



Impact of digital meditation on behavioral and physiological health outcomes among adults with overweight

A randomized, controlled trial

Rachel M. Radin, PhD (PSY 30403)
UCSF Department of Psychiatry and Behavioral sciences
June 18, 2022
2022 ACBS World Conference, San Francisco, CA

6/17/22



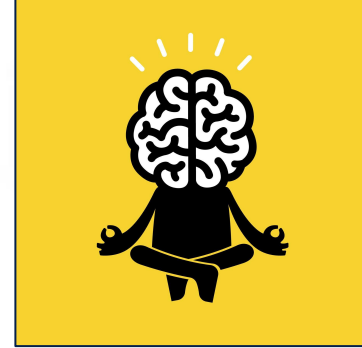
Background



- ***Obesity rates have reached pandemic levels***
 - Behavioral weight loss interventions fail to maintain weight loss



Franz et al., 2007; Ogden et al., 2015; Flegal et al., 1998; Douketis et al., 2005; Ganster et al., 2013

Background



- **Mindfulness for improving health in workplace settings?**
 - Adaptive self-regulation
 -  Global perceptions of stress in workplace
 - *In-person practice not easily scaled and disseminated*
 - *Treatment adherence poorly understood*
- **Mindfulness for those with overweight and high stress?**
 - Awareness of body states
 -  Feelings of hunger, fullness
 - *Rigorous RCTs limited*

Jamieson & Tuckey, 2017; Chiesa & Serretti, 2009; Kristeller, Wolever, & Sheets, 2014

Background & Rationale



- ***Mindfulness training via self-guided smartphone app***

- Convenient alternative to in-person treatment
 - Standardization of instructions across participants
 - Ability to control how to access treatment
 - Objective measures of adherence



- ***Effects on food cravings, weight, and metabolic health poorly understood***

Howells, Itvtzan, & Eiroa-Orosa, 2016; Lim, Condon, & DeSteno, 2015; Ly et al., 2014; Carolan, Harris, & Cavanagh, 2017

Objectives

▪ **Primary:**

- Treatment effect on:
 - Global perceptions of psychological distress (PSS)
 - Tolerance for food cravings (FAAQ)

▪ **Secondary:**

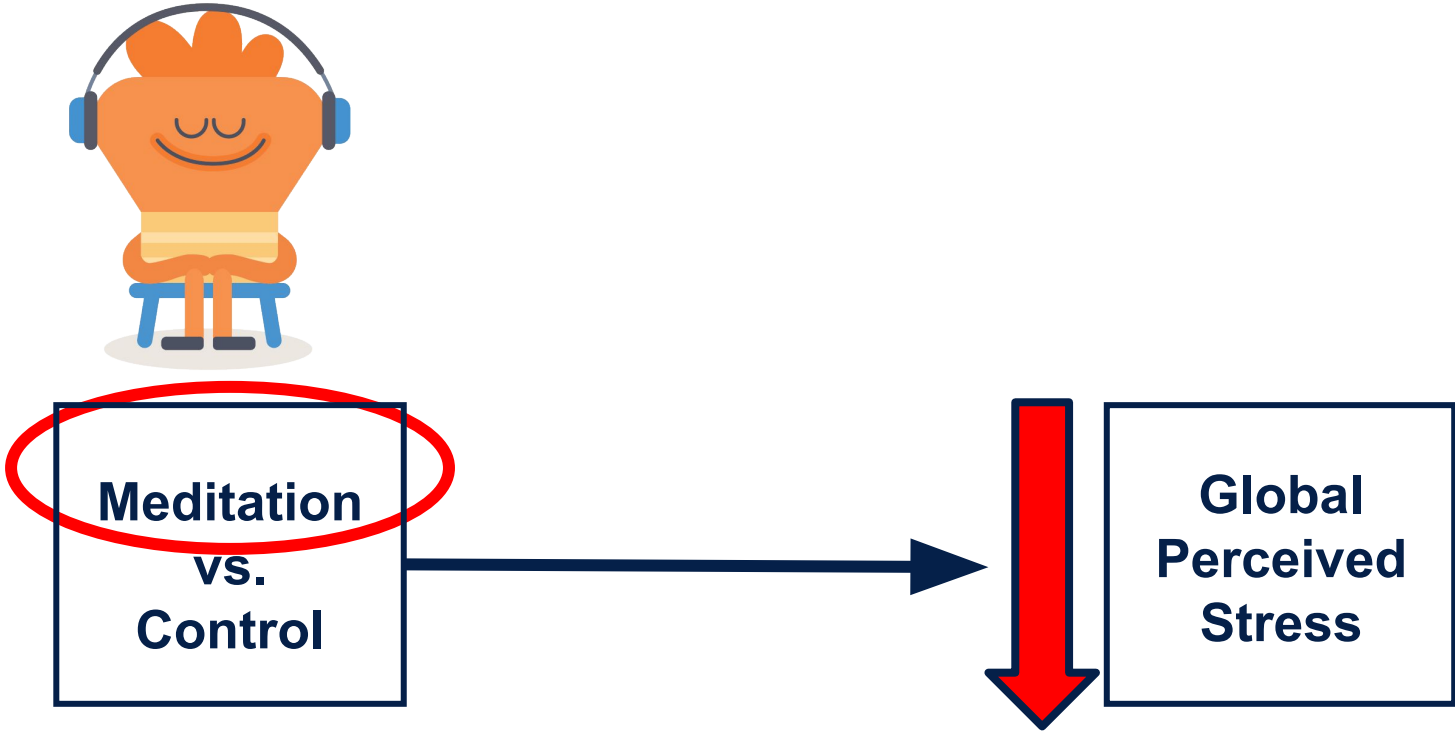
- Treatment effect on:
 - Body mass index (BMI)
 - Sagittal diameter

▪ **Exploratory:**

- Effect of treatment adherence on primary/secondary outcomes
- Moderating effect of binge eating presence

