Affect-Focused Microinterventions & MOBC among Female Veterans with Alcohol Misuse

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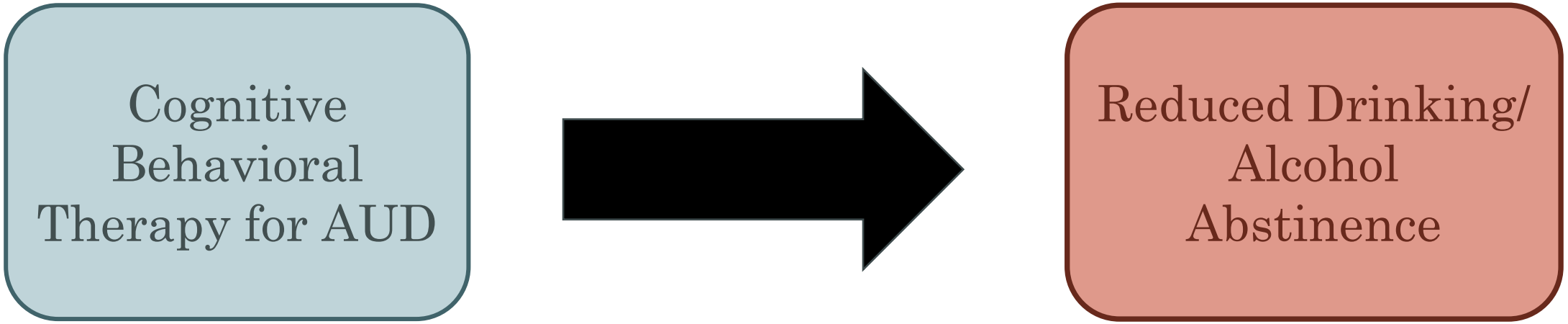
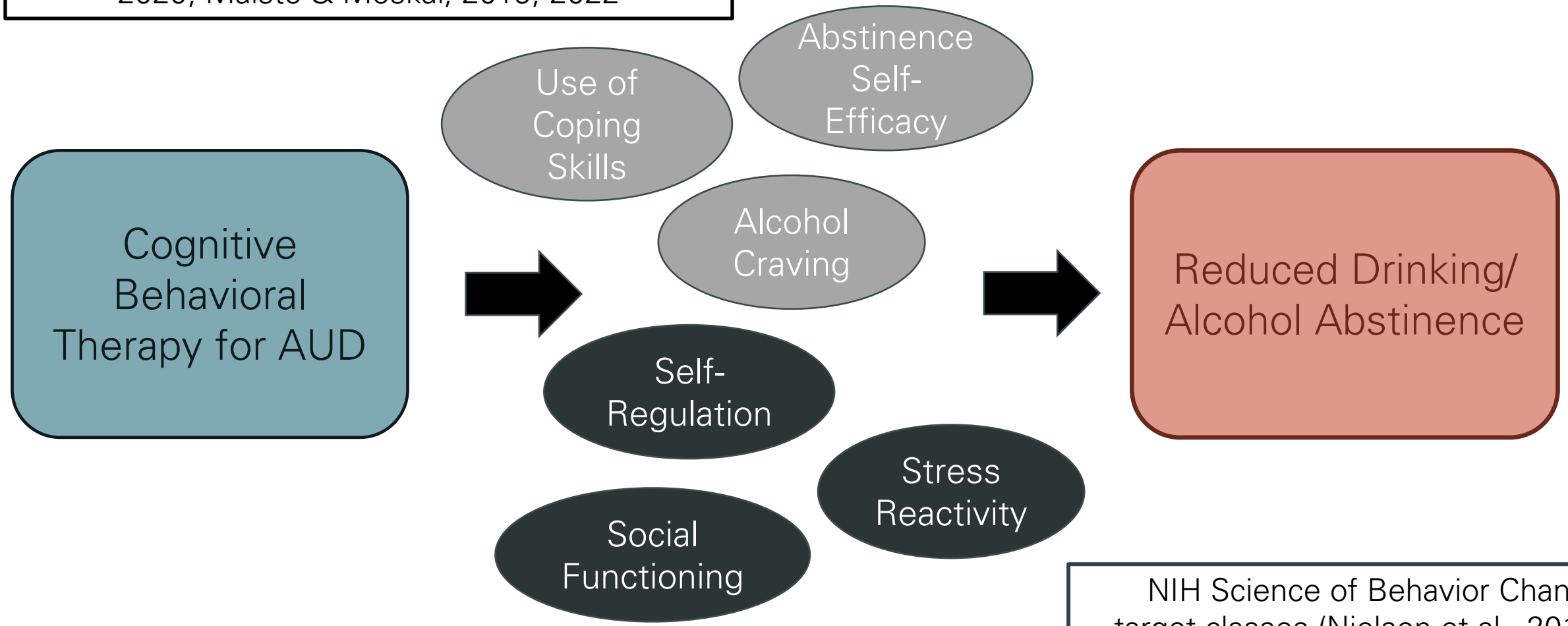
- The opinions expressed here are those of the authors and do not represent the official policy or position of the U.S. Department of Veterans Affairs or the U.S. government.

Mechanisms of Behavior Change (MOBC) in Cognitive-Behavioral Therapy for Alcohol Use Disorder (CBT-AUD)



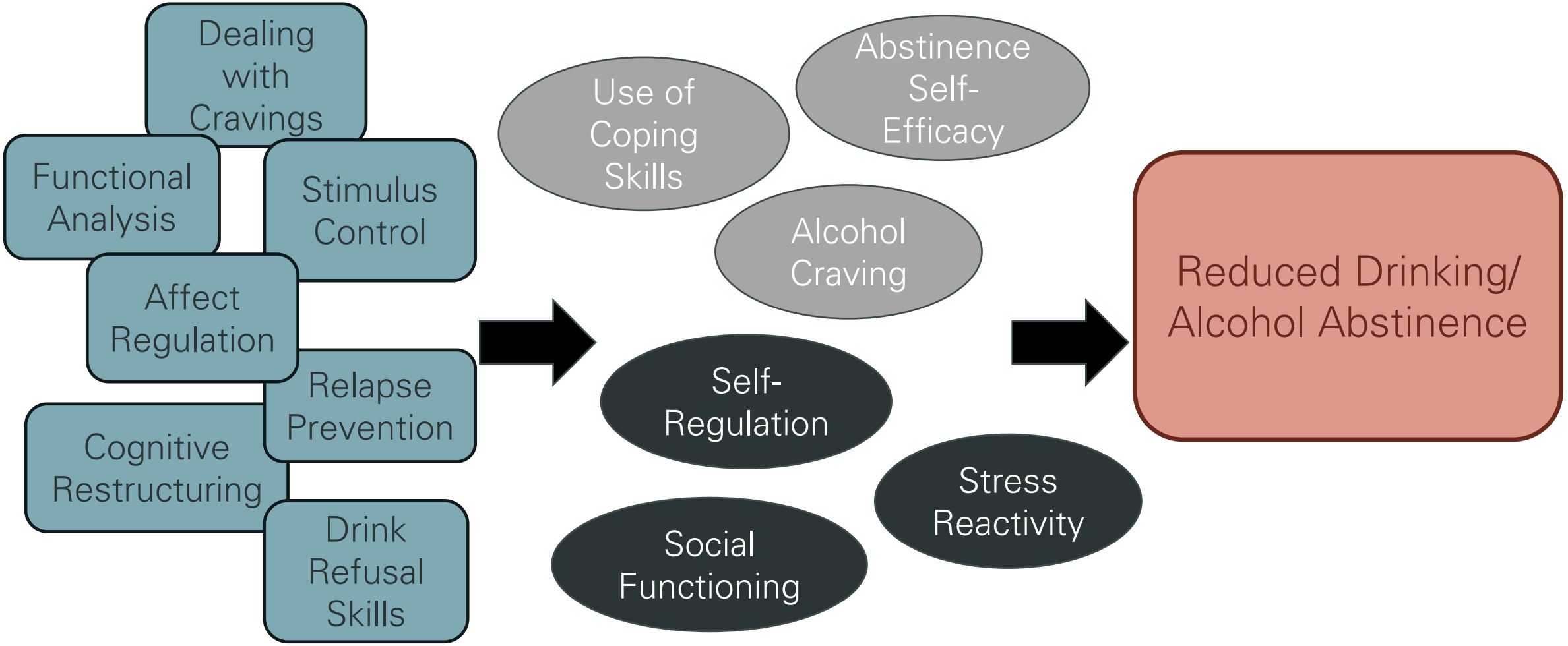
Alcohol-Specific & Transdiagnostic MOBC in CBT-AUD

Magill, Tonigan, Kiluk, Ray, Walthers, & Carroll, 2020; Maisto & Moskal, 2019, 2022



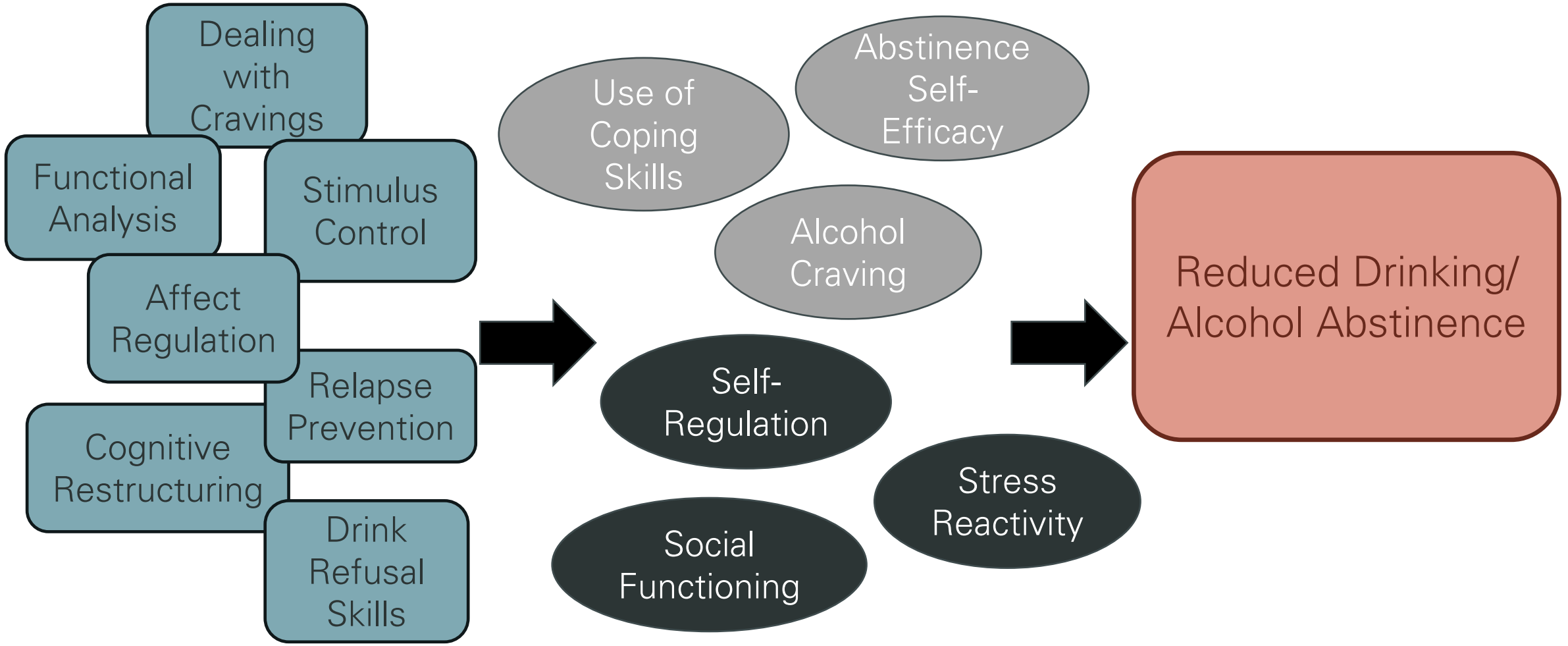
NIH Science of Behavior Change target classes (Nielsen et al., 2018)

Little is known about the efficacy of individual interventions (Nielsen et al., 2018)



Little is known about the efficacy of individual interventions (Nielsen et al., 2018)

