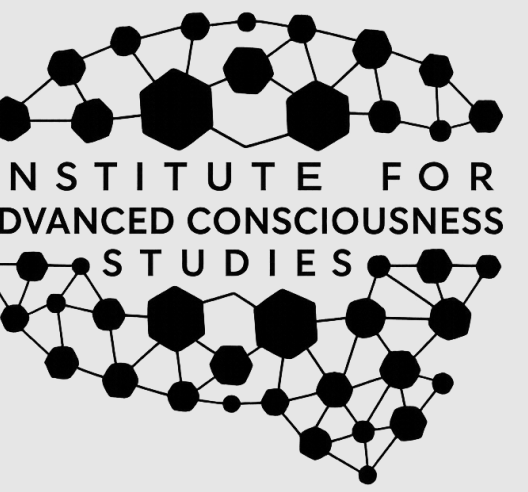


Characterizing Sleep and Subjective Experience During a 3-Day Dark Retreat

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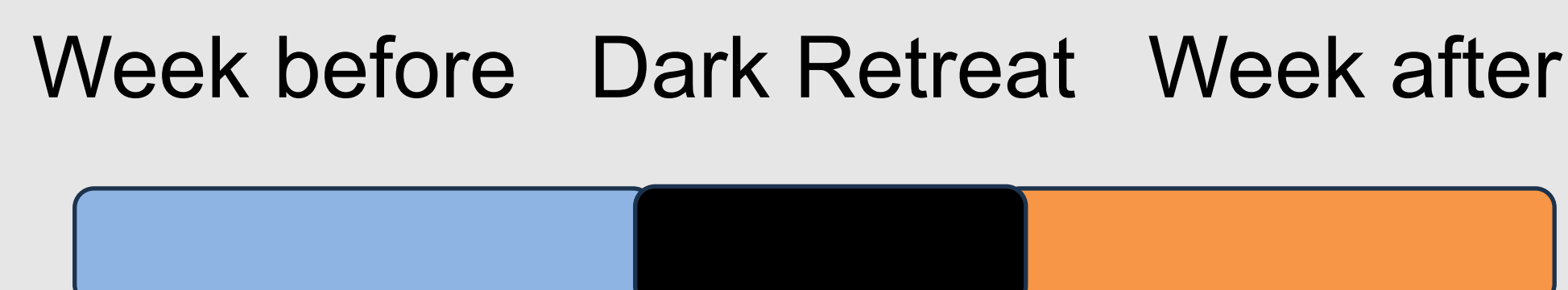
Introduction

- Dark retreat is an ancient contemplative practice in which practitioners enter complete darkness and social isolation with the goal of gaining spiritual insight through intensive exploration of first-person experience.
- Research Objectives:** Characterize the neurophysiological, psychological, and phenomenological effects of a 3-day dark retreat at Sky Cave Dark Retreat Center in Oregon, USA.
- Hypotheses:**
 - Subjective improvement in mood, embodied mindfulness, and psychological insight after the dark retreat.
 - Objective changes in sleep measures, circadian rhythms, and heart-evoked potentials¹ during dark retreat.

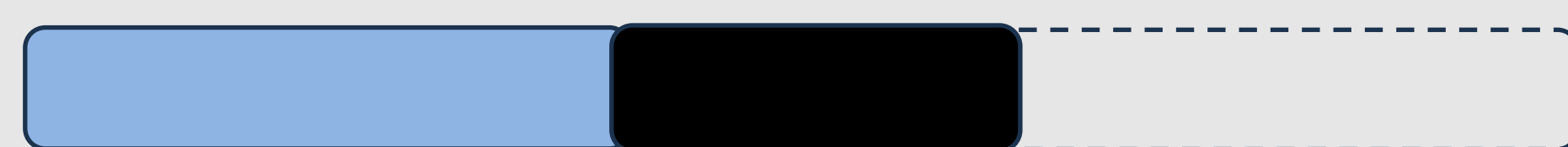
Methods

- Arm 1: $N = 12$ participants (all measures)
- Arm 2: $N = 22$ participants (only qualitative measures)

