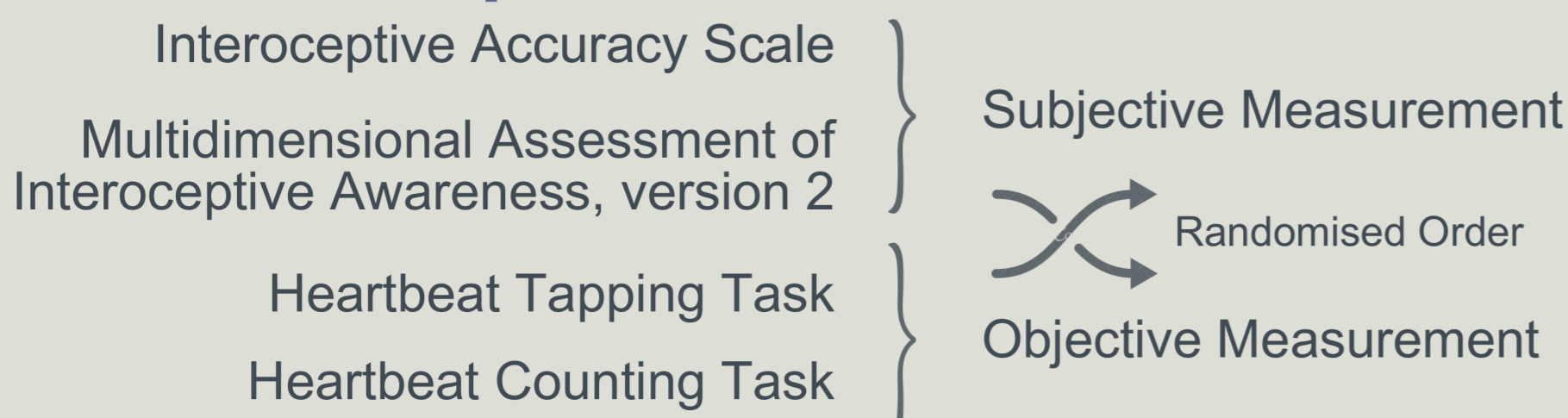
Interoceptive ability is **positively** correlated with believing that the world is "Alive", "Understandable" and "Hierarchical".