…or their impact on specific MOBCs



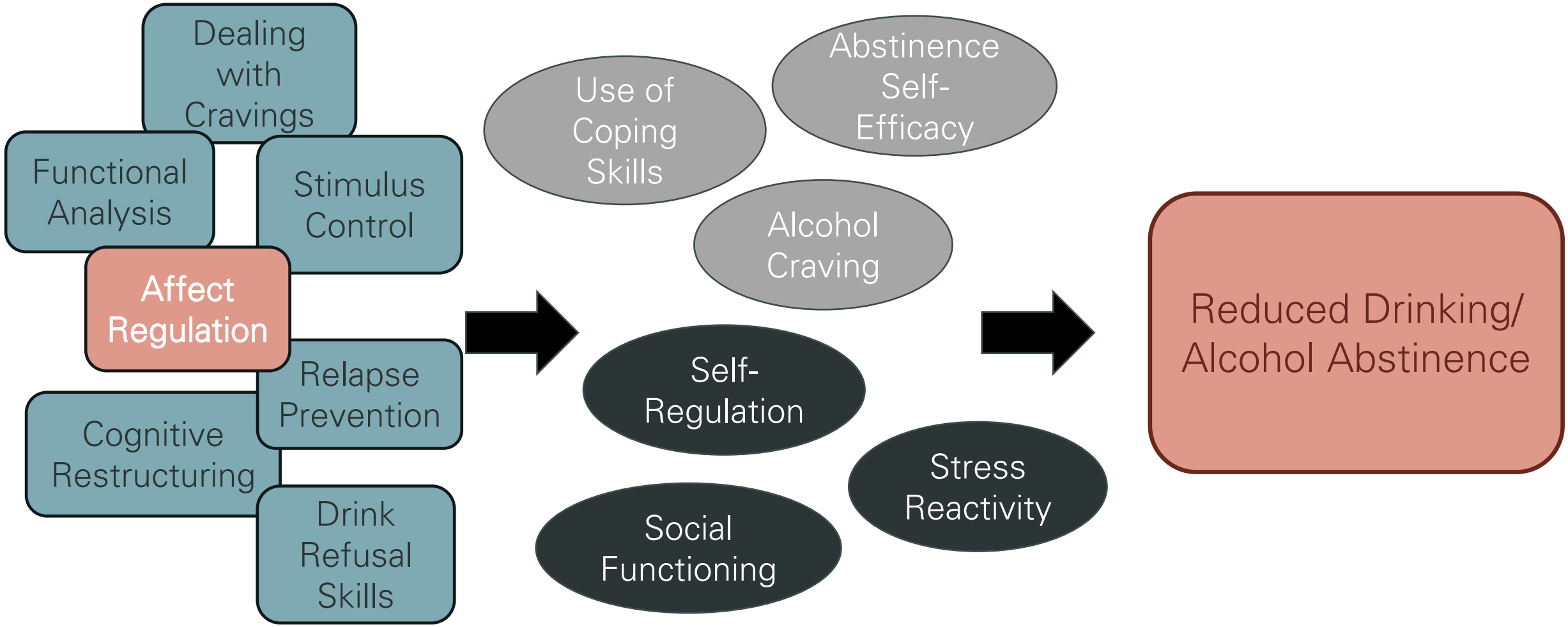
Microintervention Design: The application of an individual therapy intervention, guided by theory of change, to examine its impact on clinical outcomes …and MOBC

(Strauman et al., 2013)

Allow you to formulate and power *a priori* hypotheses about
- Whether an intervention impacts a specific MOBC
- Moderators of intervention efficacy

What works best and for whom?

Isolating Affect Regulation Intervention



Why Affect Regulation Microintervention?

Negative affect is especially salient for understanding women's alcohol misuse

Compared to their male counterparts, women with AUD and heavy drinking habits have:

- Higher rates of all mood & anxiety disorders
  (Goldstein et al., 2012; Karpyak et al., 2016)
- Greater likelihood of drinking and relapse in response to stress and negative affect
  (Peltier et al., 2019; Fox et al., 2009)
- More alcohol-induced alterations in their biological, cognitive, and psychological response to stress
  (Guinle & Sinha, 2020)

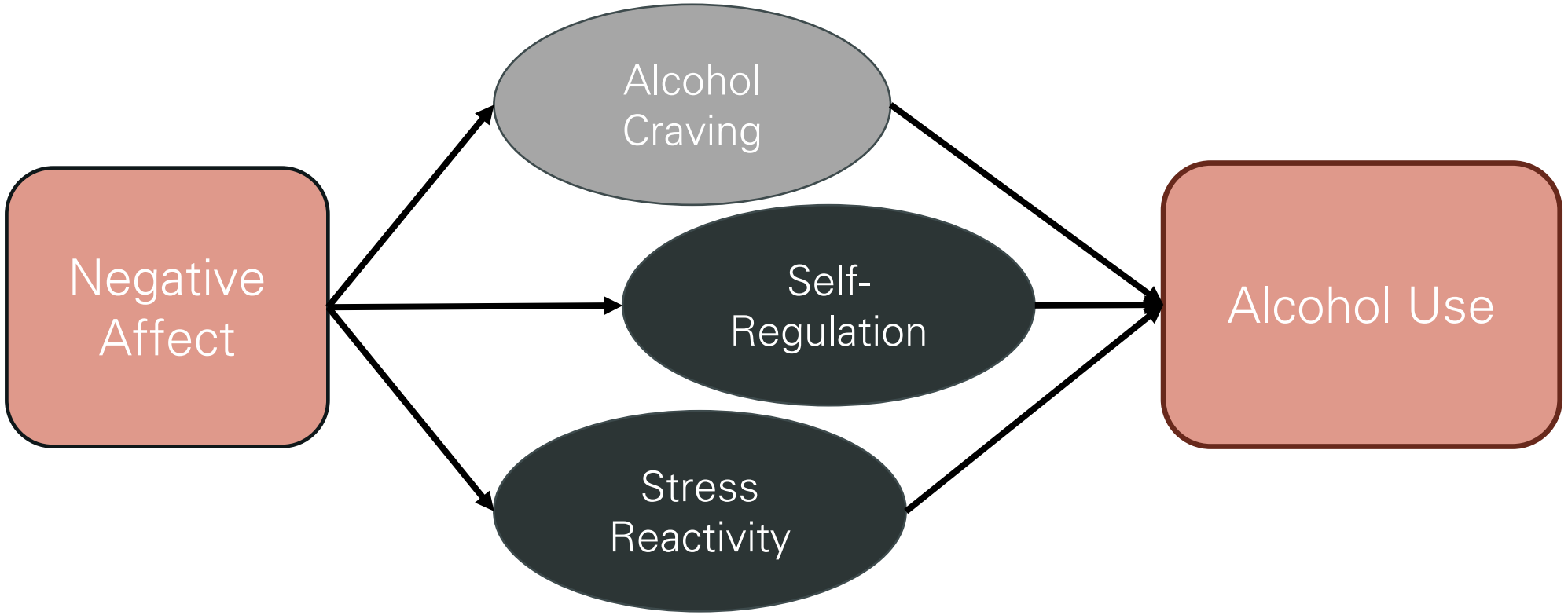
Cognitive Reappraisal Microintervention

Generating an alternative interpretation of an emotion- or stress-eliciting situation to down-regulate negative affect

- An adaptive & effective emotion regulation strategy
  (Beadman et al., 2015; Buhle et al., 2014; Denny et al., 2015; Koch et al., 2007; Naqvi et al., 2015; Ray et al, 2010)

…Compared to Control Condition

Selected MOBCs

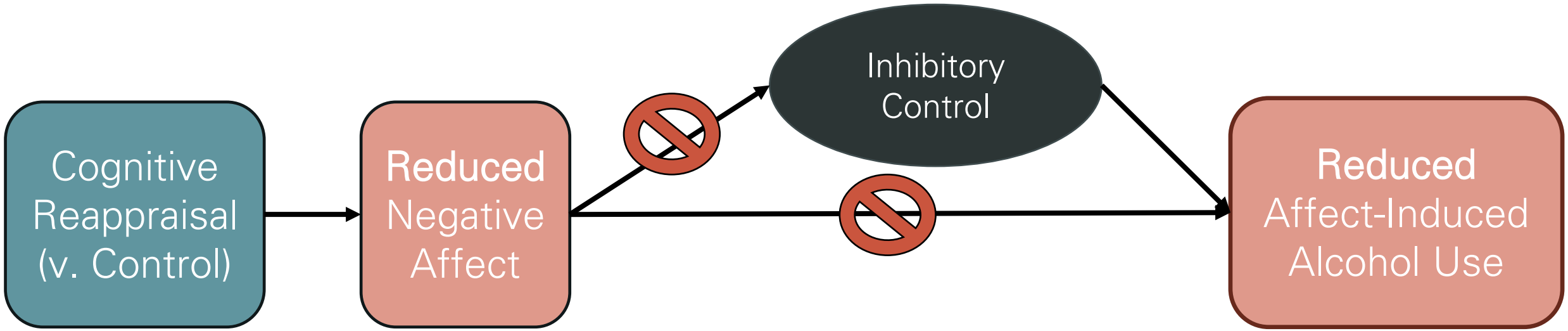


Inhibitory Control

Inhibitory Control

- One facet of executive functioning
- Reduced in response to negative affect (Scholz et al., 2009)
- Particularly low in women with heavy drinking (Weafer et al., 2015)

Model for Testing the Impact of Affect Regulation Microintervention (CR) on Selected MOBC



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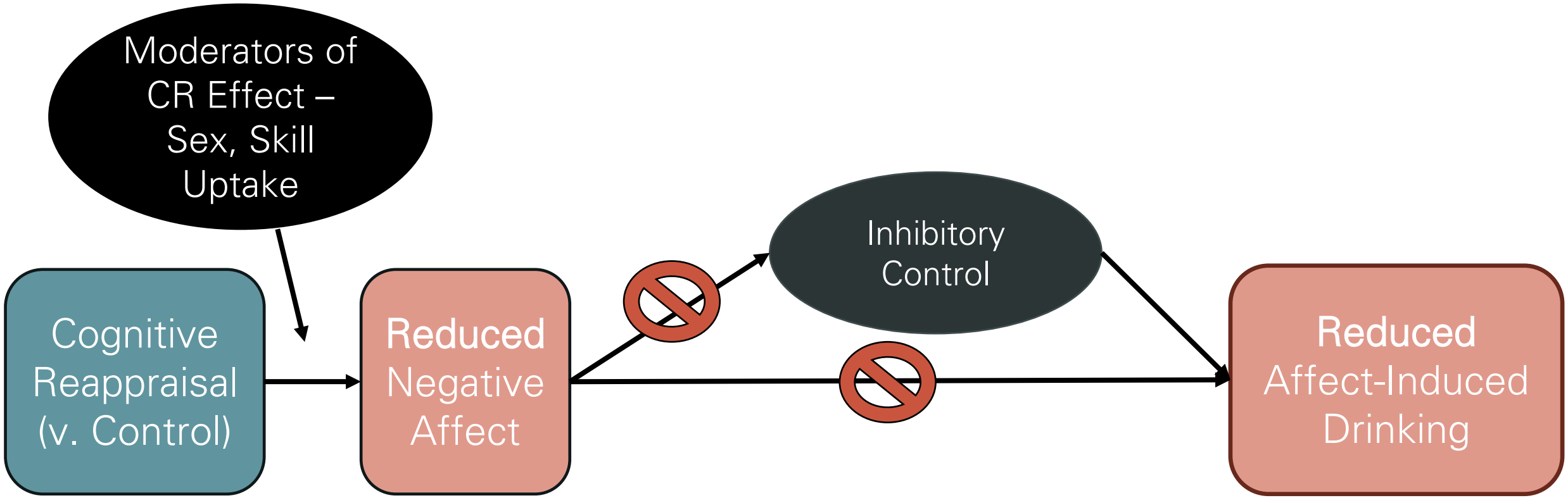
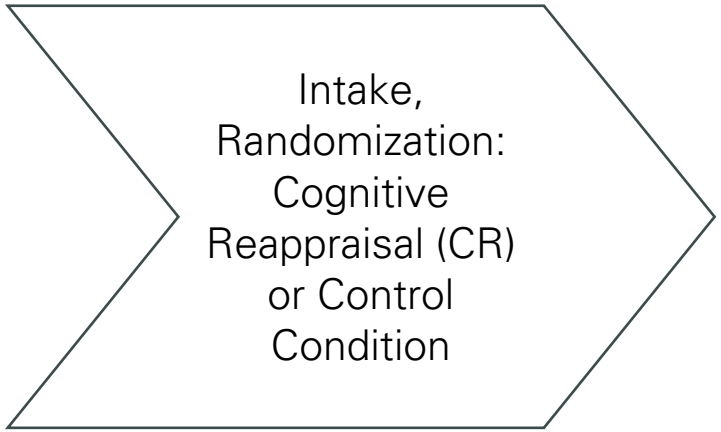
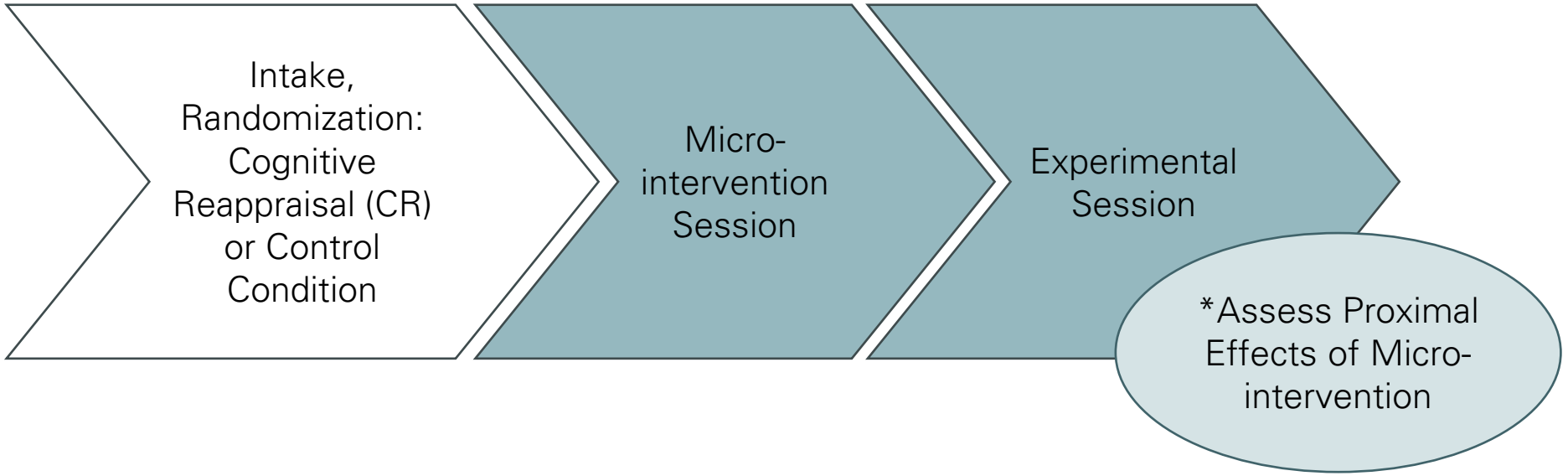