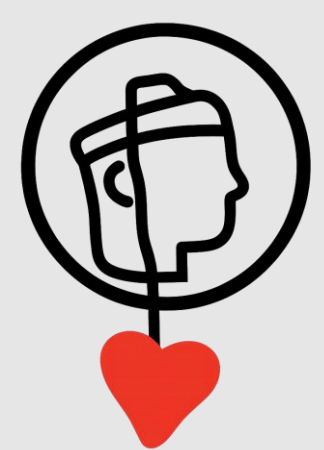
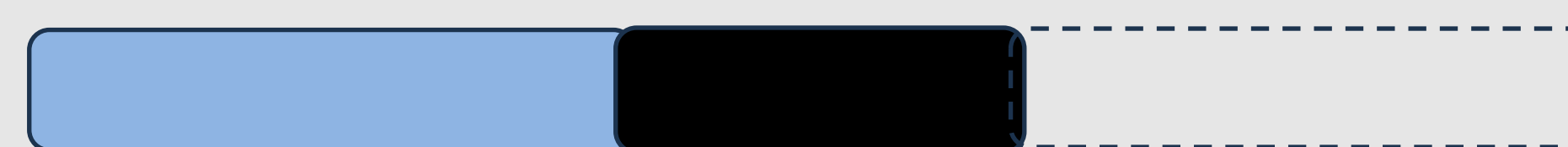
1. Oura ring



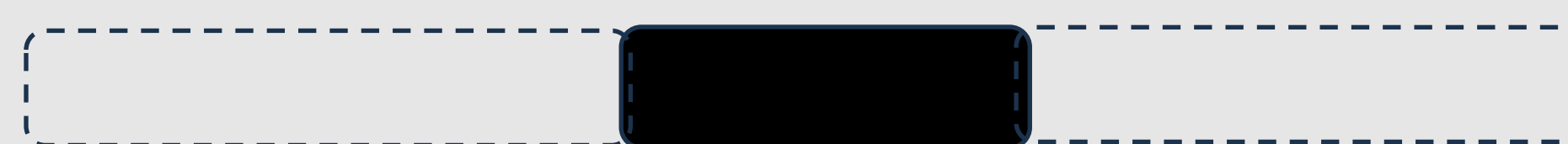
2. Muse EEG (sleep)



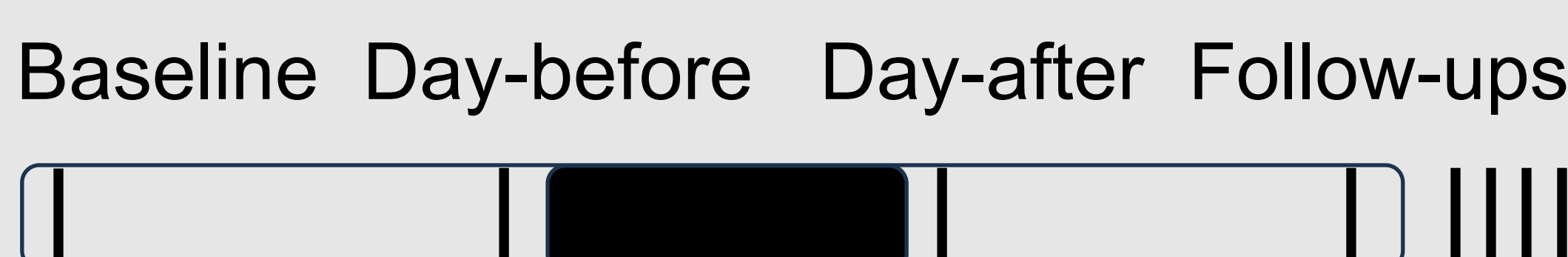
3. C3 + ECG (1 hr/day)