Clinicaltrials.gov: NCT03945214

Hypotheses: Primary



Hypotheses: Primary



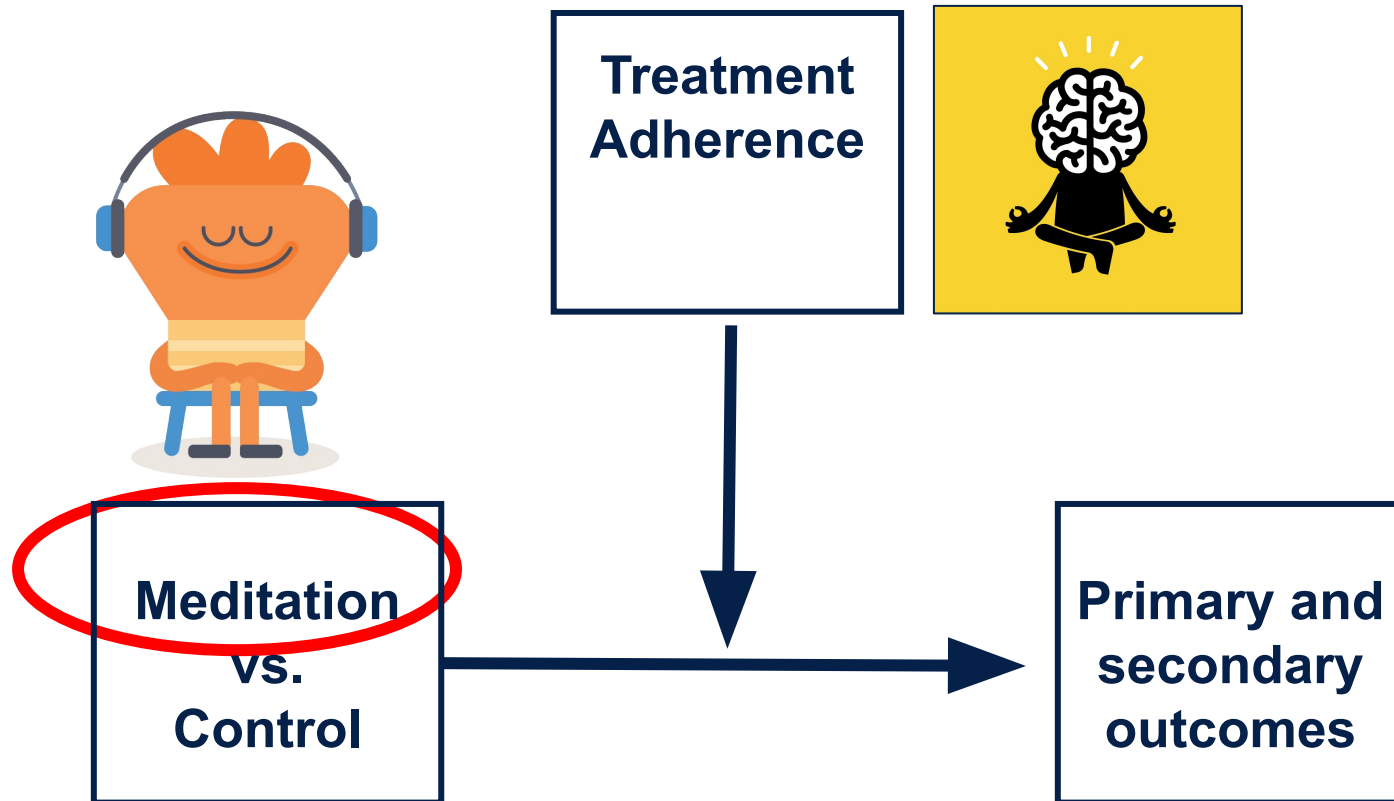
Hypotheses: Secondary



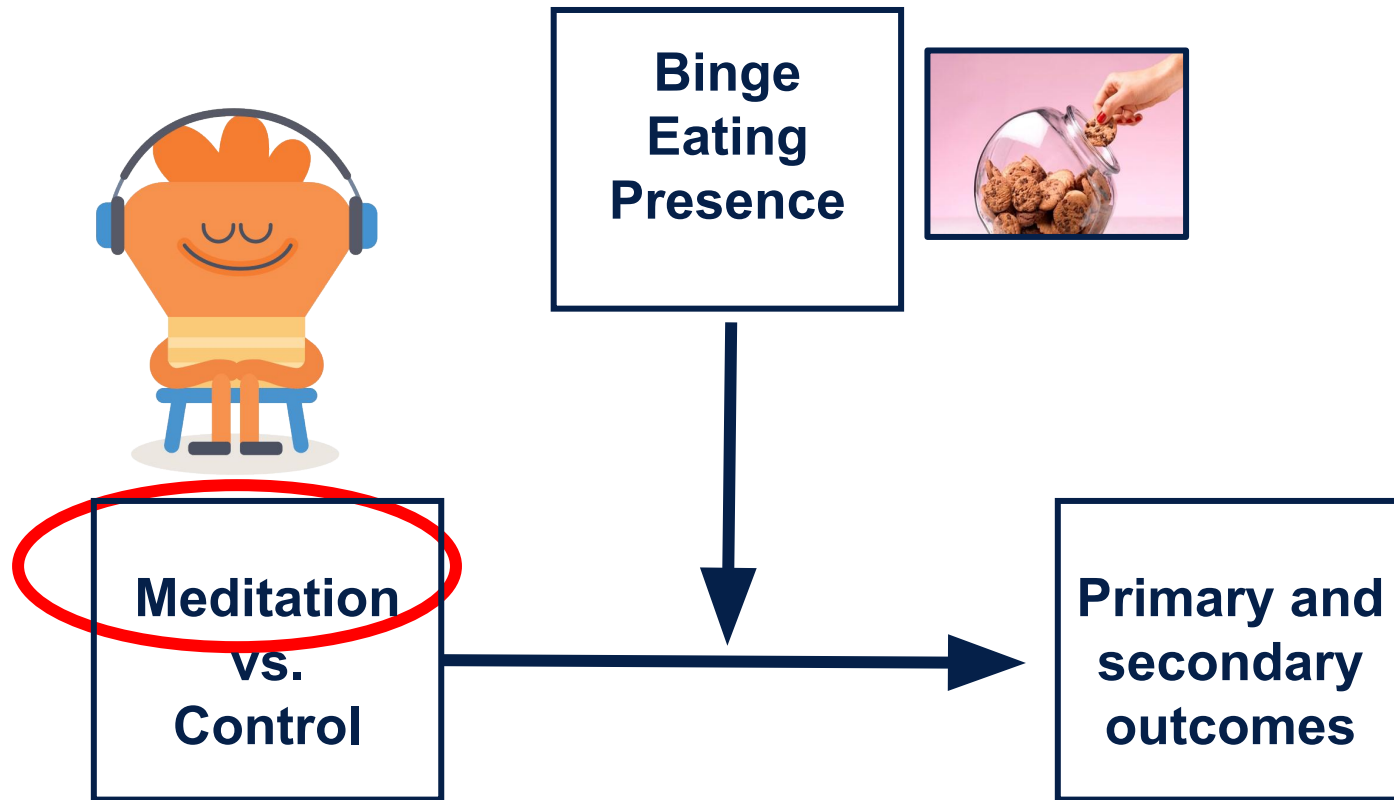
Hypotheses: Secondary



Hypotheses: Exploratory



Hypotheses: Exploratory



Meditation Conditions

Meditation only (MED)

- Digitally-based program (Headspace)
- Instructed to engage 10 min/day



Meditation + Healthy Eating (MED+HE)

Non-Meditation, Control Conditions

Healthy Eating (HE)

- Active control
- In-person counseling session
- 3 booster calls
- Motivational interviewing + mindfulness