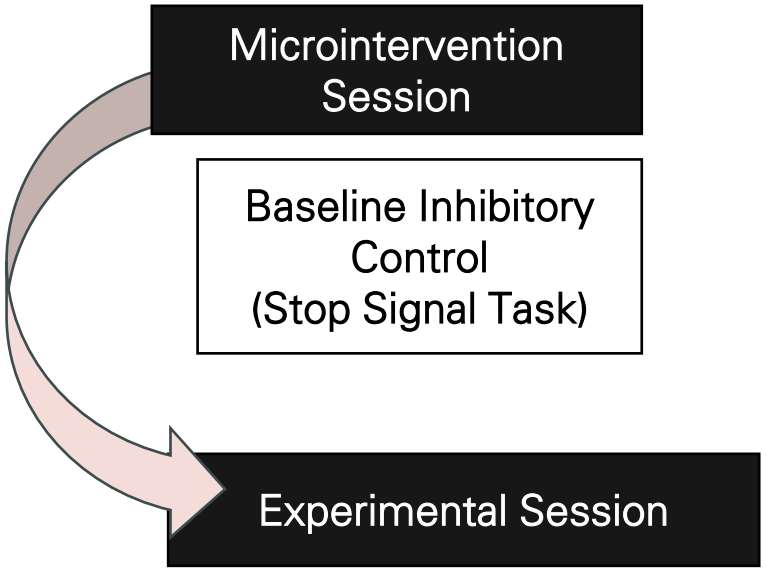
Methods

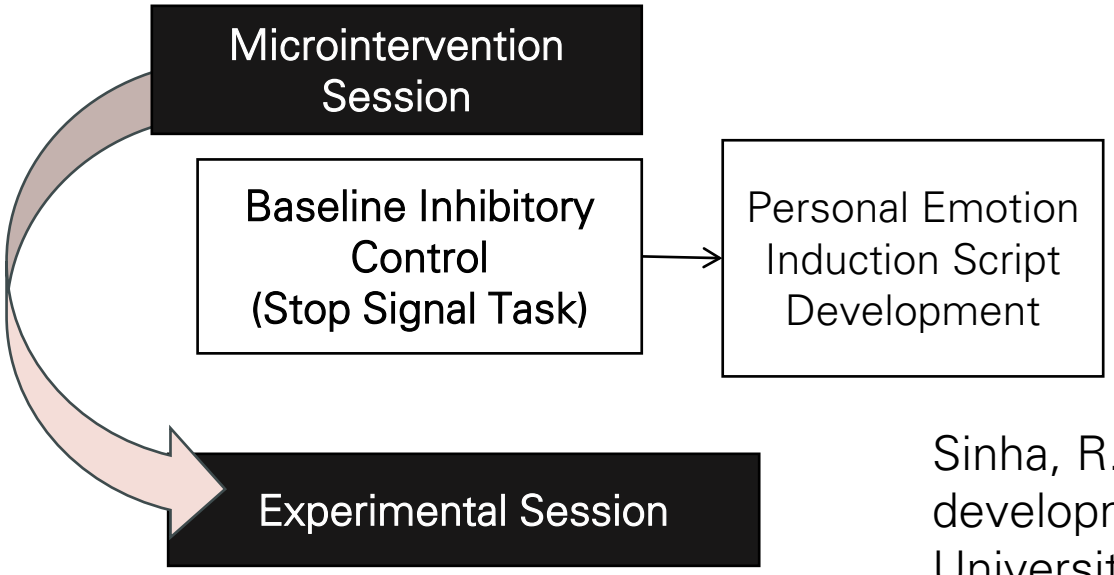
Study Flow


Intake,
Randomization:
Cognitive
Reappraisal (CR)
or Control
Condition

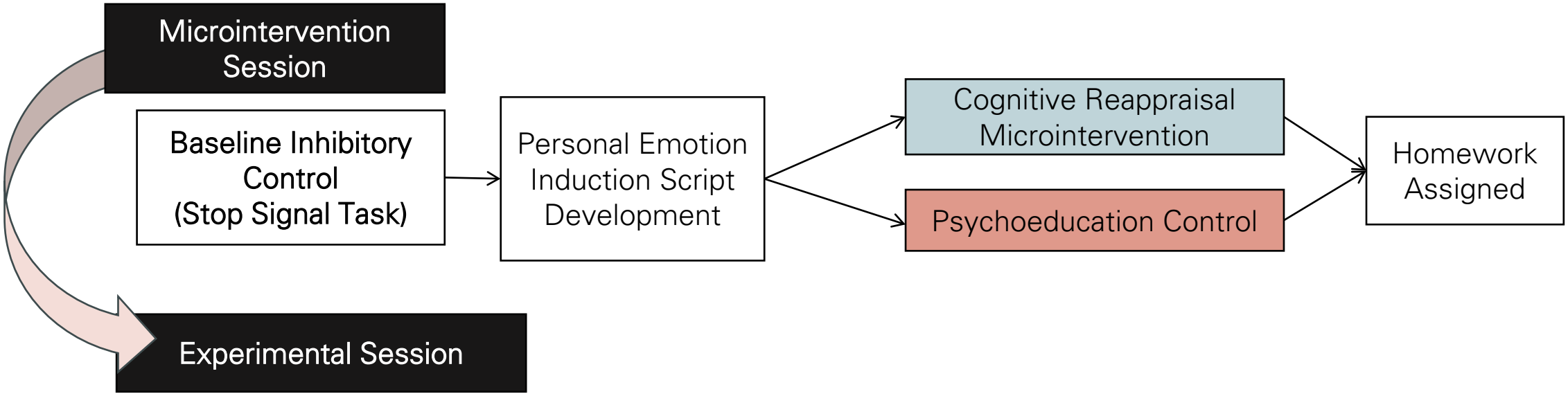
Study Flow


Intake, Randomization: Cognitive Reappraisal (CR) or Control Condition
Micro-intervention Session
Experimental Session
*Assess Proximal Effects of Micro-intervention

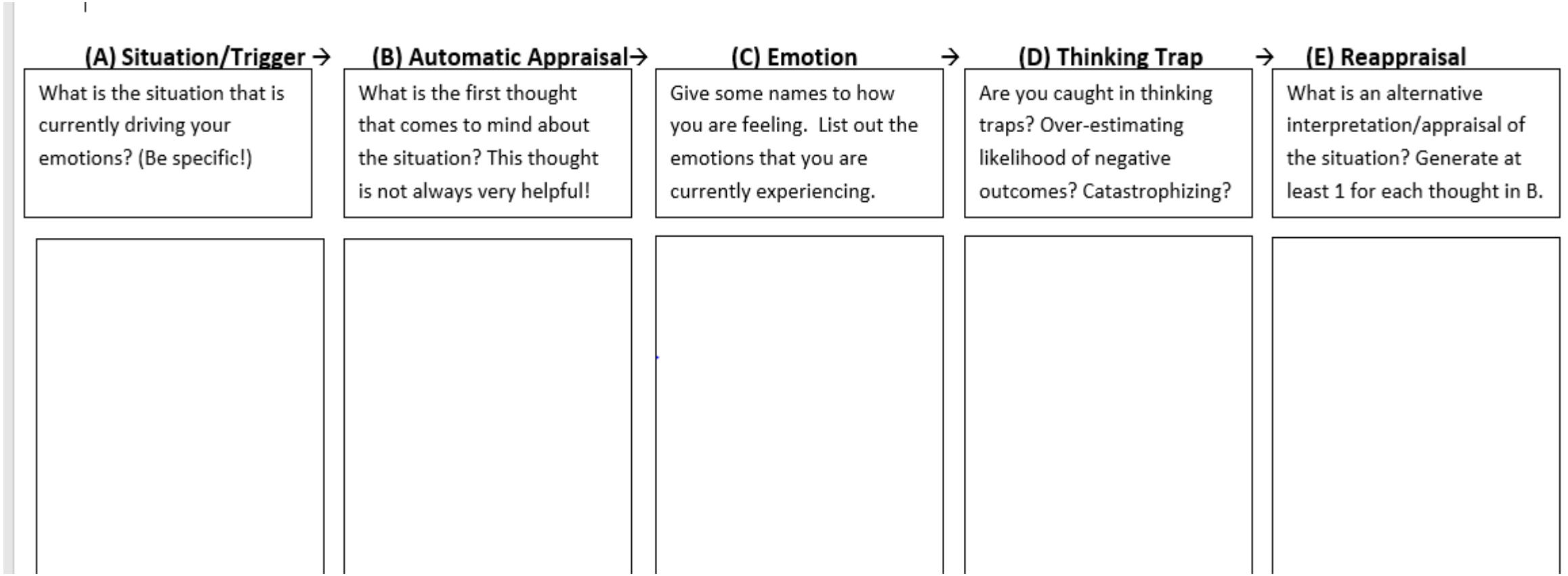

Microintervention Session
Baseline Inhibitory Control (Stop Signal Task)
Experimental Session



Sinha, R., & Tuit, K. L. (2012). Imagery script development procedures. New Haven, CT: Yale University School of Medicine.

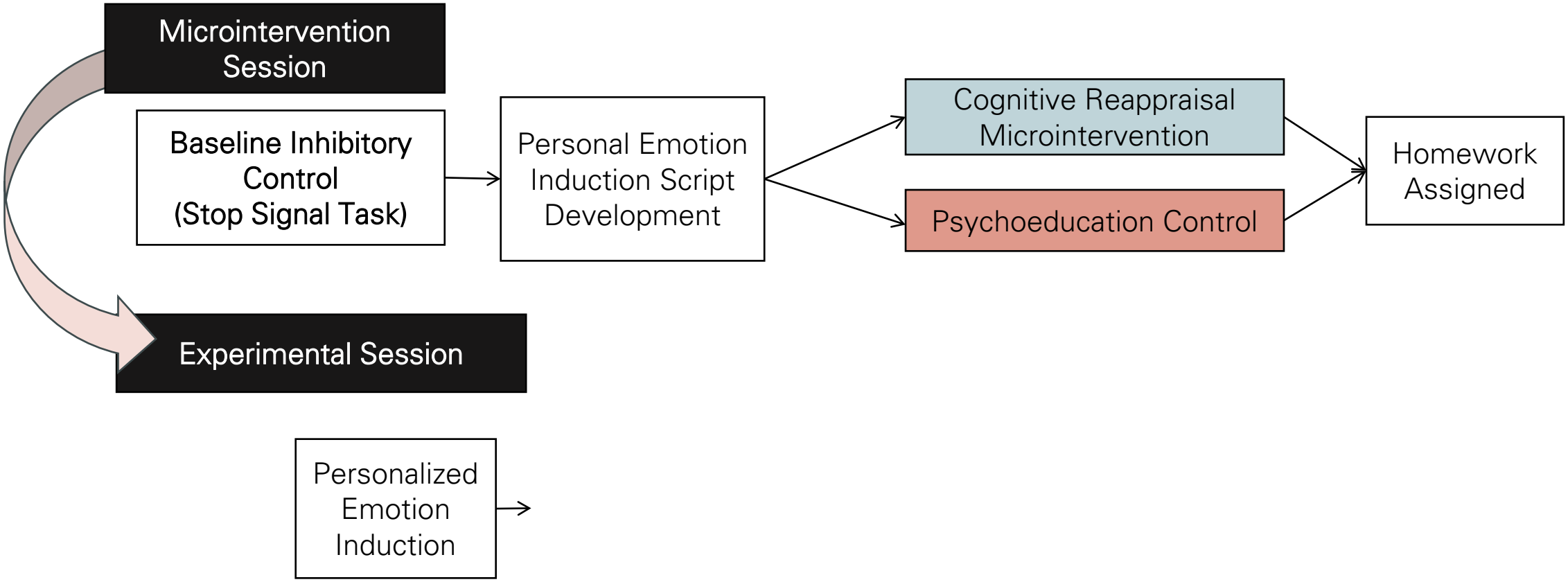

Microintervention Session
Baseline Inhibitory Control (Stop Signal Task)
Personal Emotion Induction Script Development
Cognitive Reappraisal Microintervention
Psychoeducation Control
Homework Assigned
Experimental Session

Cognitive Reappraisal Worksheet



(A) Situation/Trigger →	(B) Automatic Appraisal→	(C) Emotion →	(D) Thinking Trap →	(E) Reappraisal
What is the situation that is currently driving your emotions? (Be specific!)	What is the first thought that comes to mind about the situation? This thought is not always very helpful!	Give some names to how you are feeling. List out the emotions that you are currently experiencing.	Are you caught in thinking traps? Over-estimating likelihood of negative outcomes? Catastrophizing?	What is an alternative interpretation/appraisal of the situation? Generate at least 1 for each thought in B.