4. Voice Recorder



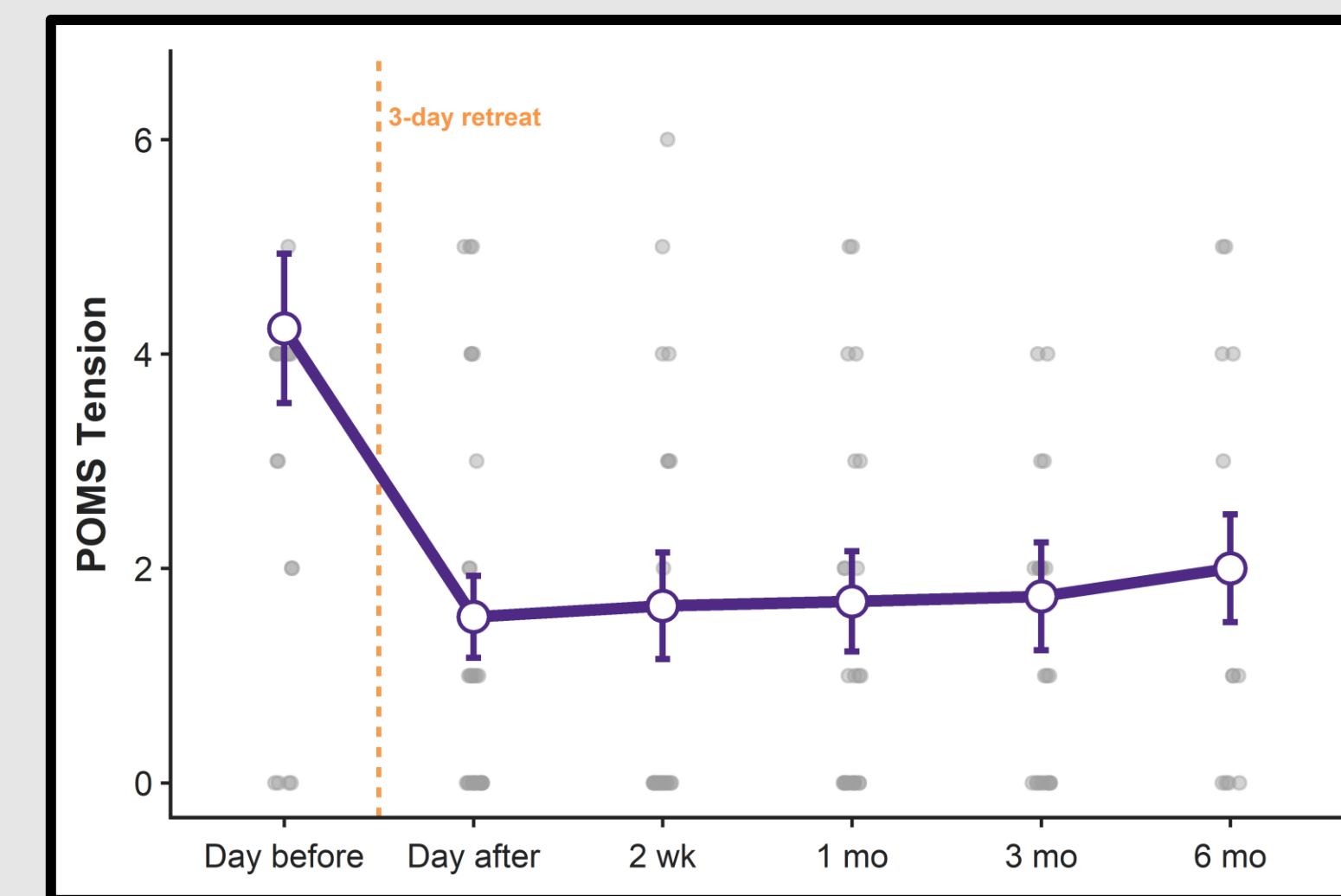
5. Questionnaires



Follow ups at: 2 weeks, 1 month, 3 month, 6 months

