

INTRODUCTION

- **Maltreatment → poor sleep** across the lifespan (Brown et al., 2022; Abajobir et al., 2017)
- **Emotion regulation** disrupted by early adversity, linked to sleep (Gruhn & Compas, 2020)
- **Emotion beliefs** shape regulation strategy use and outcomes (Kim et al., 2024)
- **Interoception** linked to biased sleep perception, independent of adversity history (Ditzer et al., 2025)
- **Aim 1:** Do emotion beliefs buffer maltreatment sleep link?
- **Aim 2:** Does maltreatment affect perceived vs objective sleep differently?
- **Aim 3:** Does interoceptive awareness explain the perception gap?

METHODS

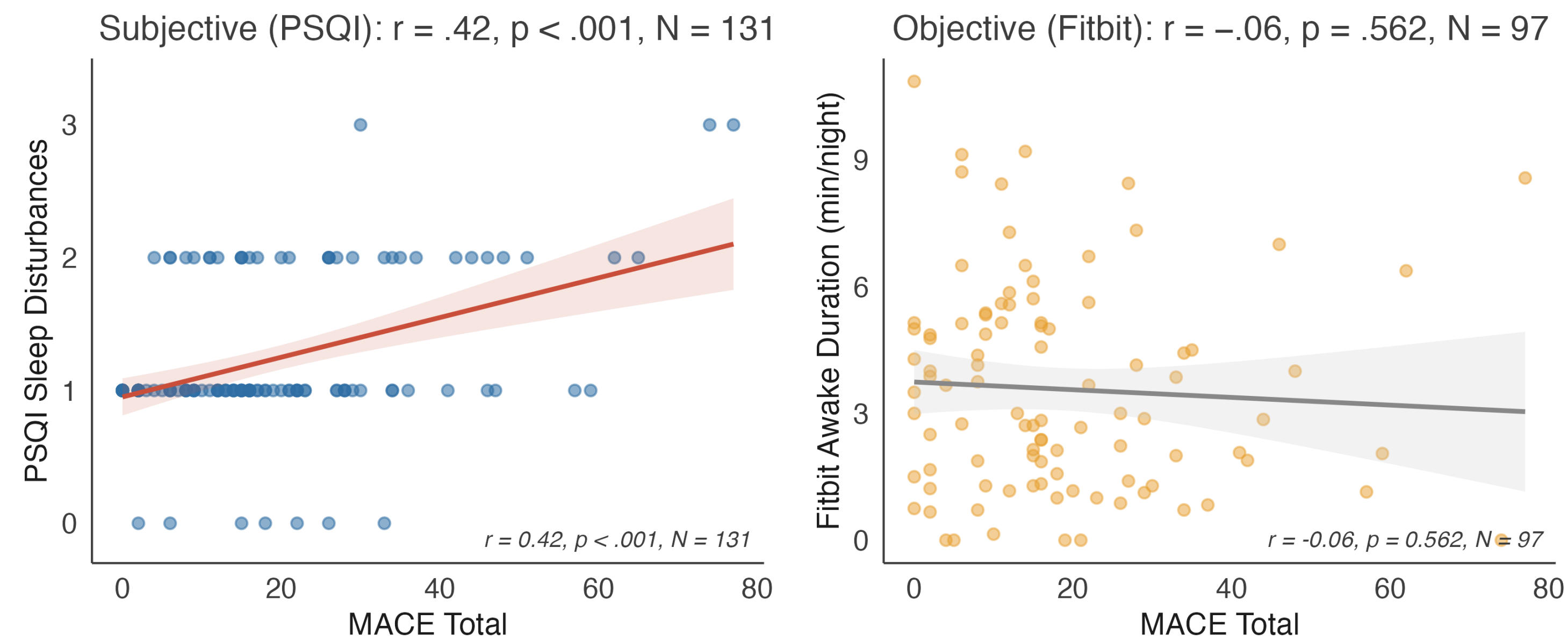
- **Sample:** N = 135 adults (ages 18–83); Fitbit data (n = 96); heartbeat discrimination (HBD) task (n = 70) after quality filter
- **Maltreatment:** Maltreatment and Abuse Chronology of Exposure (MACE) (10 subscales + total score)
- **Sleep:** Pittsburgh Sleep Quality Index (PSQI) (subjective) + Fitbit ~7 nights (objective: awake duration, efficiency, fragmentation)
- **Discrepancy score:** z(PSQI disturbances) – z(Fitbit awake duration); positive = perceives worse than objective
- **Emotion beliefs:** Personal Beliefs about Emotion Malleability (PBEM) scale
- **Interoception:** Emotional Awareness subscale of the Multidimensional Assessment of Interoceptive Awareness (MAIA; subjective); Heartbeat discrimination task, d' sensitivity index (signal detection framework, objective)
- **Analysis:** OLS regression, HC3 robust SEs, FDR correction for multiple comparisons; age and gender included as covariates throughout