1. Assigned for homework – once per week for 5 weeks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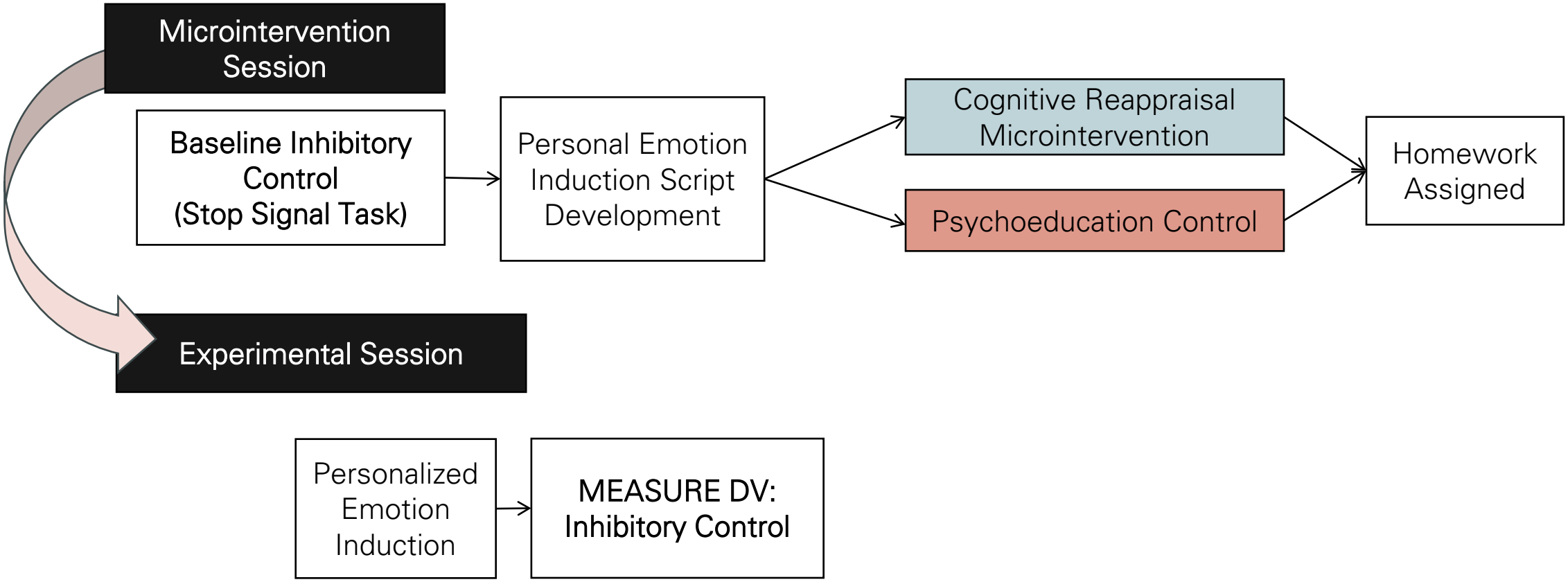
Homework Assigned
Experimental Session
Personalized Emotion Induction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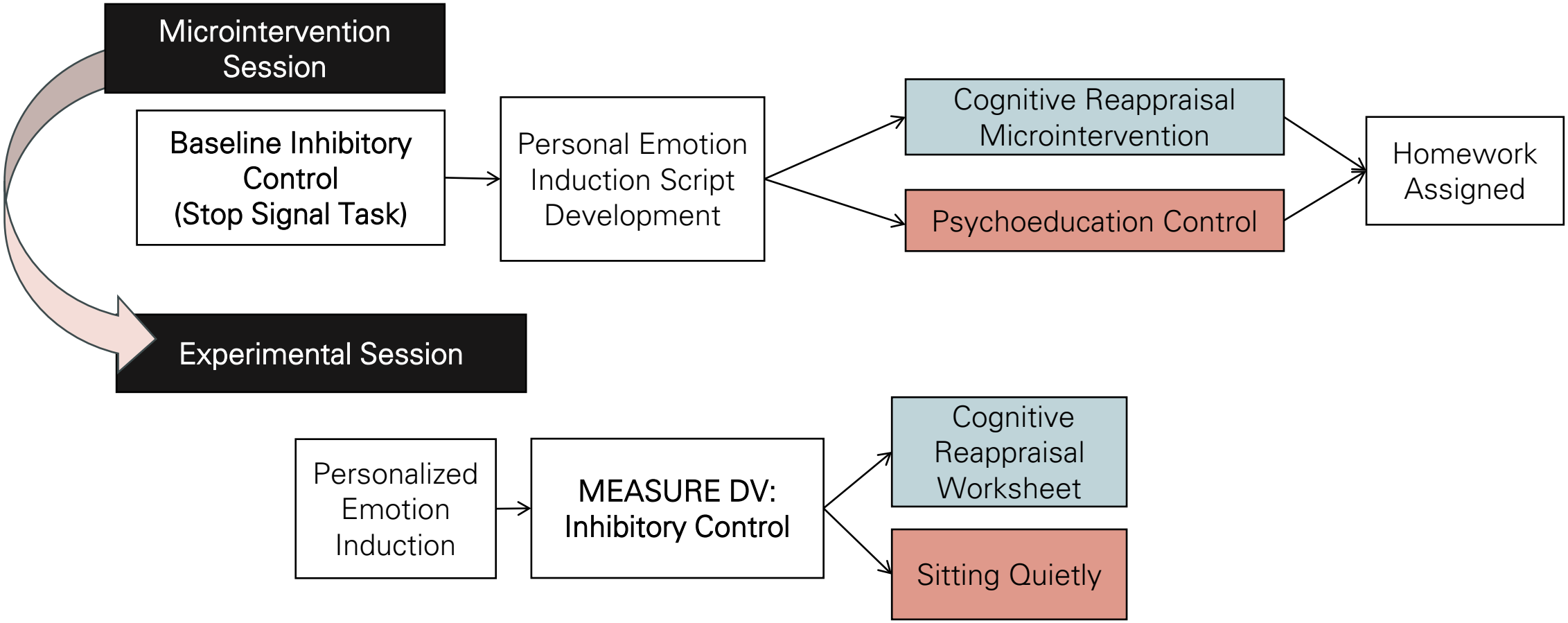
Experimental Session
Personalized Emotion Induction
MEASURE DV: Inhibitory Control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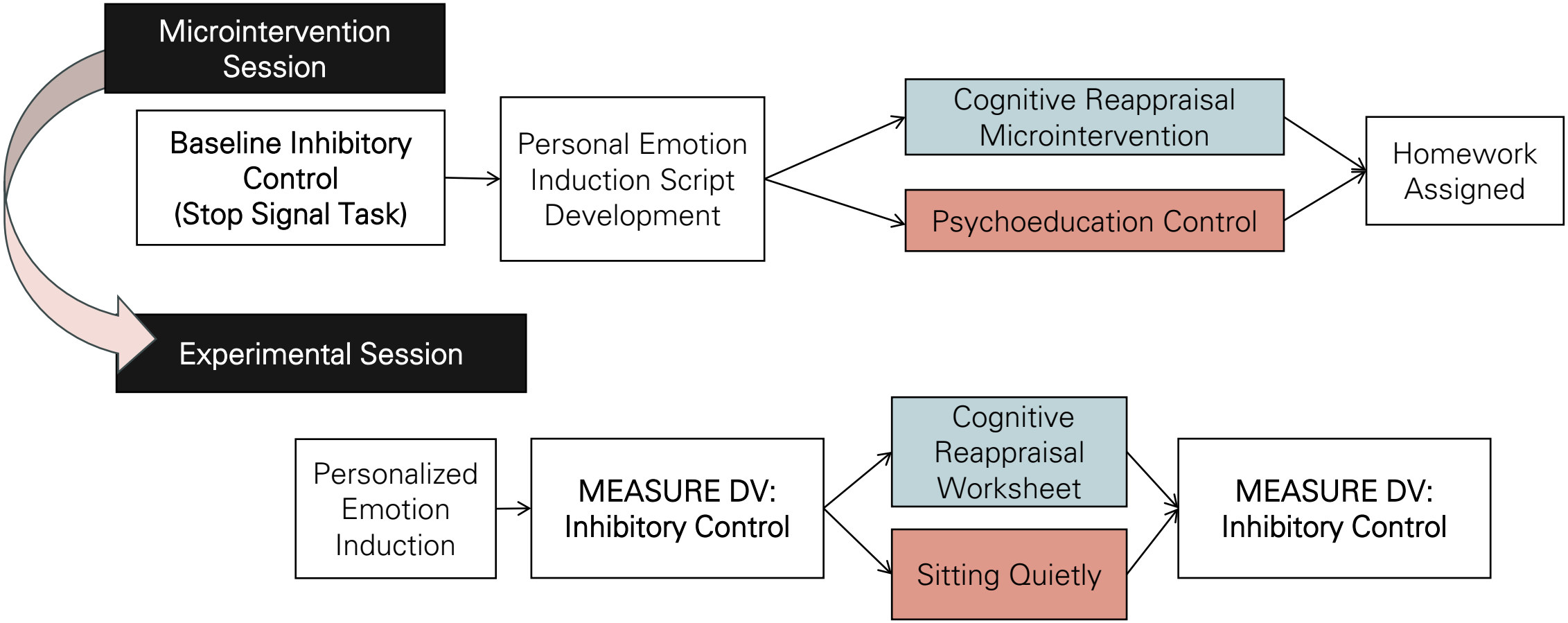
Psychoeducation Control
Homework Assigned
Experimental Session
Personalized Emotion Induction
MEASURE DV: Inhibitory Control
Cognitive Reappraisal Worksheet
Sitting Quietly

Cognitive Reappraisal Worksheet

(A) Situation/Trigger →	(B) Automatic Appraisal→	(C) Emotion →	(D) Thinking Trap →	(E) Reappraisal
What is the situation that is currently driving your emotions? (Be specific!)	What is the first thought that comes to mind about the situation? This thought is not always very helpful!	Give some names to how you are feeling. List out the emotions that you are currently experiencing.	Are you caught in thinking traps? Over-estimating likelihood of negative outcomes? Catastrophizing?	What is an alternative interpretation/appraisal of the situation? Generate at least 1 for each thought in B.

1. Assigned for homework – once per week
2. Completed in Lab - after Emotion Induction
    - Scored, to give Quality of CR Use Score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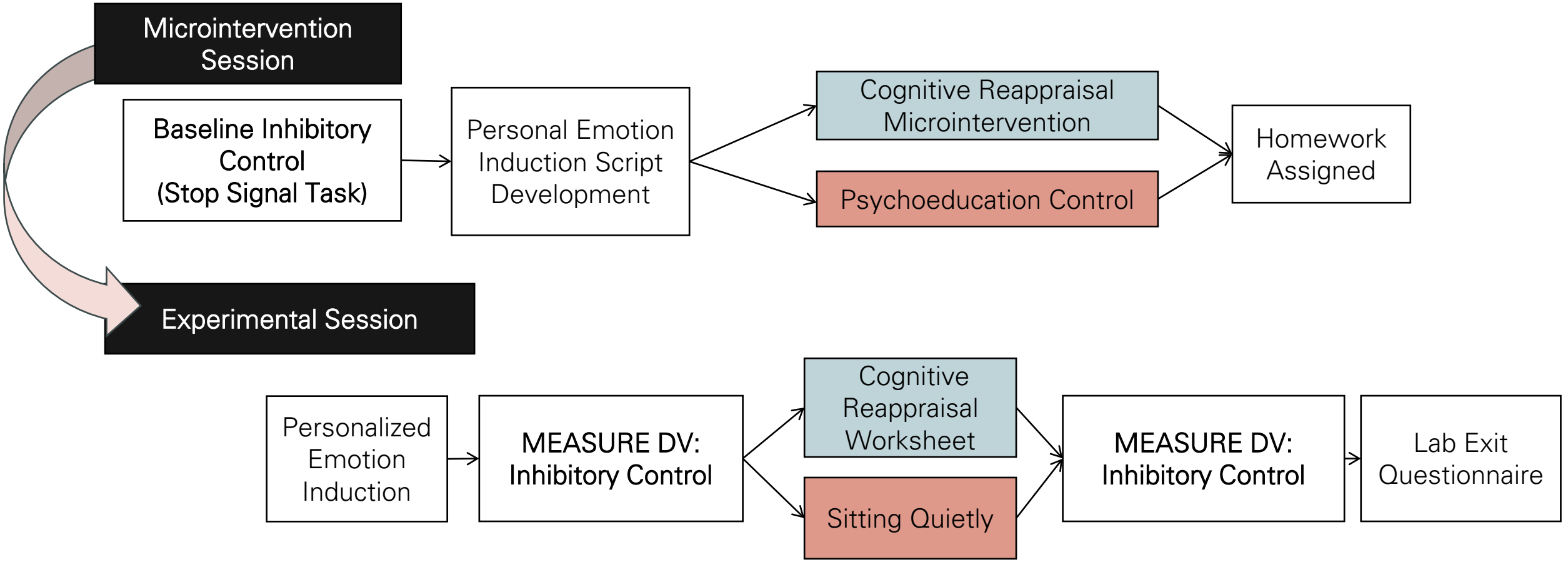
Homework Assigned
Experimental Session
Personalized Emotion Induction
MEASURE DV: Inhibitory Control
Cognitive Reappraisal Worksheet
Sitting Quietly
MEASURE DV: Inhibitory Control