Waitlist control (WL)

- Instructed not to add meditation practice during study period

Participants ($n=161$)



Inclusion

- ≥ 18 years-old
- $\text{BMI} \geq 25 \text{ kg/m}^2$
- Employed at large academic center
- Mild to moderate stress ($\text{PSS} \geq 15$)

Exclusion

- Current meditation practice (3x week or more)

Measures



Perceived Stress

- *Perceived Stress Scale (PSS-10 item)*

Tolerance for Food Cravings

- *Food Acceptance and Awareness Questionnaire (FAAQ)*
 - 10 items
 - Acceptance of urges and cravings to eat

Metabolic Health

- BMI (kg/m²)
- Sagittal Diameter (via abdominal caliper above umbilicus)

Treatment Adherence

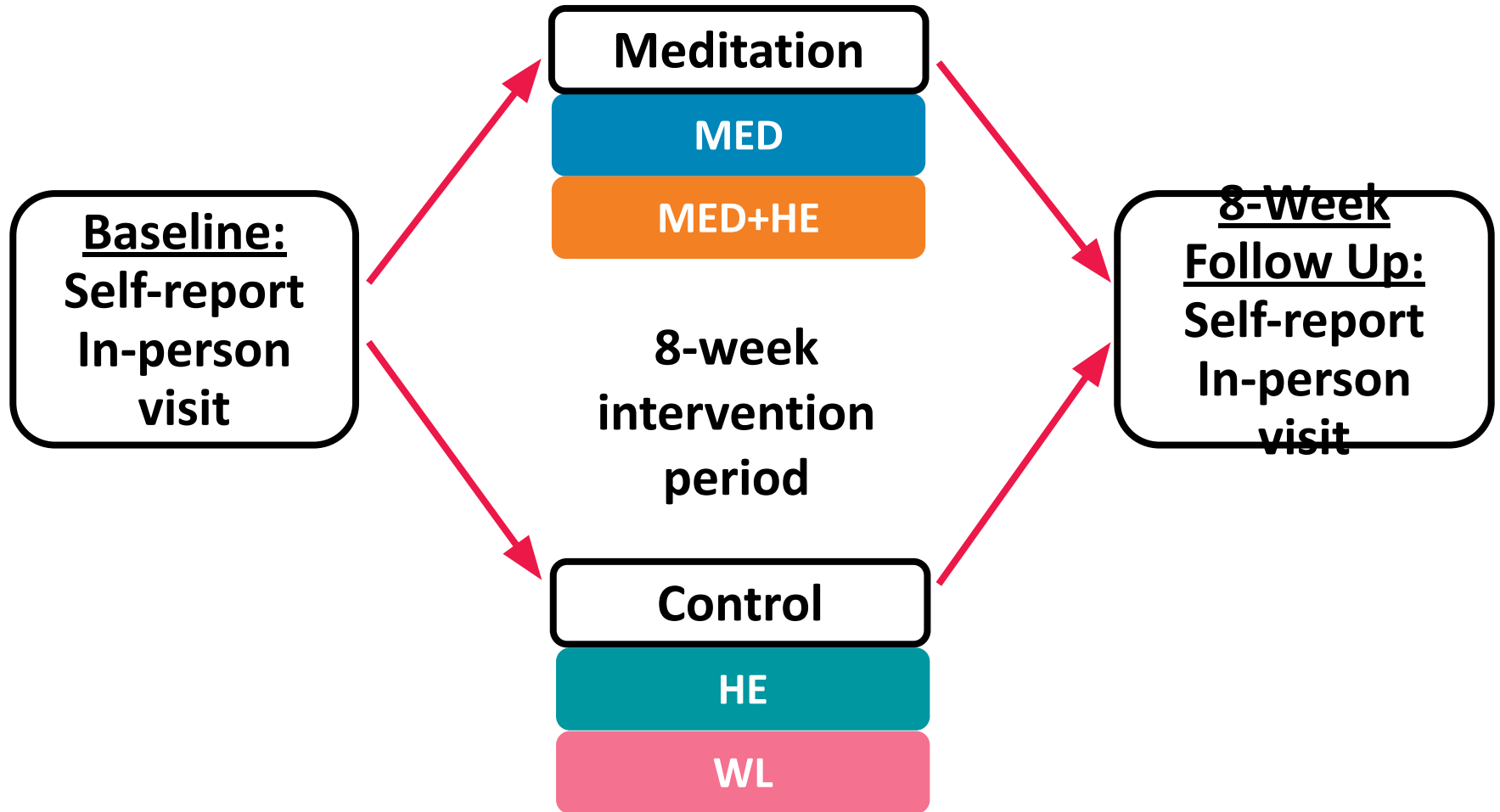
- Sum of total minutes meditating on Headspace over 8 weeks

Binge Presence

- Questionnaire on Eating and Weight Patterns-5 (QEWP-5)