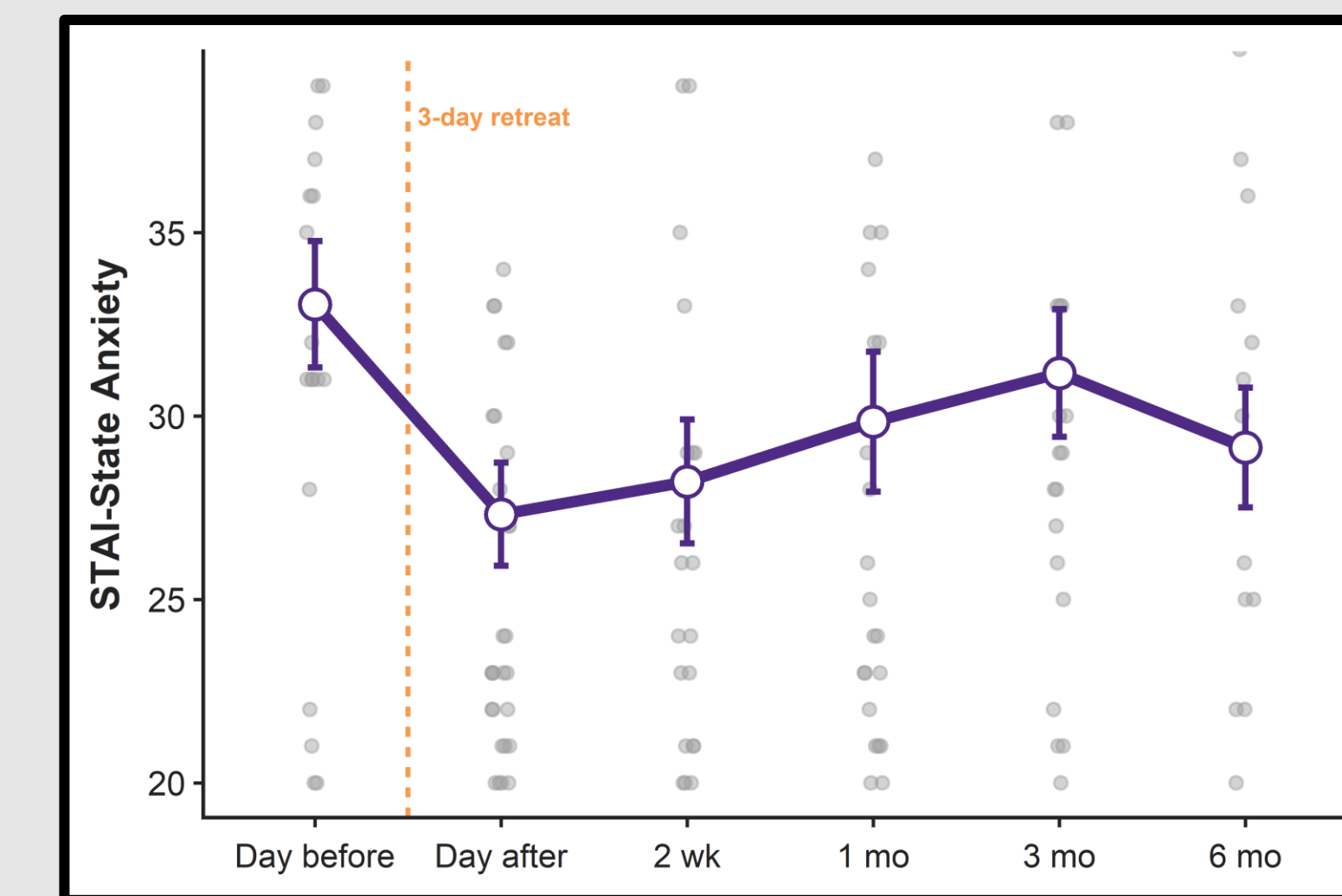
Results

1. Reduced tension after retreat