Microintervention Session
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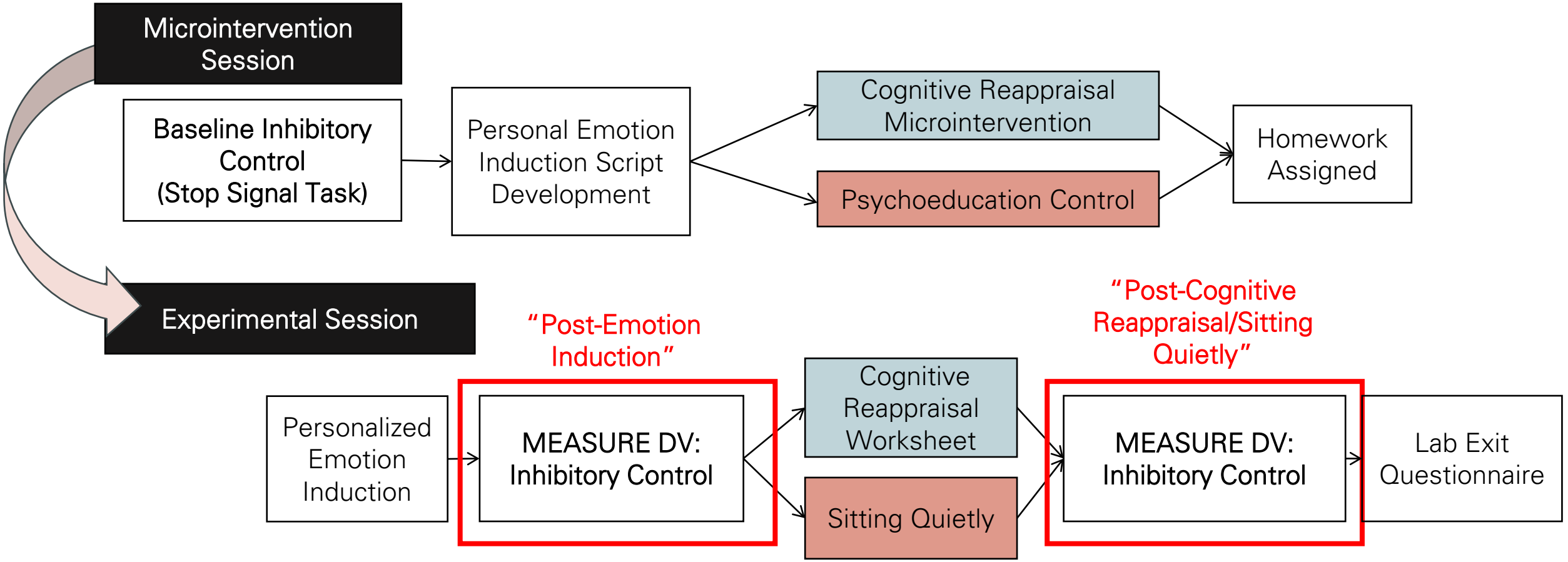
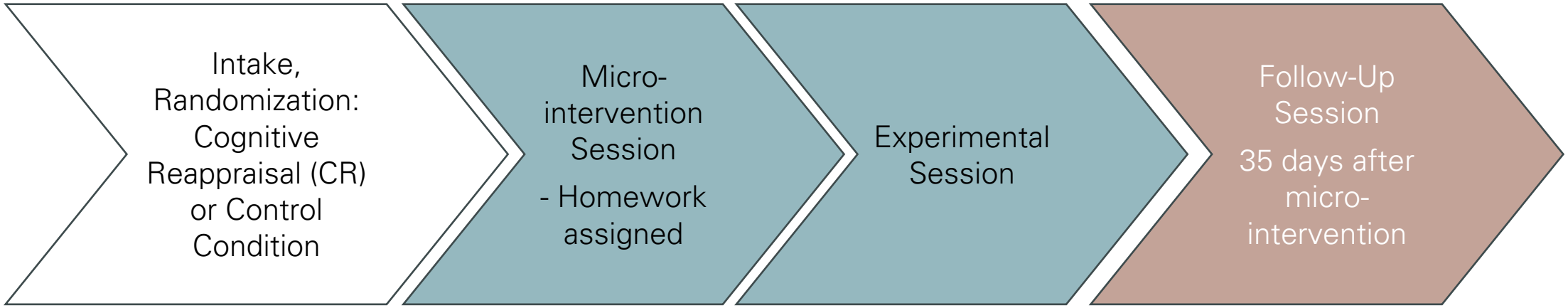
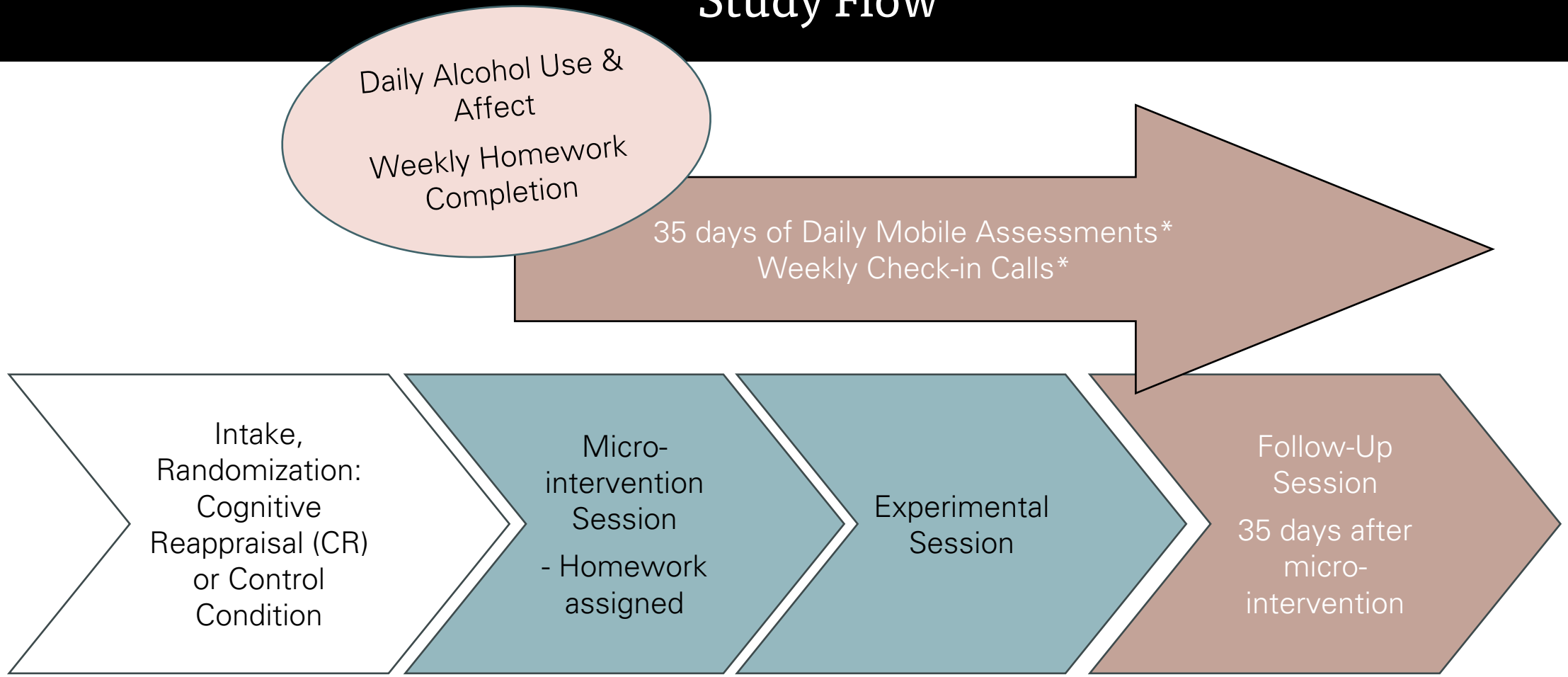
Personal Emotion Induction Script Development
Cognitive Reappraisal Microintervention
Psychoeducation Control
Homework Assigned
Experimental Session
Personalized Emotion Induction
MEASURE DV: Inhibitory Control
Cognitive Reappraisal Worksheet
Sitting Quietly
MEASURE DV: Inhibitory Control
Lab Exit Questionnaire


Microintervention Session
Baseline Inhibitory Control (Stop Signal Task)
Personal Emotion Induction Script Development
Cognitive Reappraisal Microintervention
Psychoeducation Control
Homework Assigned
Experimental Session
"Post-Emotion Induction"
"Post-Cognitive Reappraisal/Sitting Quietly"
Personalized Emotion Induction
MEASURE DV: Inhibitory Control
Cognitive Reappraisal Worksheet
Sitting Quietly
MEASURE DV: Inhibitory Control
Lab Exit Questionnaire

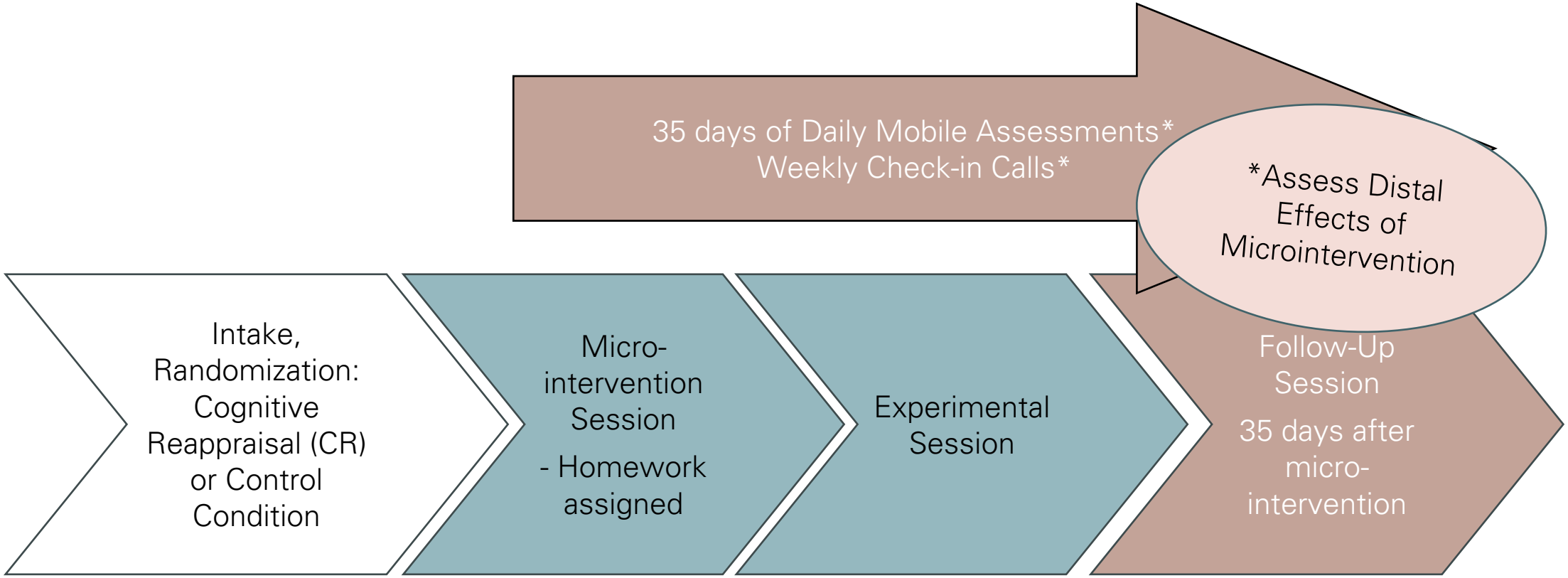
Study Flow


Intake, Randomization: Cognitive Reappraisal (CR) or Control Condition
Micro-intervention Session
- Homework assigned
Experimental Session
Follow-Up Session
35 days after micro-intervention