RESULTS

NULL FINDING: EMOTION MALLEABILITY BELIEFS

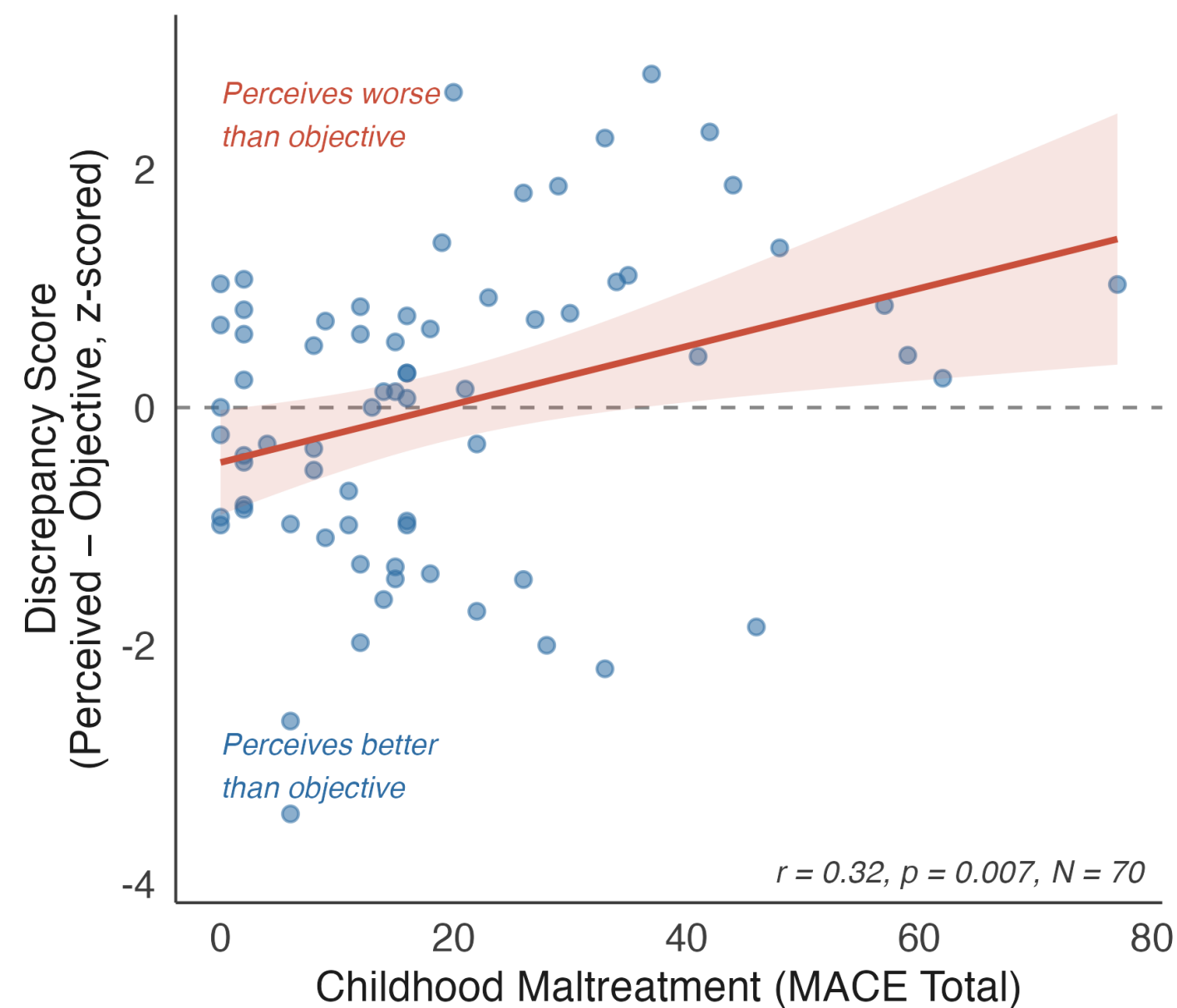
PBEM did not moderate or mediate any maltreatment → sleep association (*all interaction $p > .50$; ACME ≈ 0 , 95% BCI spans zero*). Maltreatment did not predict PBEM ($\beta = -.005, p = .281$). Simple slopes show the MACE effect on disturbances is significant across the entire range of emotion beliefs — beliefs **do not** buffer this pathway at any level.