Methods: Study Timeline

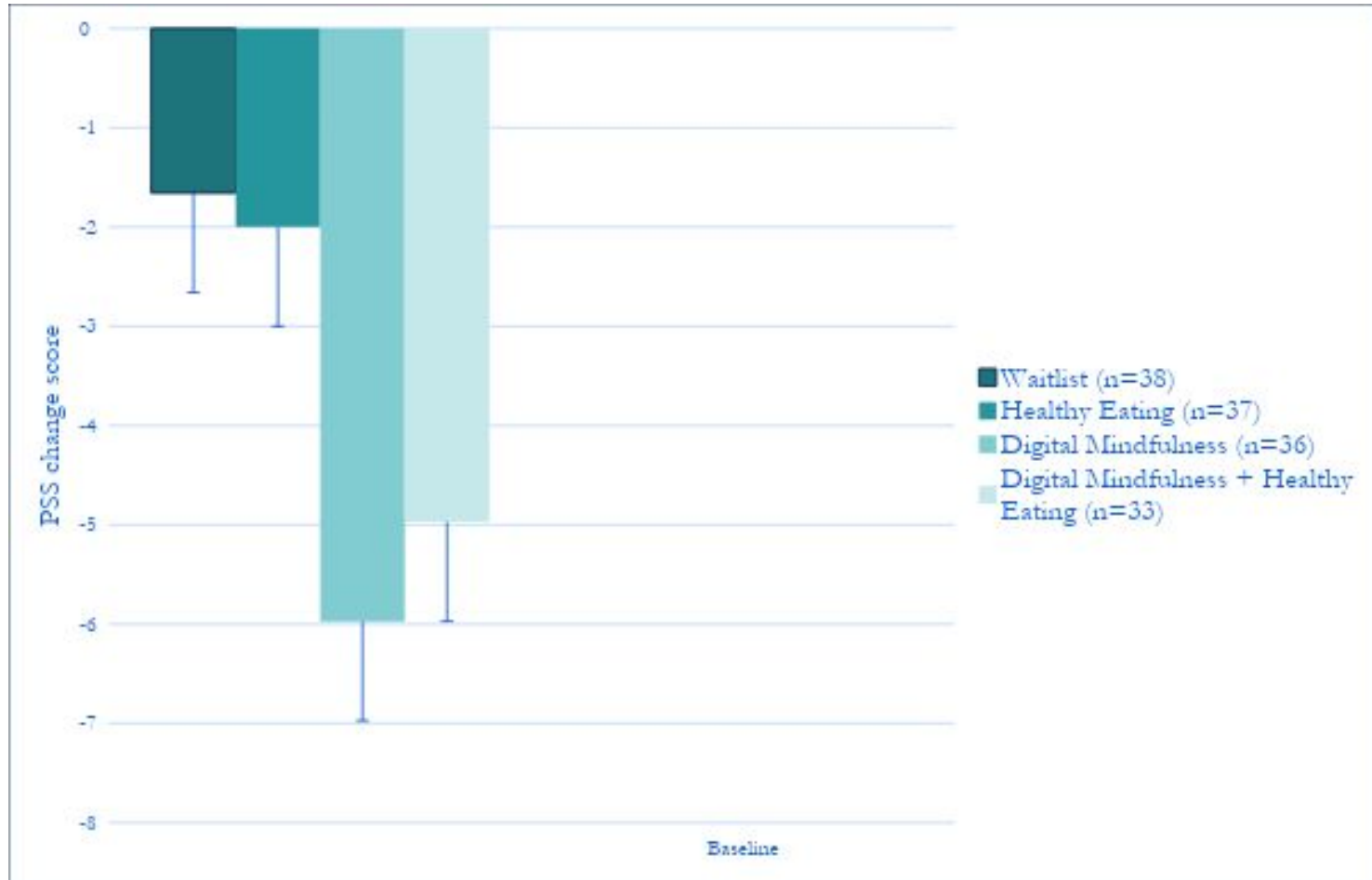


Results: Participant characteristics ($n=161$)

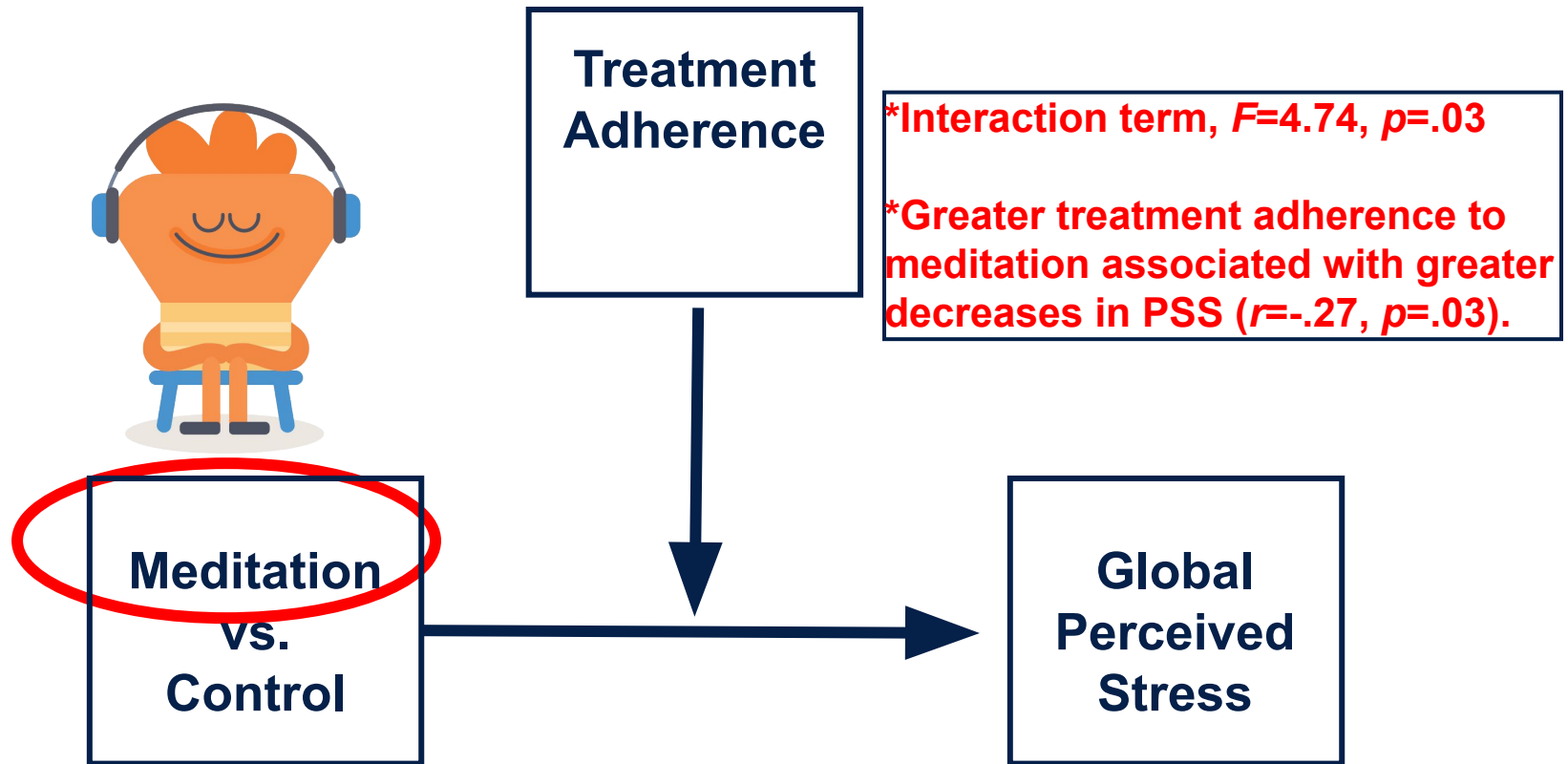


- BMI (mean): 30.78 kg/m²
 - 40% with obesity; 60% with overweight
- Work type:
 - 30% administrative
 - 19% research, 16% mid-level manager, 15% medical staff
- PSS (mean): 21.88 (moderate stress)
- Meditation frequency (self-report): 95% < 1x/week
- Mild to moderate stress (PSS \geq 15)