Study Flow


Daily Alcohol Use & Affect
Weekly Homework Completion
35 days of Daily Mobile Assessments*
Weekly Check-in Calls*
Intake, Randomization: Cognitive Reappraisal (CR) or Control Condition
Micro-intervention Session
- Homework assigned
Experimental Session
Follow-Up Session
35 days after micro-intervention

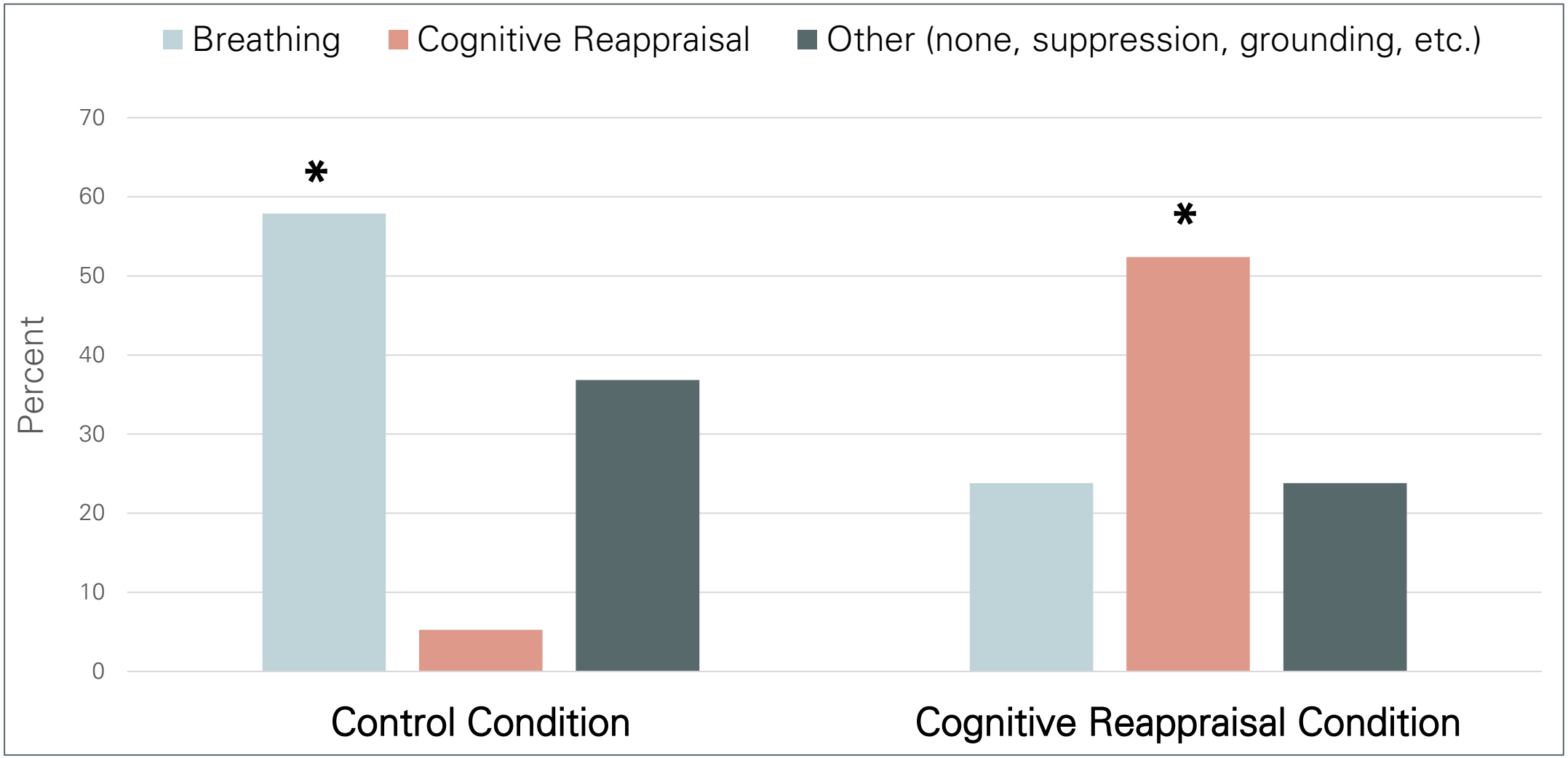
Study Flow


35 days of Daily Mobile Assessments*
Weekly Check-in Calls*
*Assess Distal Effects of Microintervention
Intake, Randomization: Cognitive Reappraisal (CR) or Control Condition
Micro-intervention Session
- Homework assigned
Experimental Session
Follow-Up Session
35 days after micro-intervention

Results

Preliminary Analyses: Women's Use of Cognitive Reappraisal After Microintervention Delivery

Please briefly describe any skills or strategies you used to cope with or regulate any stress or emotions you experienced during the session



More breathing strategies used in Control Condition,
More Cognitive Reappraisal Strategy use in Cognitive Reappraisal Condition, x^2= 10.85, p= .013

Most Women Successfully Implement Cognitive Reappraisal (CR) in the Lab …

- CR worksheets were independently rated by two clinicians
- On a scale of 4-12, average score was 10 (SD=1.5)
- 21% women scored a “perfect” 12

… But quality of skill use does vary

Most Women Used Cognitive Reappraisal (CR) in their daily lives…

Women report completing the CR worksheet on average 1/5 weeks in study

- 32% reported never completing the worksheet at home

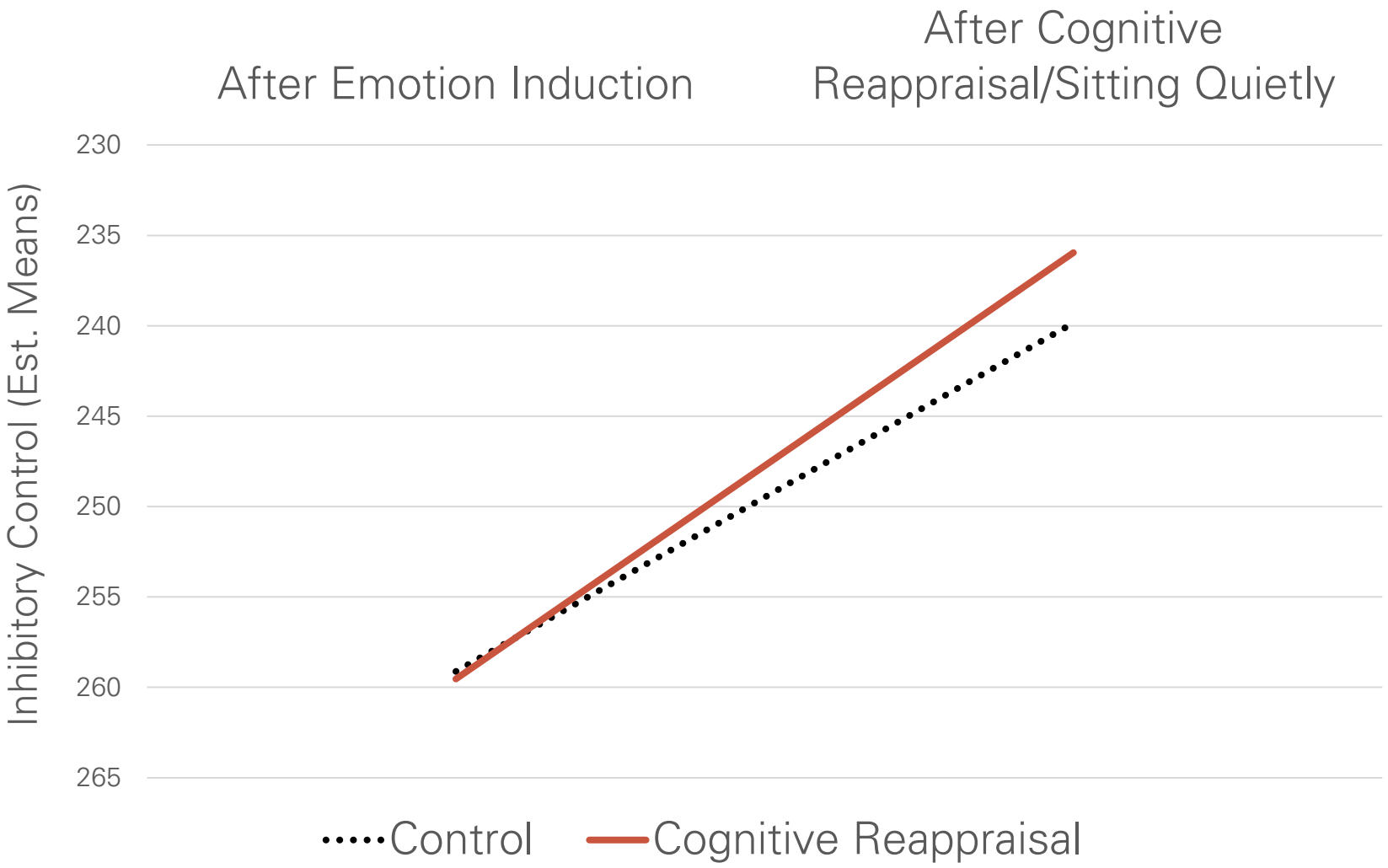
Women report at least using CR on 3/5 weeks in the study

- 100% reported using CR at least once during in their daily life during the study

… But frequency of skill use does vary

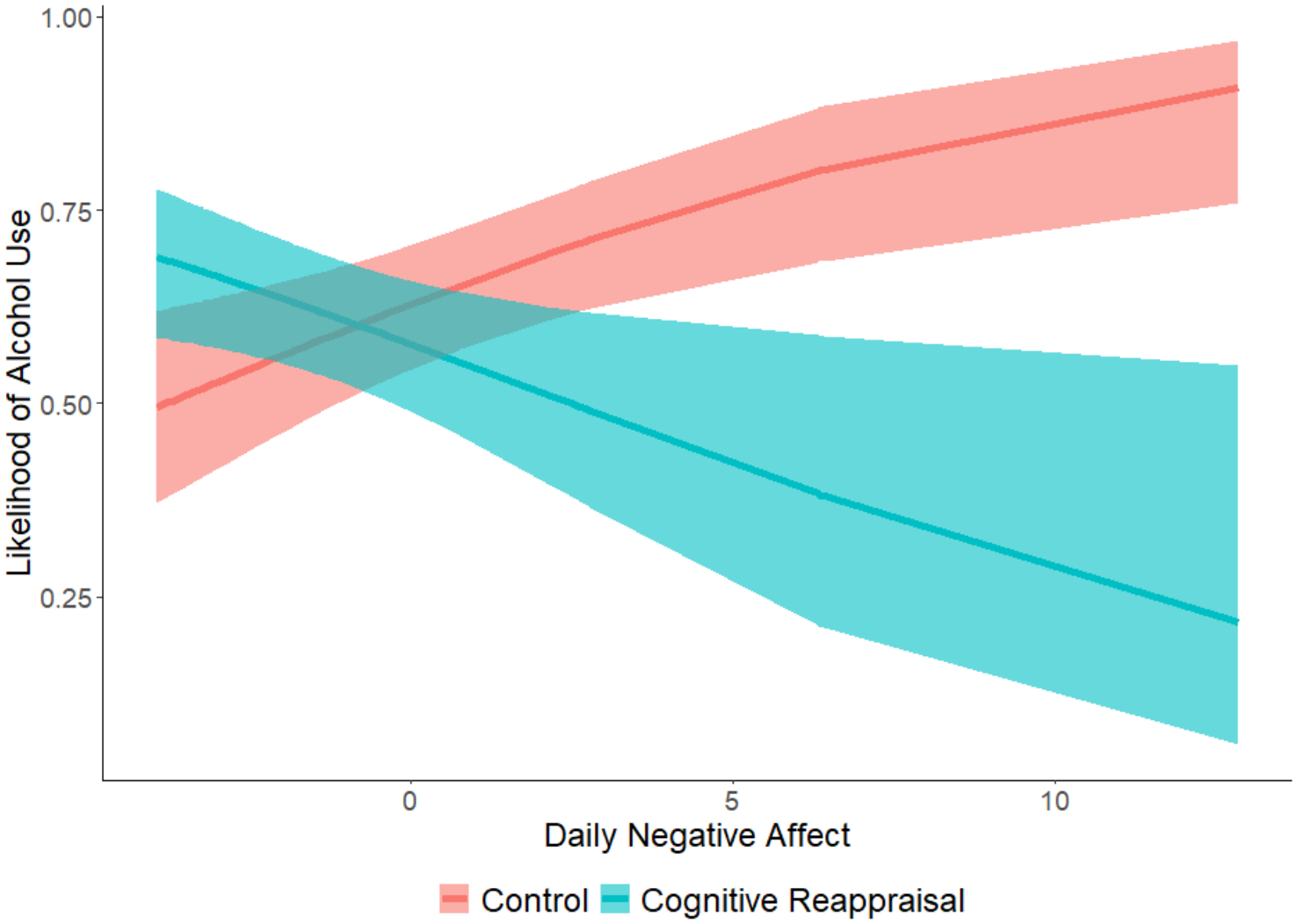
Cognitive Reappraisal v. Control on affect-modulated outcomes in the lab & daily life among female veterans