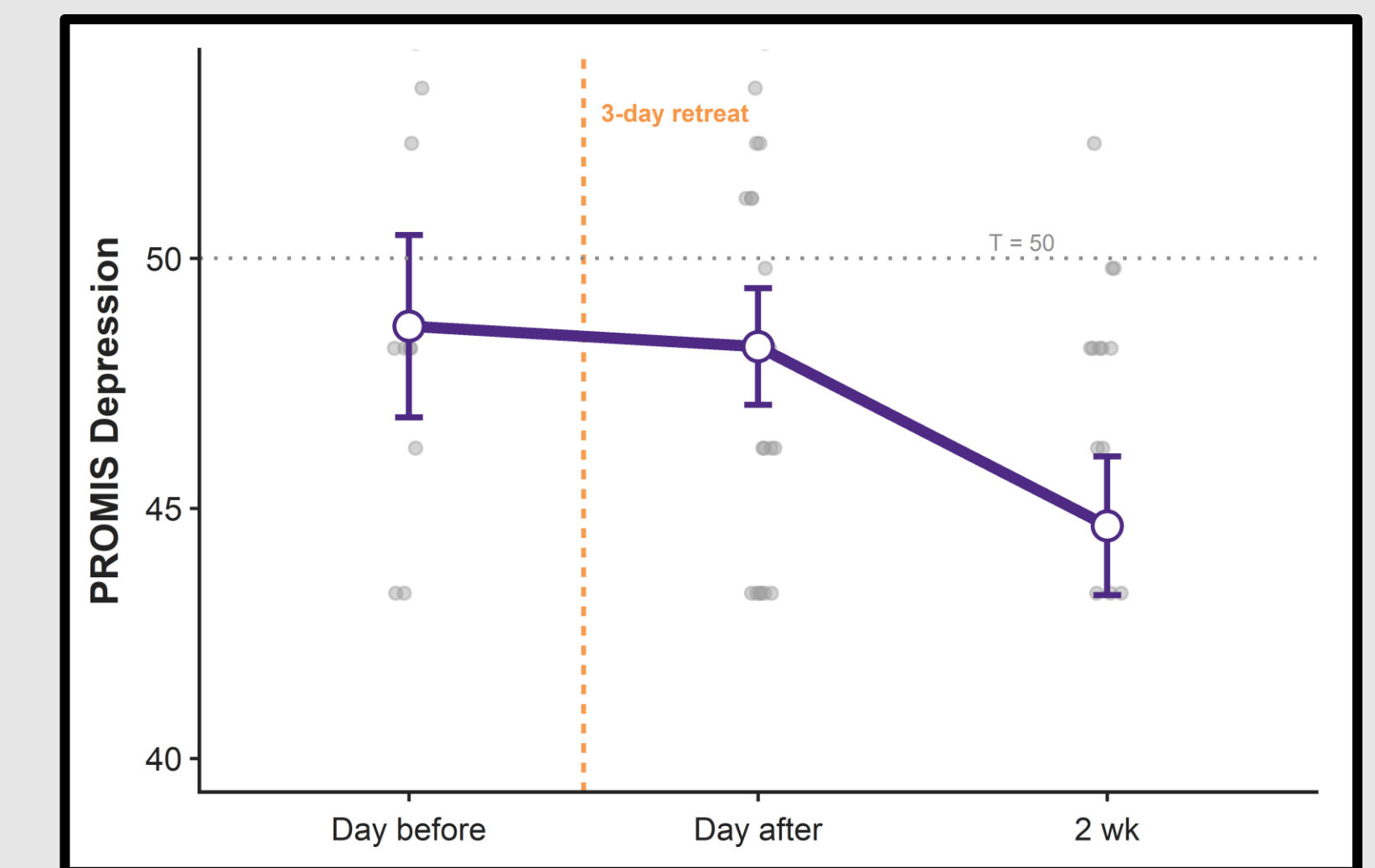
"There's no sense of obligation or performance... I'm just free to be and move about." — P024