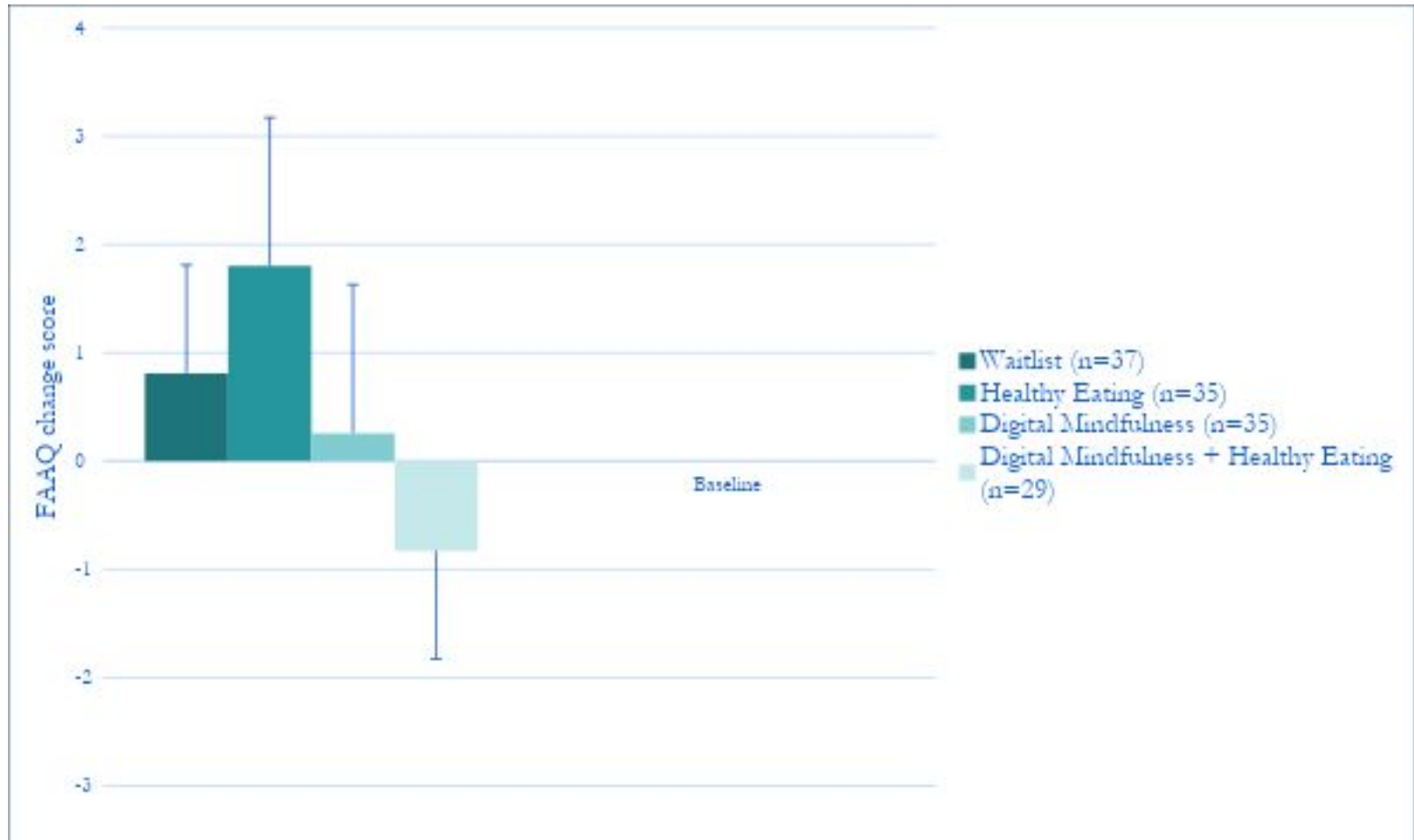
Results: Perceived Stress



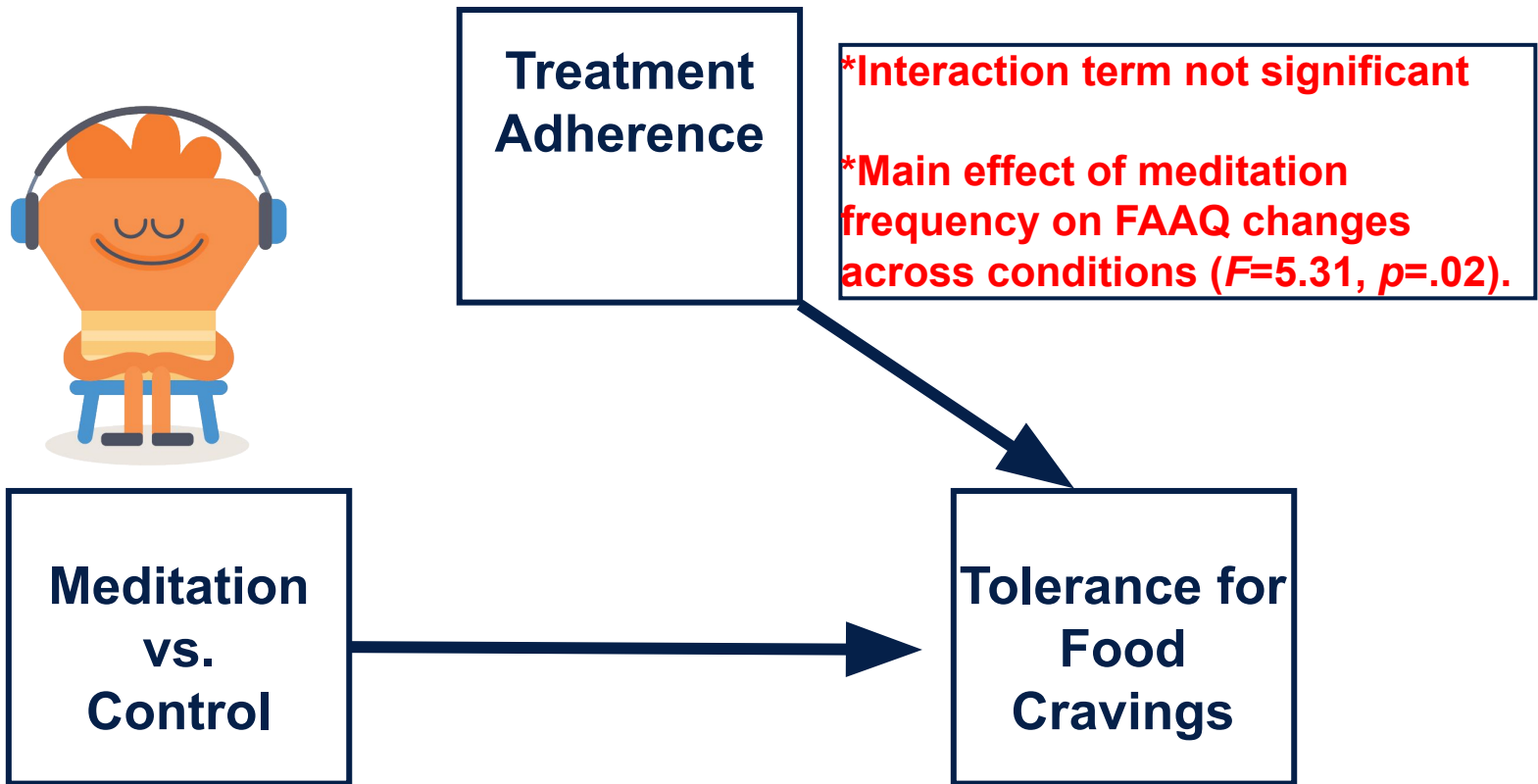
Results: Moderation by Treatment Adherence