Proximal Main Effects of Condition on Inhibitory Control



RM GLM// *n*= 82 female participants // Condition*Time F= 0.12, p= .73

Distal Main Effects of Microintervention on Affect-Induced Alcohol Use



In the 5 weeks After Microintervention:

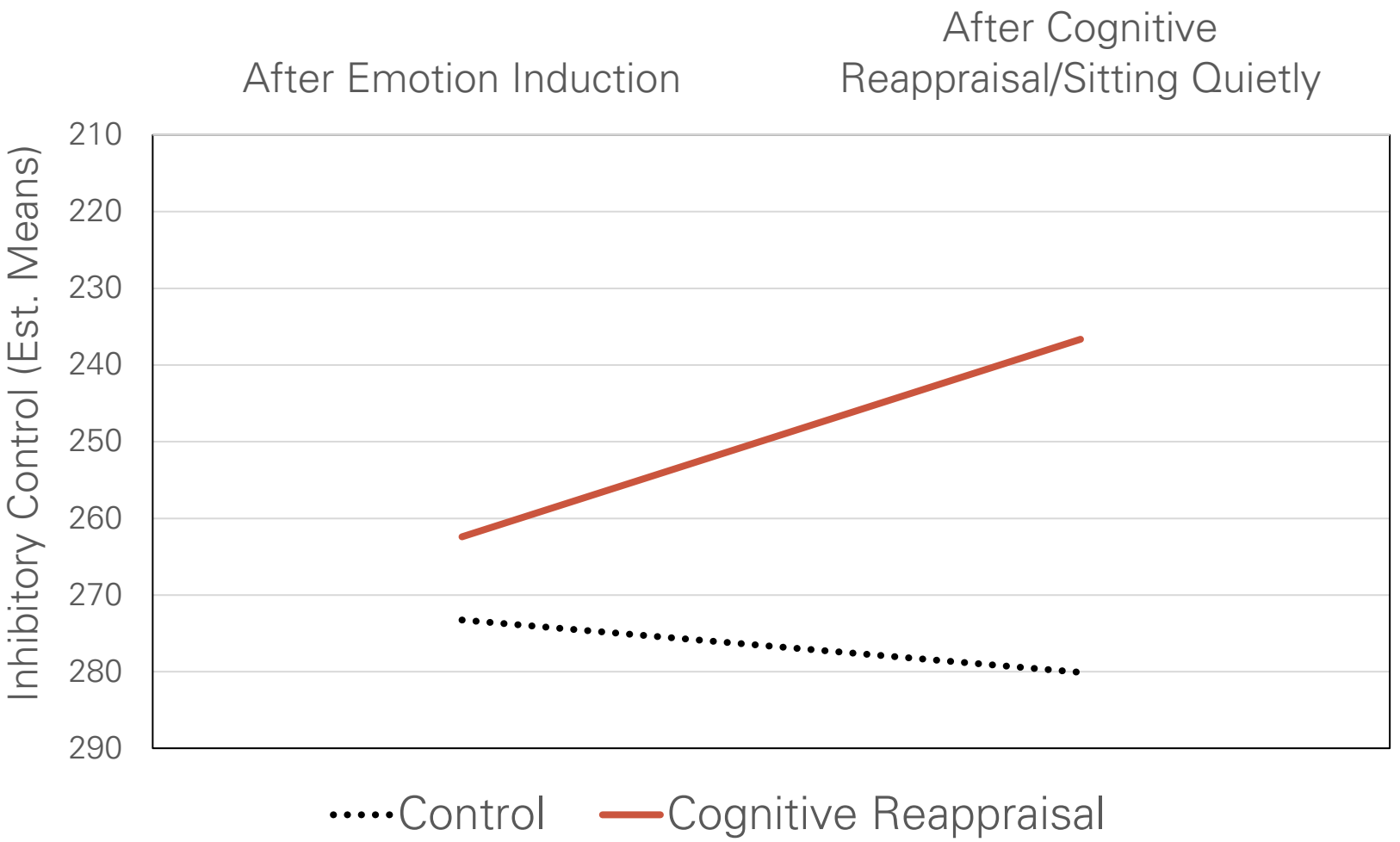
Participants in the Control Condition had *higher* likelihood of alcohol use on days of relatively higher negative affect

Participants in the Cognitive Reappraisal Condition had *lower* likelihood of alcohol use on days of relatively higher negative affect

GLMM// *n*= 41, 1307 obs. // Condition*PANAS NA (btwn) b= -0.26, p= .05

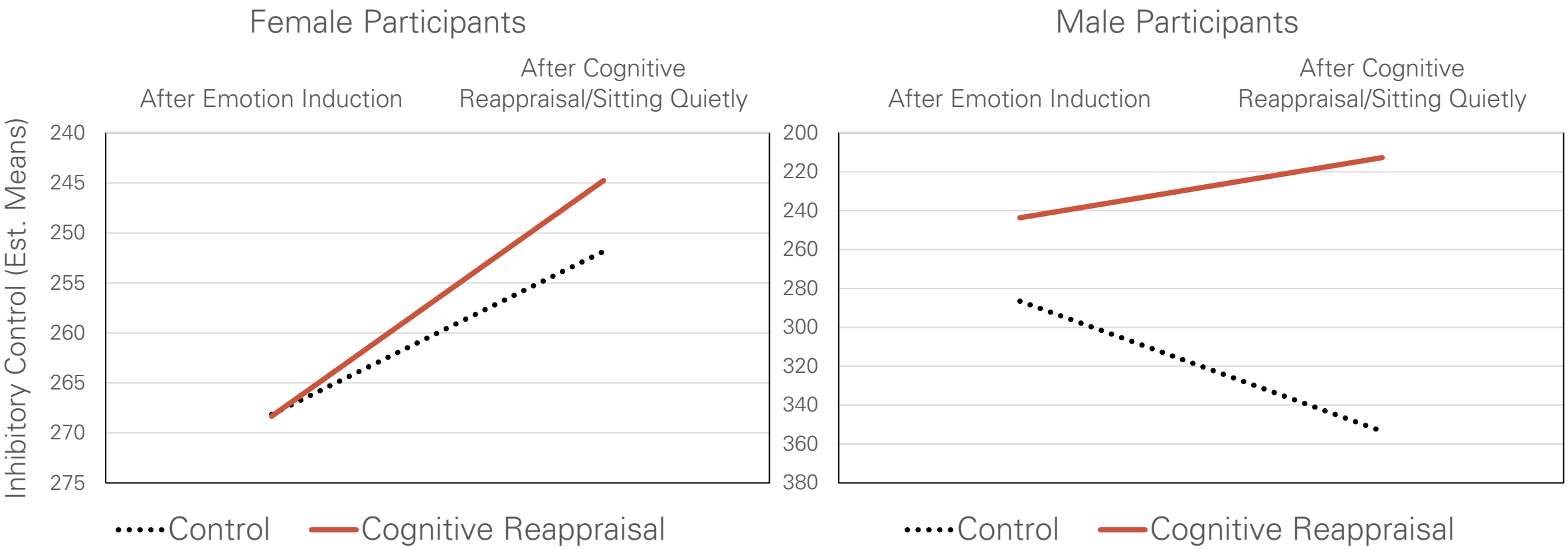
Cognitive Reappraisal v. Control on affect-modulated inhibitory control:
Participant Sex as a Moderator

Main Effects of Condition on Inhibitory Control: **Male + Female Veterans**



RM GLM// *n*= 110 participants // Condition*Time F= 6.78, p= .011, Cohen's f=.23

Participant Sex as a Moderator



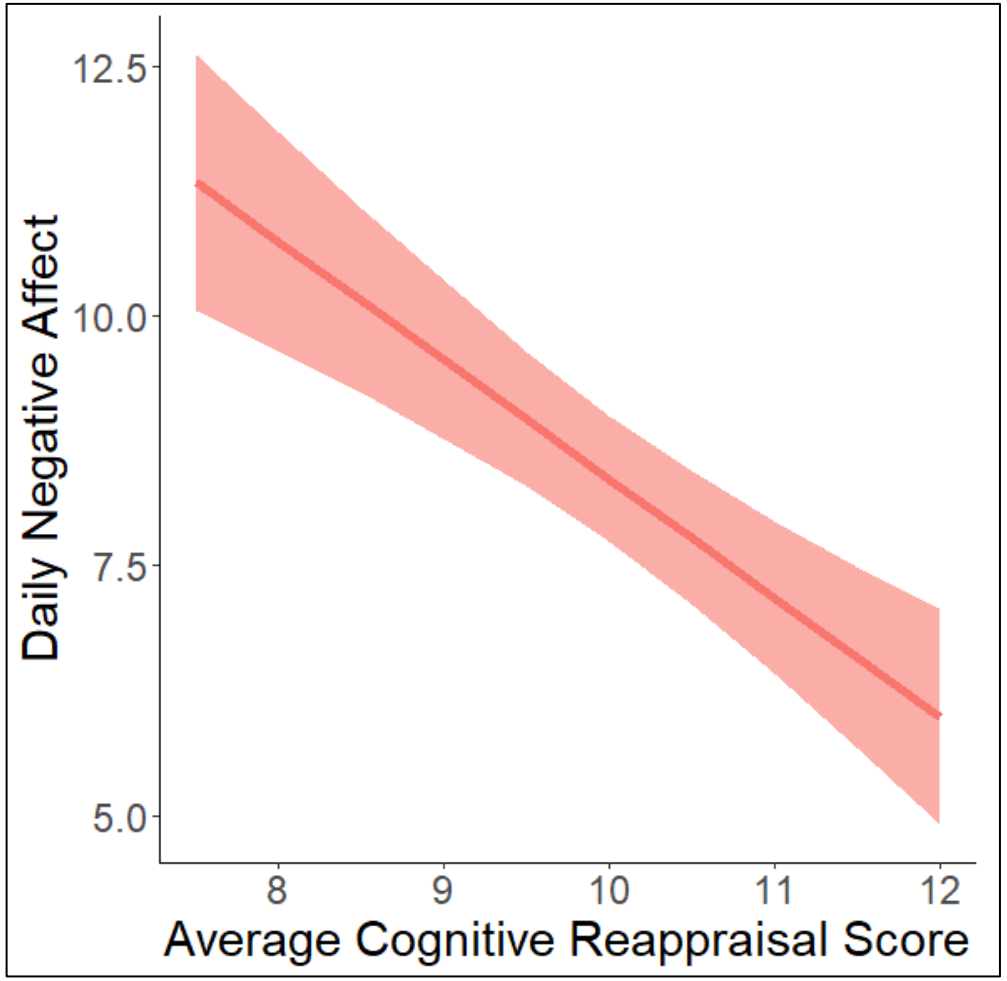
Female participants had improved inhibitory control in both conditions.

Male participants had improved inhibitory control after using Cognitive Reappraisal and worsened inhibitory control after Sitting Quietly.

RM GLM// *n*= 110 // Condition*Sex*Time F= 11.28, p= .001, Cohen's f= .31

Association of skill uptake and quality of skill use with Cognitive Reappraisal Efficacy among female veterans
(CR Condition Only)

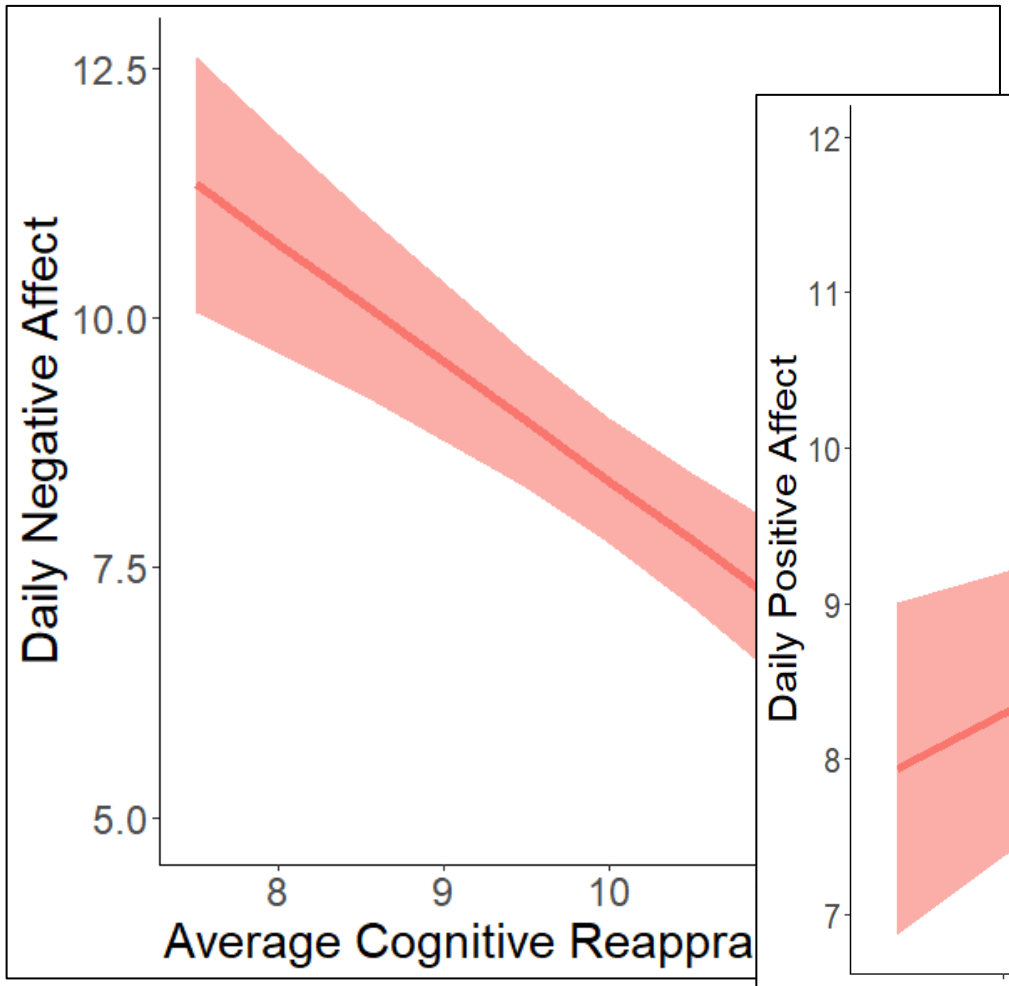
Is quality of CR skill use (assessed in lab) associated with daily affect?