2. Reduced anxiety after retreat

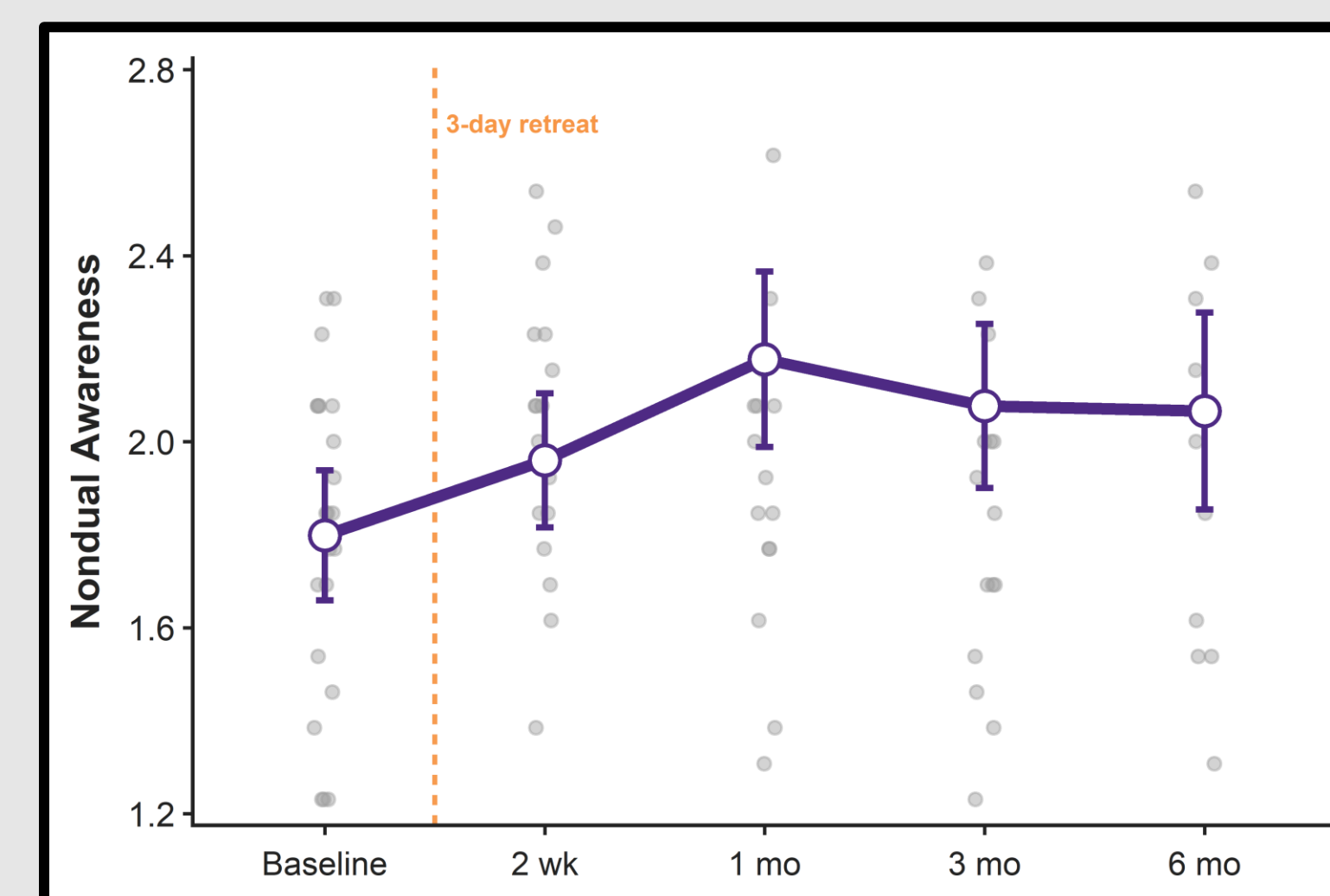


"I feel like I can take that into the light... I found a clarity in my mind, and I found bliss." — P014