Results: Tolerance for Food Cravings



Results: Moderation by Treatment Adherence



Results: BMI



**Meditation
vs.
Control**

$F(1,126)=1.13, p=.29; \eta^2=.01$

BMI

Results: Moderation by Treatment Adherence



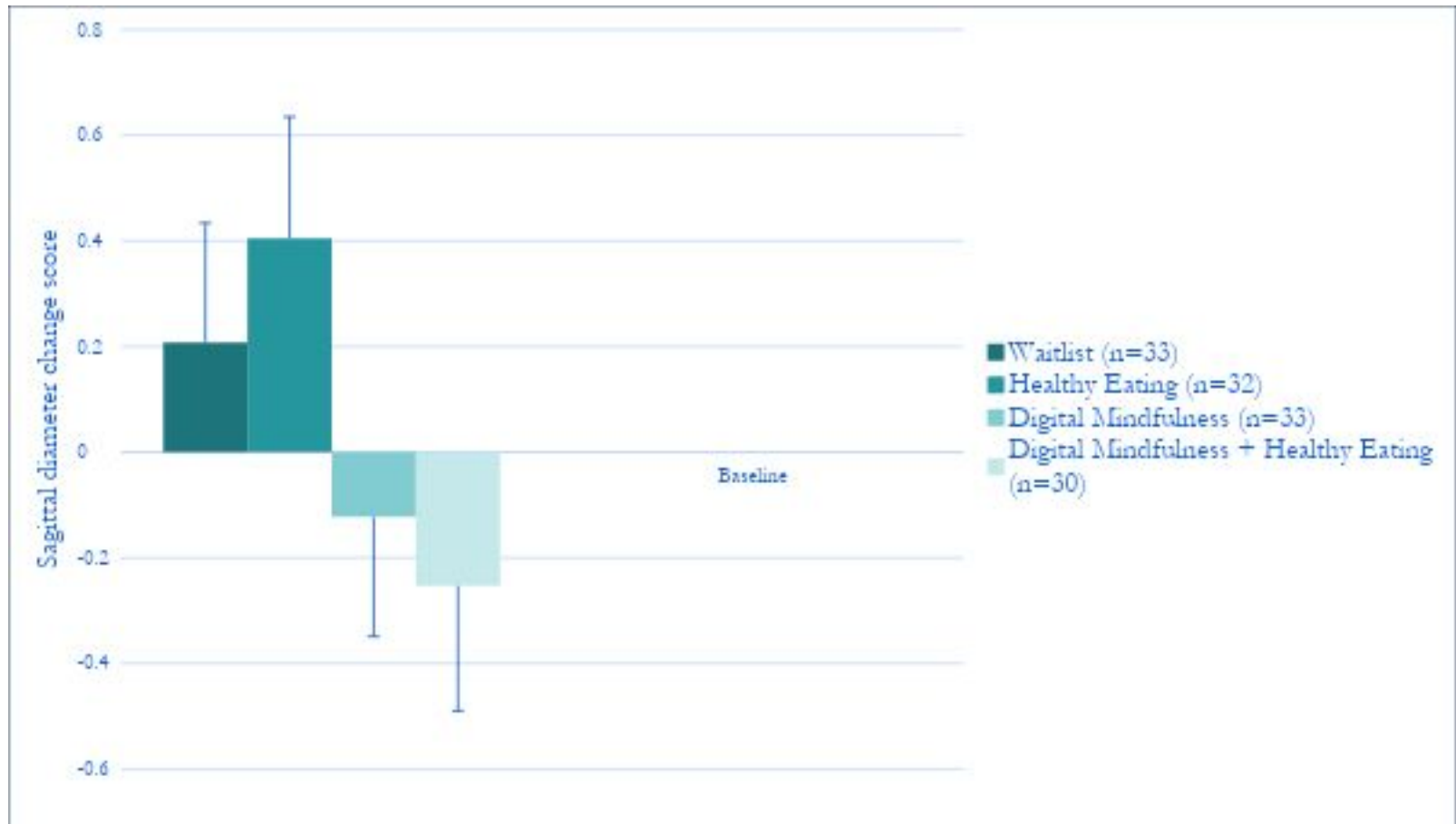
Treatment Adherence

***Interaction term not significant**
***No association between meditation frequency and change in BMI across conditions ($r=-.03$, $p=.83$).**