2. Methods

Entering a Calm State

8-minutes Resting Task

Interoceptive Abilities Measures

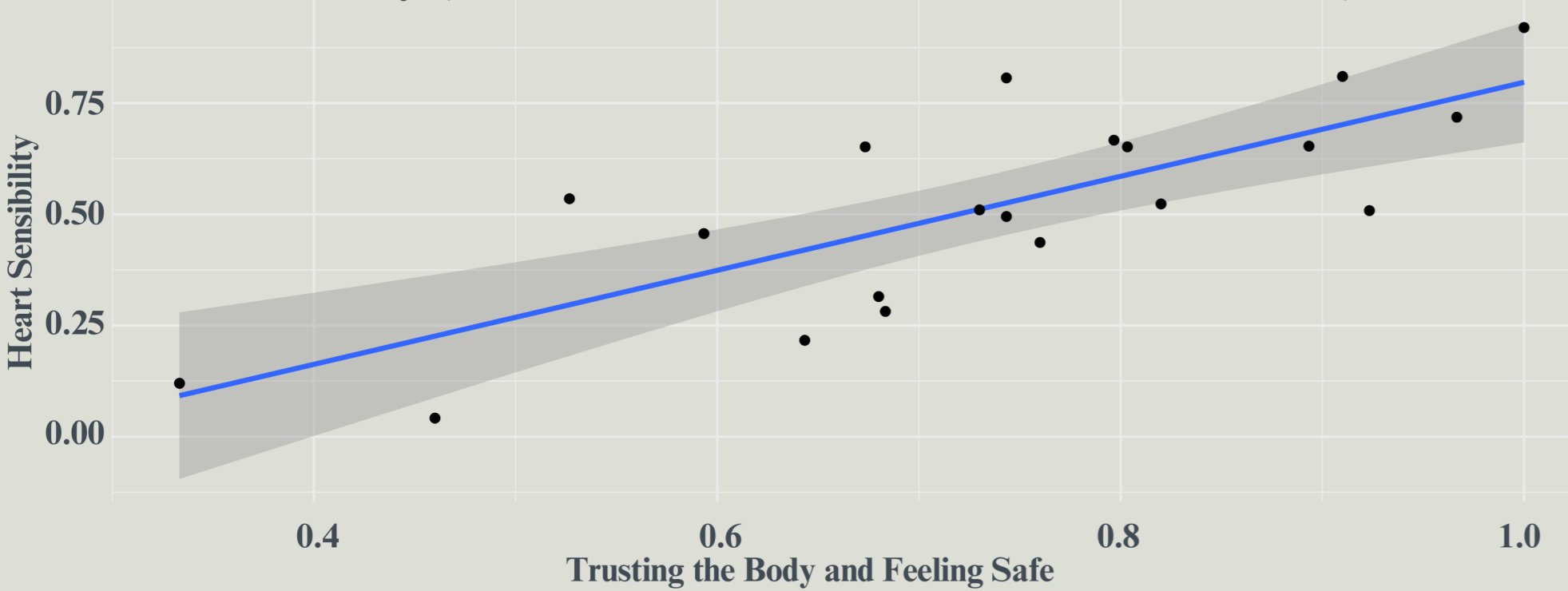


Beliefs Measure

99-item Primals Inventory Questionnaire

4. Additional Finding

Heartbeat Sensibility and Experience of One's Body as Safe and Trustworthy ($\rho = 0.66$, 95% CI [0.35, 0.86], BF = 215.09)



There was a **significant positive** correlation between **self-rated confidence** in counting the accurate number of heartbeats and **feeling safe and trusting** one's body sensations, suggesting:

- A stronger **mind-body connection** in those who **confidently perceive** their heartbeats, potentially contributing to **increased self-awareness** and **safety**.
- A potential link between **bodily awareness** and **psychological well-being**, as trusting one's body sensations might aid in **stress management** and **emotional balance**.

3. Results and Discussion

Correlation Between Primals and Interoceptive Measures

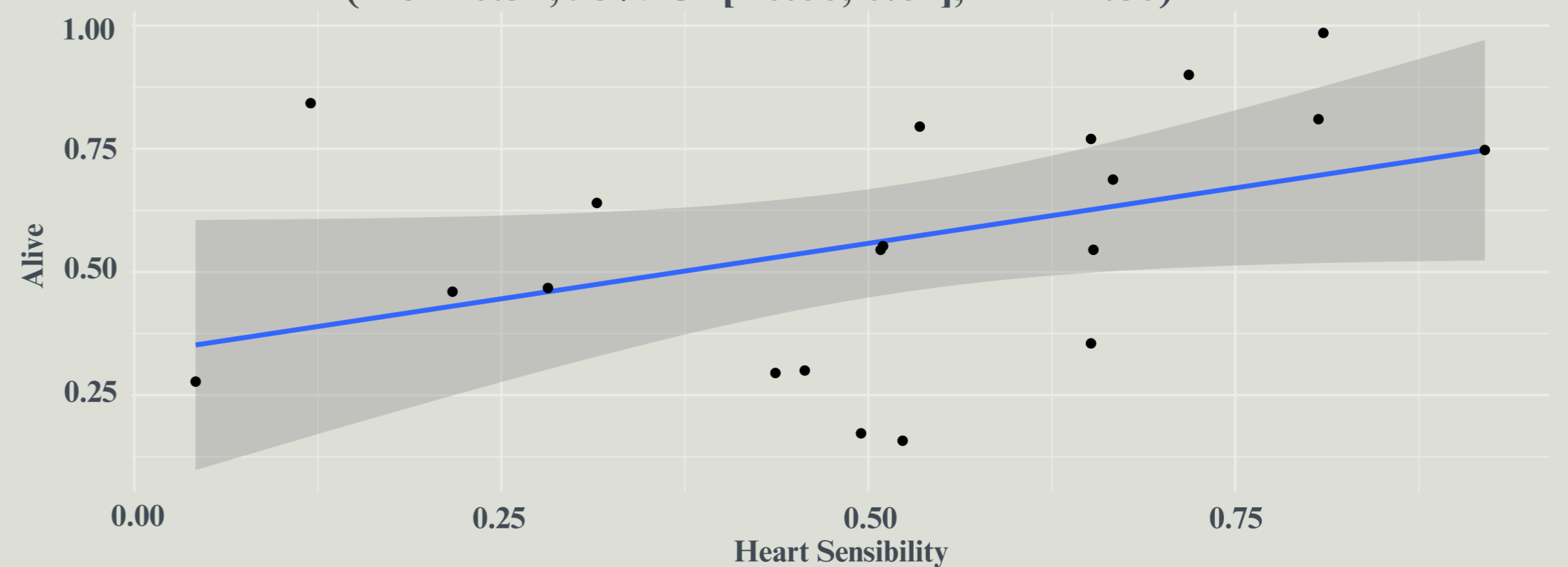
	Heart Sensibility	Intero. Noticing	Intero. Accuracy	Heart Awareness	Heart Accuracy
Alive	0.32	0.27	0.15	-0.23	0.13
Understandable	0.25	0.28	0.25	-0.18	0.01
Hierarchical	0.27	0.03	0.13	0.04	-0.06