MALTREATMENT PREDICTS PERCEIVED — NOT OBJECTIVE — SLEEP DISRUPTION

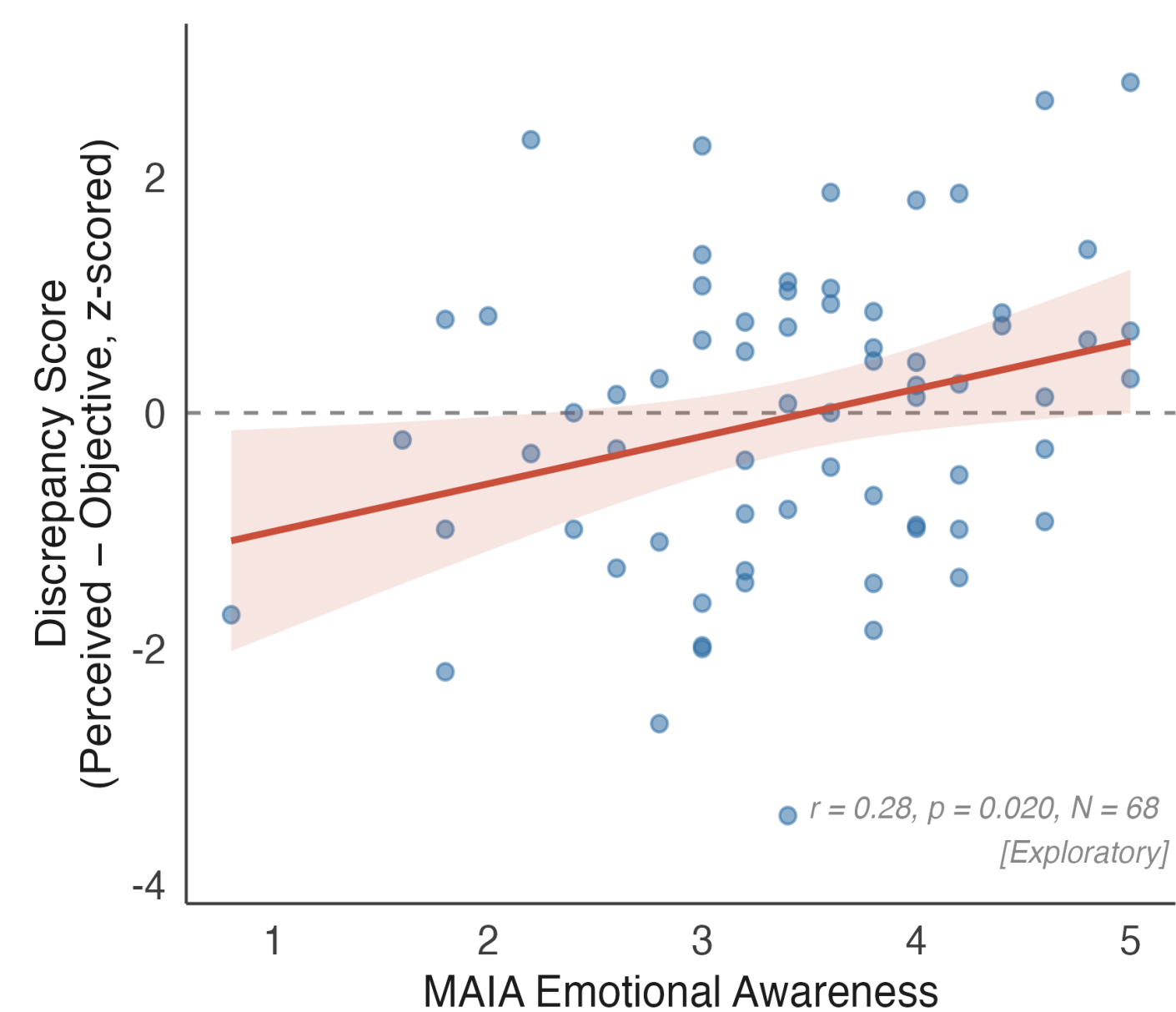


Age independently predicts a smaller gap ($\beta = -.029, p = .002$) — older adults perceive more accurately despite worse objective sleep. The MACE effect on the gap is significant in younger and middle-aged adults but attenuates in older adults (*interaction $p = .087$; Johnson-Neyman: MACE effect significant below age ~48*).

MALTREATMENT → PERCEPTION GAP



EXPLORATORY: EMOTIONAL BODY AWARENESS



DISCUSSION

- **Maltreatment → perceived but not objective sleep** — suggests a subjective-objective gap rather than uniformly worse sleep
- **Theory of Constructed Emotion** (Barrett, 2017): the brain constructs affective experiences from interoceptive predictions shaped by prior experience (Feldman, Bliss-Moreau & Lindquist, 2024); we speculate that early adversity may bias these predictions toward threat, contributing to a subjective-objective sleep gap
- **Age → objective fragmentation** (not perceived) — consistent with interoceptive recalibration across lifespan
- **Objective interoceptive accuracy (d')** showed a trend-level association ($r = .22, p = .066$), while **subjective emotional body awareness (MAIA Emotion Awareness)** was significantly associated with the gap ($r = .28, p = .020$)
- **Interoceptive awareness** has downstream clinical relevance in adversity-exposed populations (Reid-Russell & Nock, 2024); interoception and sleep are robustly linked across subjective and objective measures (Bynum & Brindle, 2025)

FUTURE DIRECTIONS

- **Replicate** subjective-objective dissociation with larger N and pre-registration
- **Formal mediation:** MACE → interoception → perception gap
- **Compare** objective interoceptive accuracy (d') vs. subjective sensibility (BAQ) as predictors
- **Daily diary:** night-to-night variability in sleep perception