3. Reduced depression after retreat

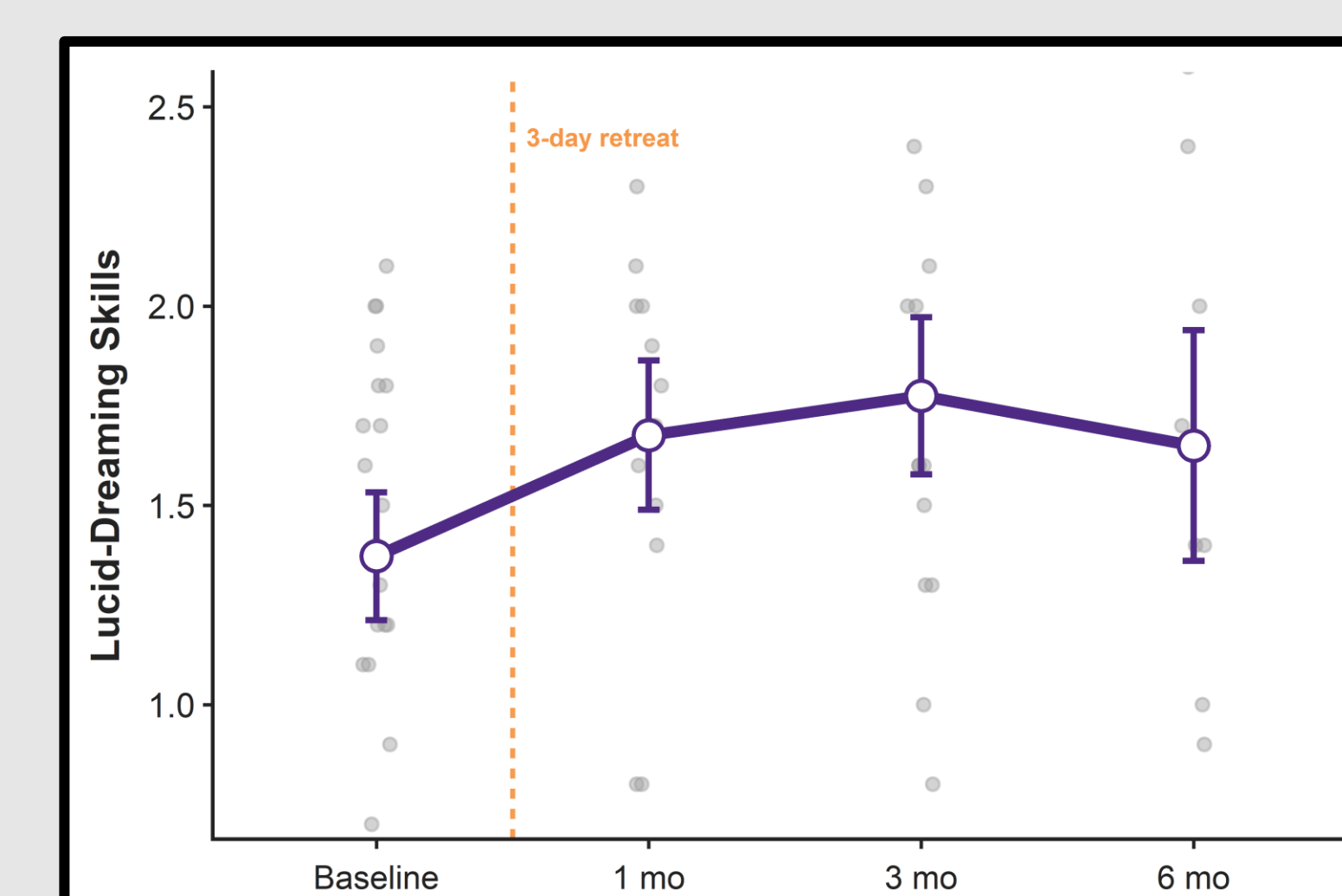


4. Increased nondual awareness

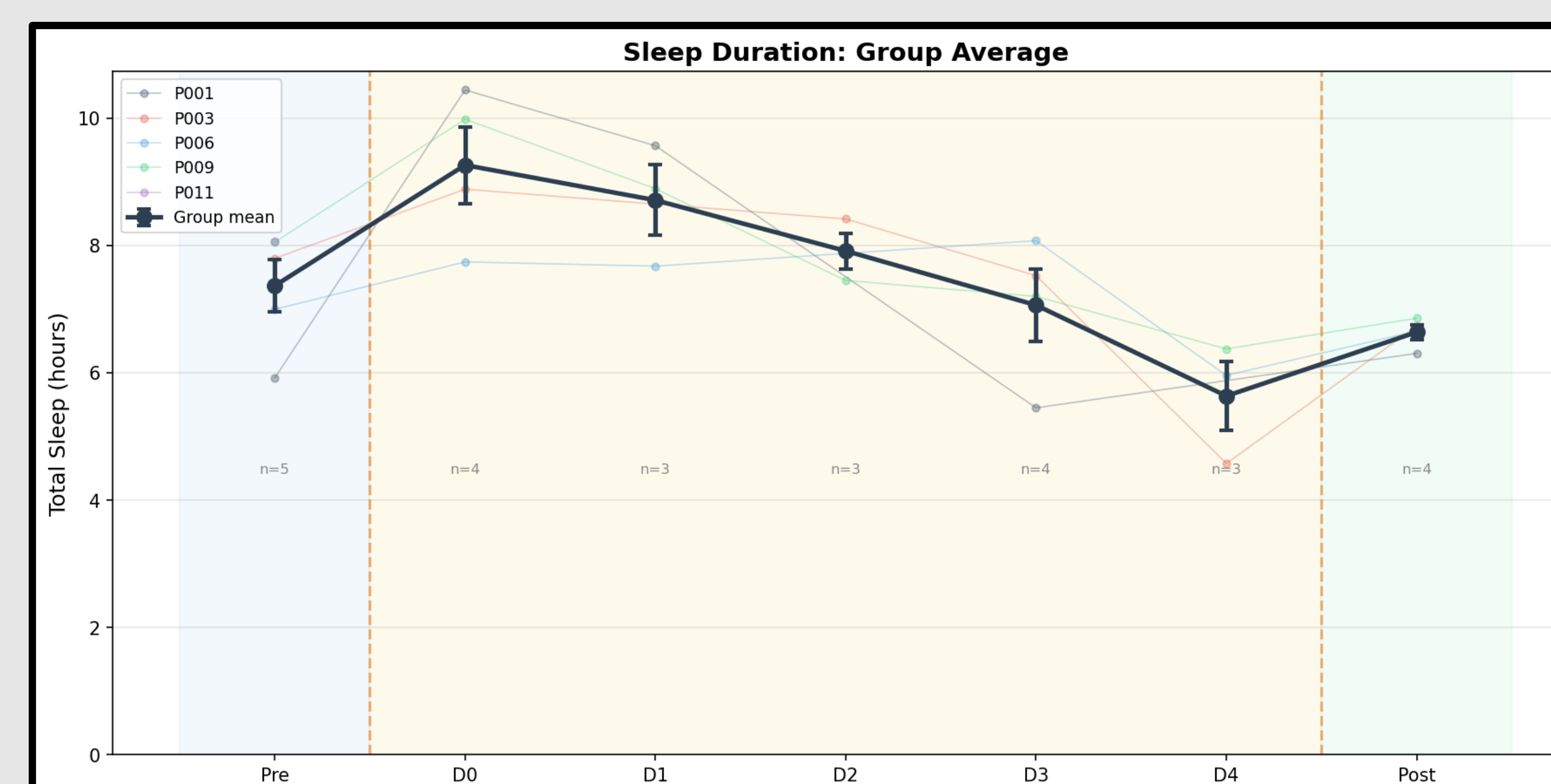


"I'm just genuinely... here. Aware of my beingness and the felt sense of being at peace." — P014

5. Increased lucid dreaming



6. Participants slept more than usual during retreat



Conclusions

- Questionnaire data shows reduced tension, anxiety, and depression immediately after retreat, with effects persisting to the 6-month follow up.
- Nondual awareness and lucid dreaming increased following retreat and remained elevated after 6-months.
- Ongoing analyses of verbal reports during retreat and heart-evoked potentials aim to characterize moments of heightened bodily awareness and meditative depth.

References

- Nath, M., Becattini, V., Laukkonen, R. E., Ganesan, S., Hanley, A., Holecek, A., Simonian, N., Schoeller, F., Khalsa, S., Sacchet, M., & Reggent, N. (2025). Heartbeat-evoked potentials as a neural marker of meditative depth. Preprint on OSF.

Thank you to Unlikely Collaborators, Sky Cave Dark Retreats, and participants. Questions? Email danielmorris@u.northwestern.edu