Despite the global pattern of correlations between primals beliefs and interoceptive measures showing a mixed pattern, some of these links are worth paying attention to:

- Believing the world is **alive**, **understandable** and **hierarchical** is **positively** correlated with **self-rated confidence** in counting the accurate number of heartbeats, and **self-reported interoceptive accuracy**. However, there is **no obvious** correlation between **primals** and **objective accuracy** in counting one's heartbeat.
- Believing the world is **alive** and **understandable** is **positively** correlated with the **self-reported awareness of body sensations** (noticing), but **negatively** correlated with the **objective measurement of the awareness of one's heartbeat**.

Here is the correlation plot of our hypothesis which shows promising result:

Believing the World is Alive and Heartbeat Sensibility ($\rho = 0.32$, 95% CI [-0.06, 0.64], BF = 1.80)



However, it was observed that the correlation is **not straightforward** because the various interoceptive measures **do not all correlate strongly and positively** between themselves, suggesting that interoception might be a **multifaceted construct**:

Correlation Between Interoceptive Measures

	Heart Accuracy	Heart Awareness	Heart Sensibility	Intero. Accuracy	Intero. Noticing
Heart Accuracy		-0.11***	-0.27	-0.12	-0.16**
Heart Awareness	-0.11***		-0.02	0.23	0.04*
Heart Sensibility	-0.12	-0.02		0.45	0.49
Intero. Accuracy	-0.27	0.23	0.45		0.53
Intero. Noticing	-0.16**	0.04*	0.49	0.53	

References

- [1] Cameron, O. G. (2002). Visceral sensory neuroscience: Interoception. Oxford University Press eBooks.
- [2] Wiens, S., Mezzacappa, E., & Katkin, E. S. (2000). Heartbeat detection and the experience of emotions. *Cognition & Emotion*, 14(3), 417–427.
- [3] Zamariola, G., Frost, N., Van Oost, A., Corneille, O., & Luminet, O. (2019). Relationship between interoception and emotion regulation: New evidence from mixed methods. *Journal of Affective Disorders*, 246, 480–485.
- [4] Clifton, J. D. W., Baker, J. F., Park, C. L., Yaden, D. B., Clifton, A. B. W., Terni, P., Miller, J. A., Zeng, G., Giorgi, S., Schwartz, H. A., & Seligman, M. E. P. (2019). Primal world beliefs. *Psychological Assessment*, 31(1), 82–99.
- [5] Vázquez, C., Valiente, C., García, F., Contreras, A., Peinado, V., Trucharte, A., & Bentall, R. P. (2021). Post-Traumatic Growth and Stress-Related Responses During the COVID-19 Pandemic in a National Representative Sample: The Role of Positive Core Beliefs About the World and Others. *Journal of Happiness Studies*, 22(7), 2915–2935.



To know more about the Reality Bending Lab (ReBeL)

To know more about the study and attempt the experiment