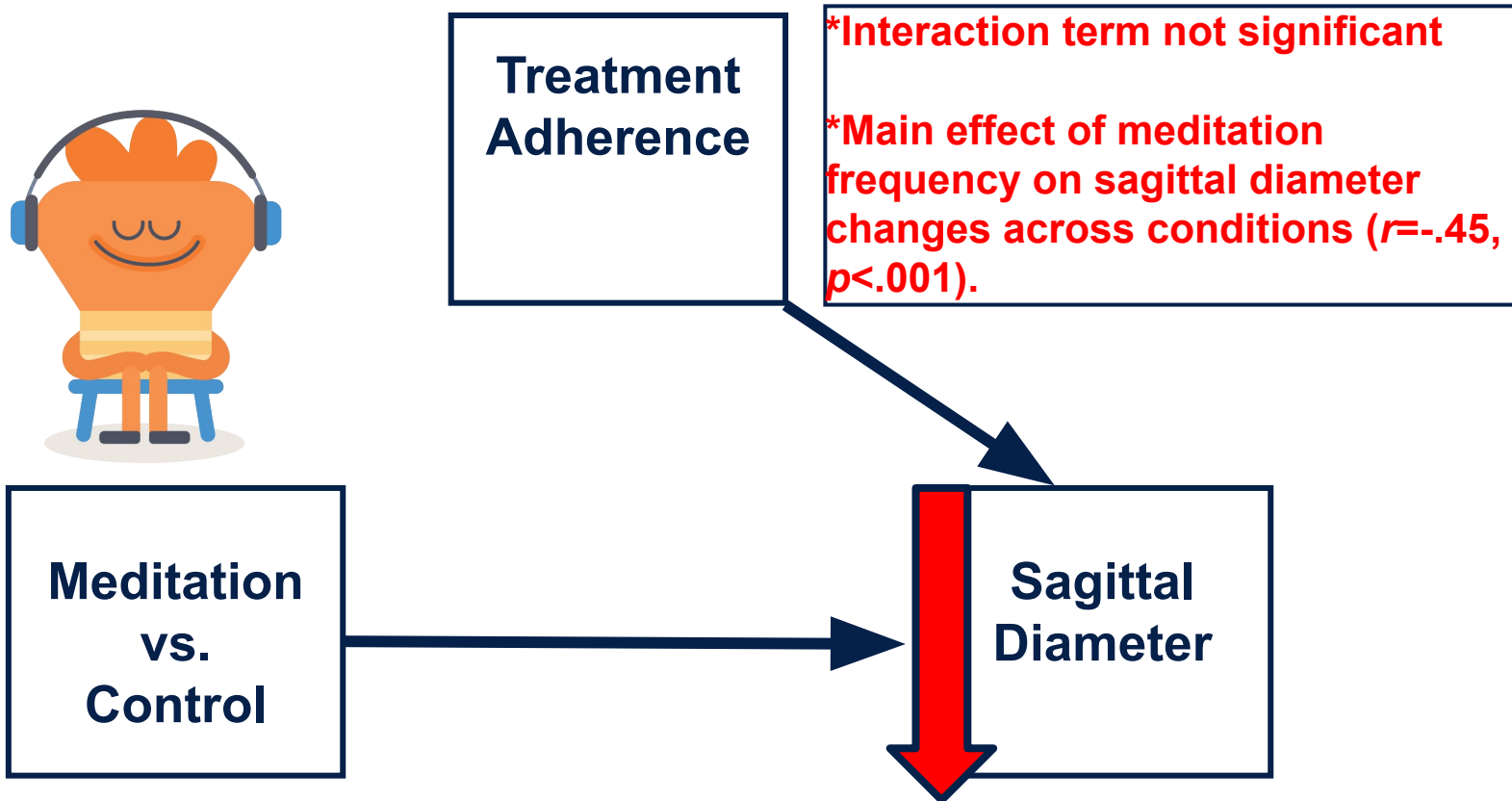
Meditation vs. Control

BMI

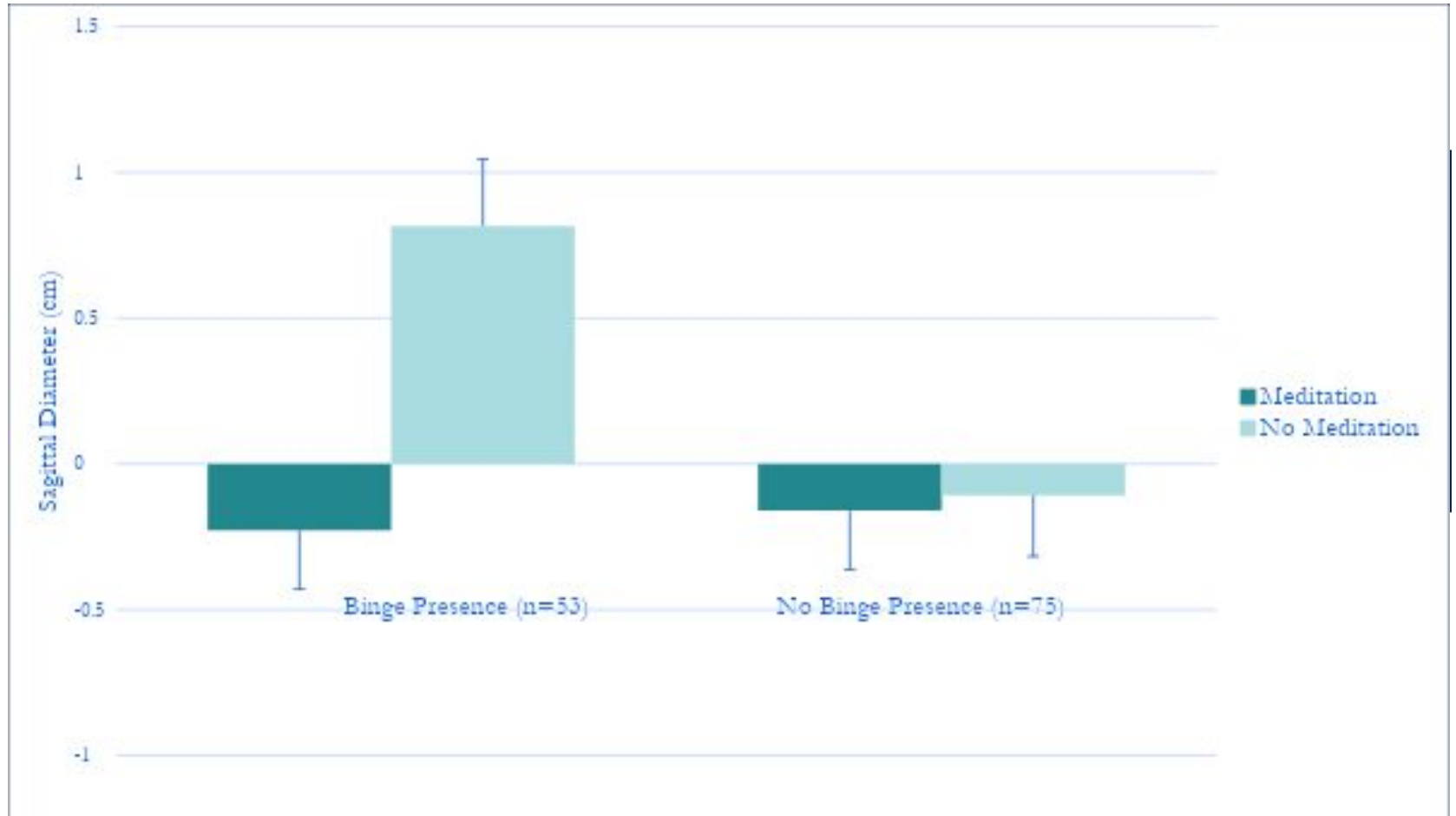
Results: Sagittal Diameter



Results: Moderation by Treatment Adherence



Results: Moderation by Binge Presence



Summary



▪ Primary:

- Treatment effect on:
 - **Global perceptions of psychological distress (PSS)**
 - ~~Tolerance for food cravings (FAAQ)~~

▪ Secondary:

- Treatment effect on:
 - ~~Body mass index (BMI)~~
 - **Sagittal diameter**

▪ Exploratory:

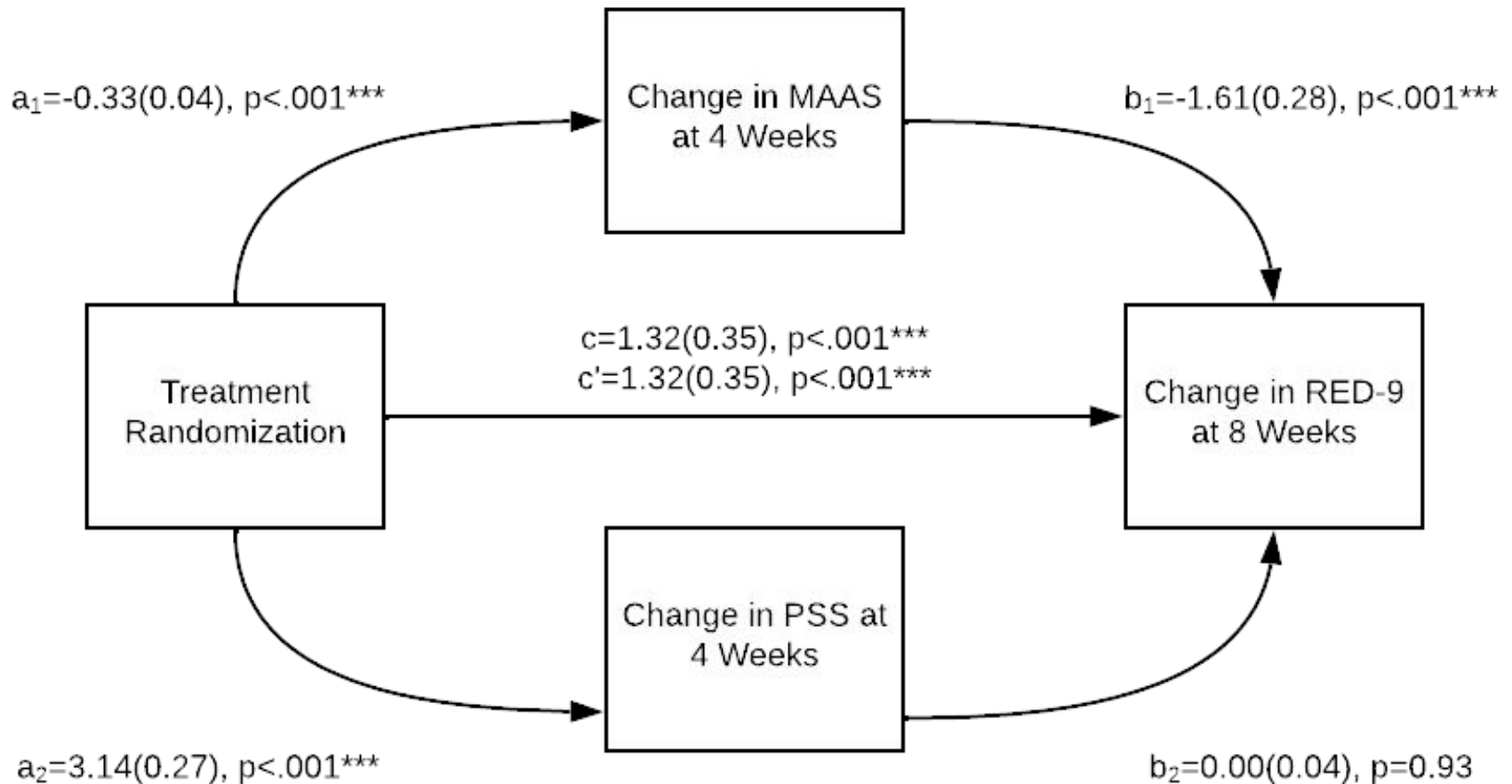
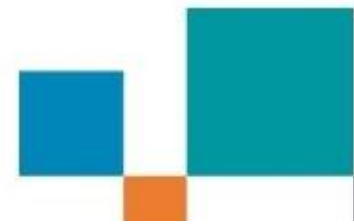
- **Effect of treatment adherence on primary/secondary outcomes**
- **Moderating effect of binge eating presence**

Summary and Discussion



- ***A brief, digital mindfulness-based program may be a low-cost method for***
 - *Reducing perceptions of stress*
 - *Improving abdominal fat distributions patterns*
 - *Despite no reductions in BMI*
 - *Particularly for those with binge eating*
- ***Treatment adherence is an important moderator of effects of a digital mindfulness intervention***
 - *Suggests a mechanistic pathway*
 - E.g., increases in mindfulness may promote decreases on physiological stress reactivity and downstream metabolic improvements

Summary and Discussion



Summary and Discussion



▪ *Overeating drive patterns: Binge eating*



Binge eating:

- *Loss of control over eating +*
- *Objectively large amount of food*



- *Greater rates of drop-out from BWL*
- *Faster weight regain after BWL*

Hudson et al., 2010; Abraham et al. 2014



Acknowledgements

Co-authors:

Elissa Epel (PI)
Aric Prather (PI)
Ashley Mason
Julie Vaccaro
Elena Fromer
Joanna Guan

Funding Sources:

UCSF Healthy Campus Network
Headspace, Inc.
NCCIH K23AT011048 (to RMR)

ClinicalTrials.gov identifier NCT03945214

UCSF

Dept of Psychiatry Behavioral Science

Rachel M. Radin, PhD
Rachel.Radin@ucsf.edu



Results: Participant characteristics ($n=161$)



- Treatment Adherence

- Participants engaged w/Headspace app an average of 4.15 ± 4.22 minutes/day

MOTIVATIONAL INTERVIEWING

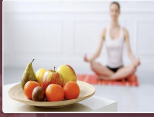
R	RESIST telling them what to do: Avoid telling, directing, or convincing your friend about the right path to good health.
U	UNDERSTAND their motivation: Seek to understand their values, needs, abilities, motivations and potential barriers to changing behaviors.
L	LISTEN with empathy: Seek to understand their values, needs, abilities, motivations and potential barriers to changing behaviors.
E	EMPOWER them: Work with your friends to set achievable goals and to identify techniques to overcome barriers.



1/29/19, 3:46 PM
 Now is a good time to check in with your hunger. What feelings are you having? www.stressfreeuc.org/healthstudy-resources




Healthy Eating Audios



Mindful Eating Introduction

Mindful eating involves paying full attention to the experience of eating and drinking, both inside and outside the body. We pay attention to the colors, smells, textures, flavors, temperature, and even the sounds of our foods.

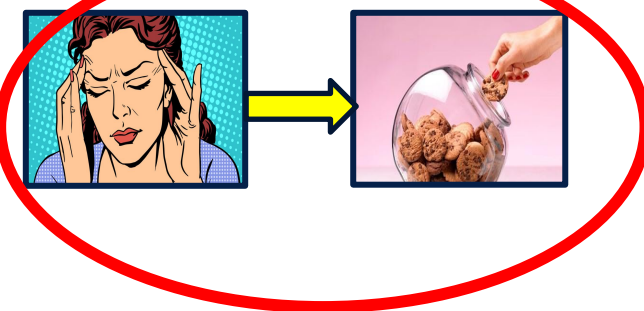
Click the button above to practice a 5-minute mindful eating exercise.



Urge Surfing Introduction

Urges are like waves—they rise in intensity, peak, and eventually crash, such as when we experience an impulse to engage in stress-eating. If we let an urge be—non-judgmentally—without feeding or fighting it, then it will crest, subside, and pass.

Click the button above to practice a 5-minute urge surfing exercise.



Clinical Implications



Clinical Implications



- *Greater rates of drop-out from BWL*
- *Faster weight regain after BWL*