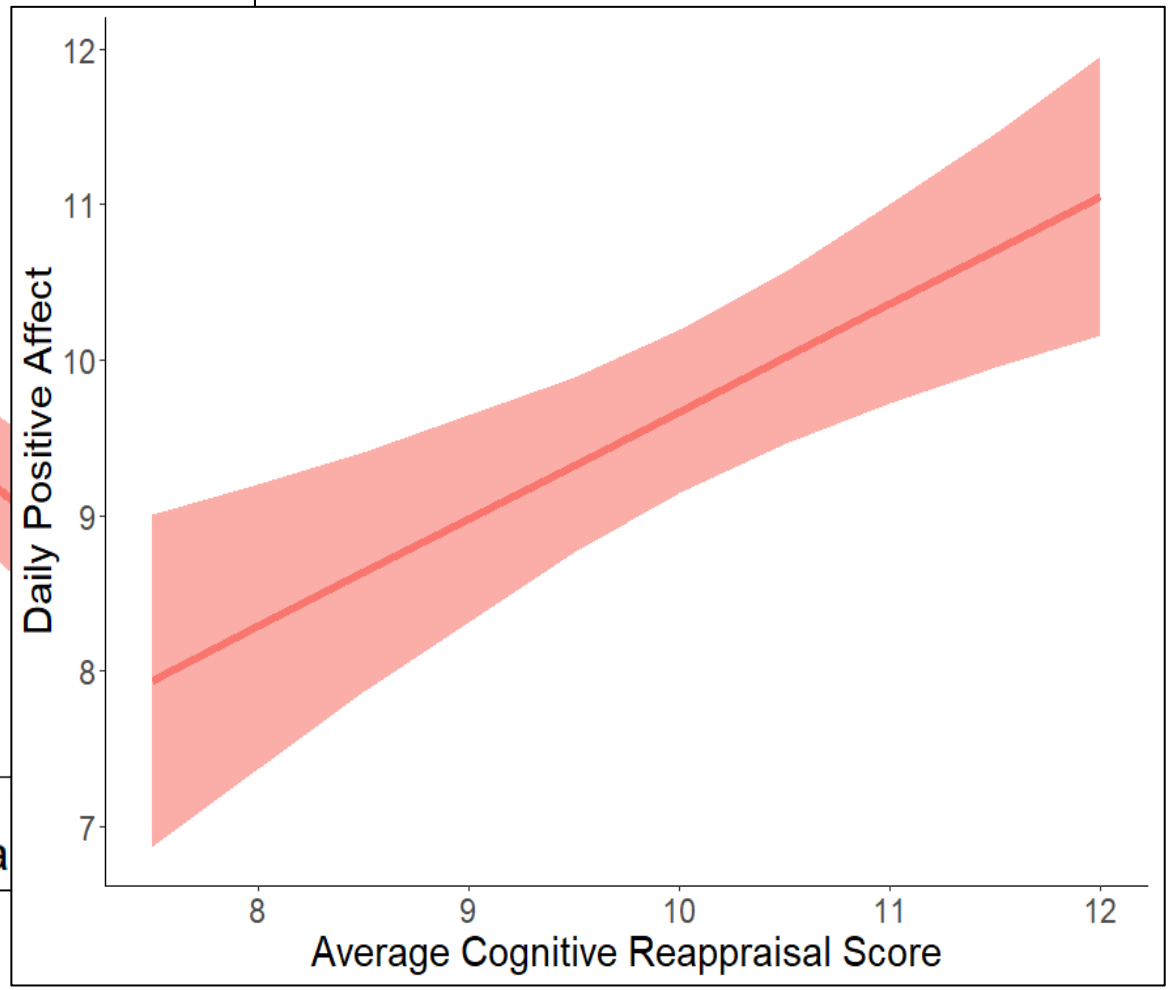


Higher cognitive reappraisal score associated with overall lower daily negative affect

t= -2.68, p= 0.01

Is quality of CR skill use (assessed in lab) associated with daily affect?

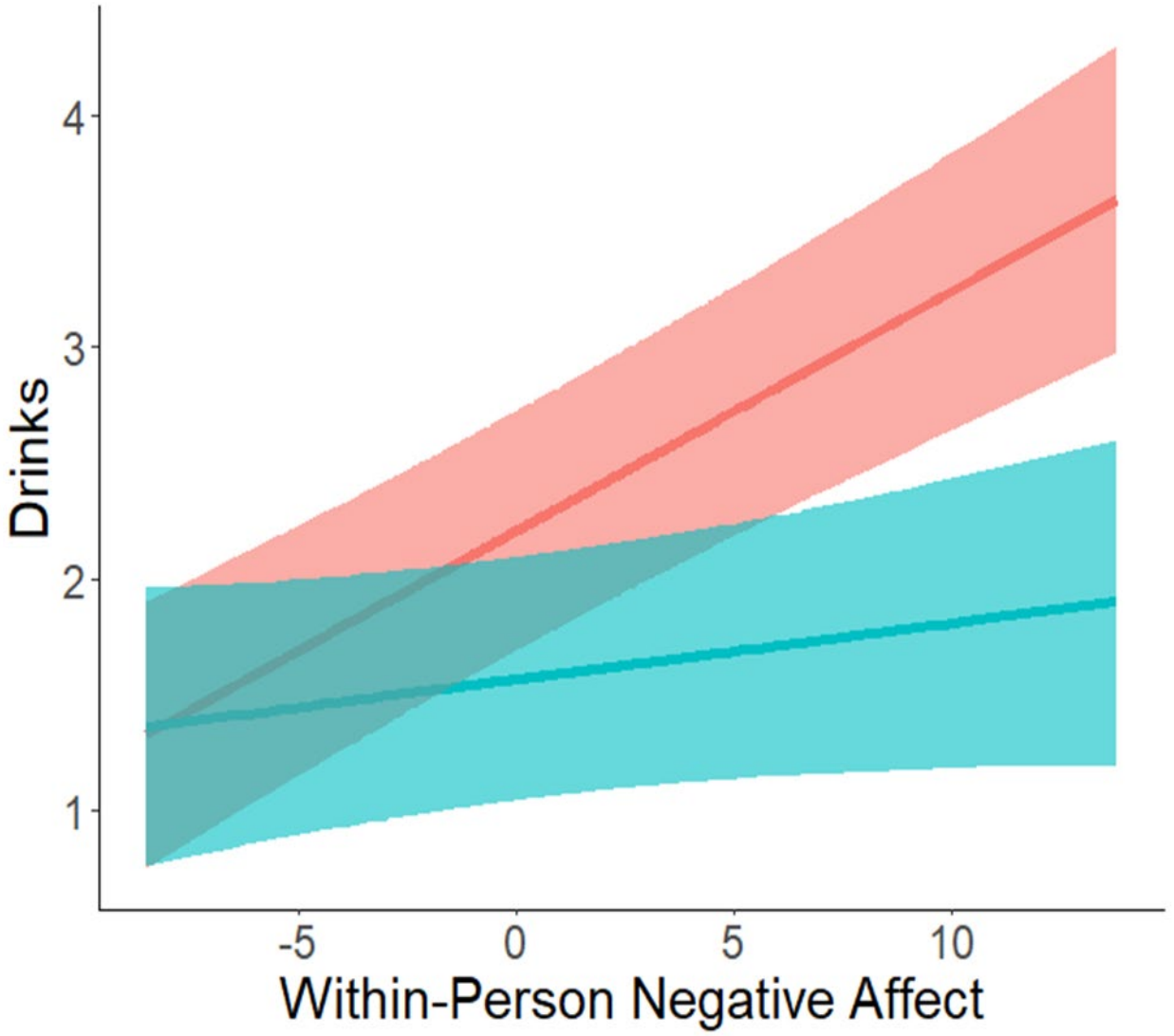




…and higher daily positive affect

t= 1.87, p= 0.08

Is quality of CR skill use (assessed in lab) associated with daily affect-induced drinking?

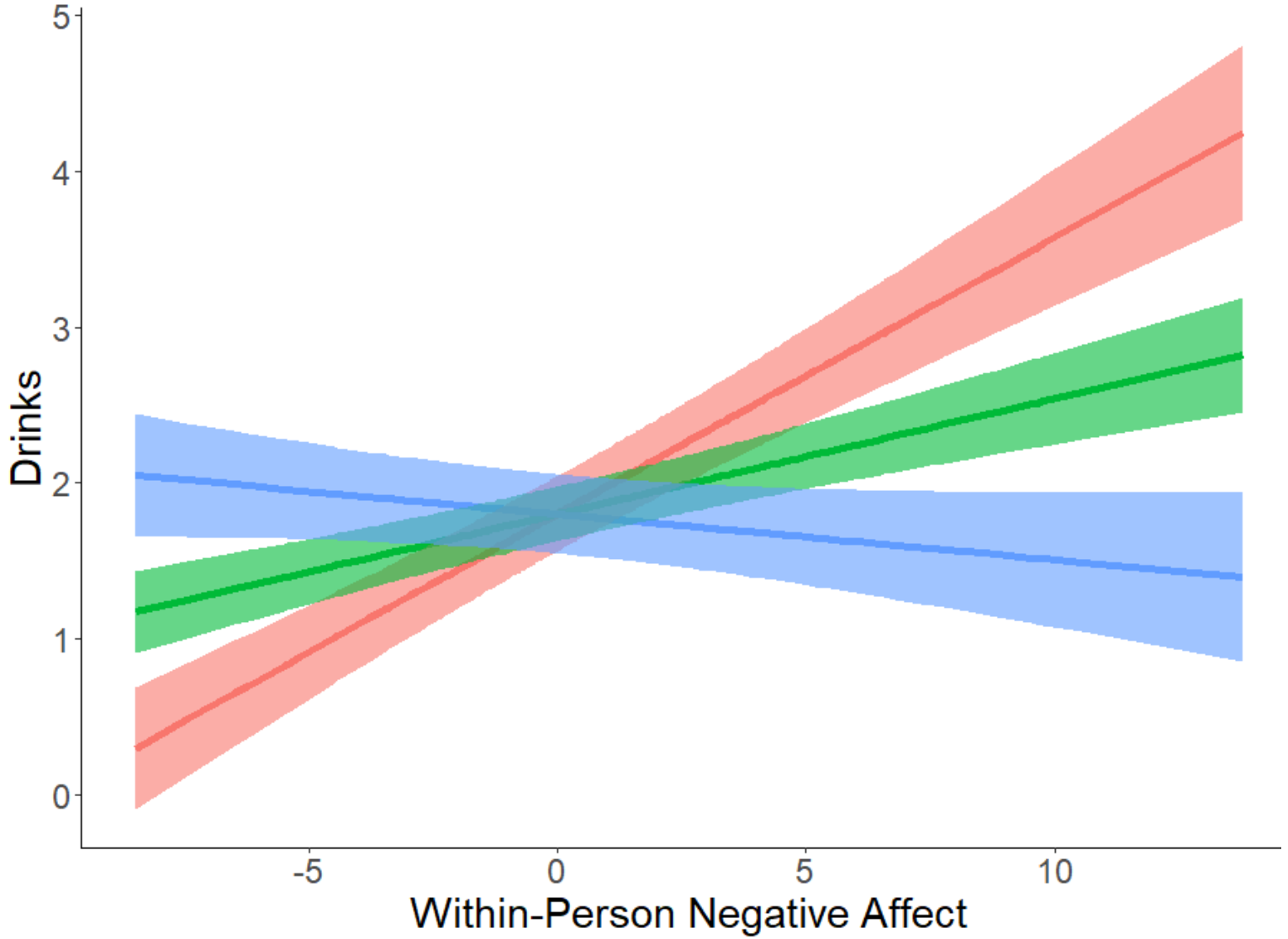


At lower total CR scores, ***higher*** negative affect was associated with ***more drinks*** on a given day.

At higher total CR scores, higher negative affect ***was not associated*** with number of drinks.

t= -1.89, p= 0.05

Is homework completion associated with daily affect-induced drinking?

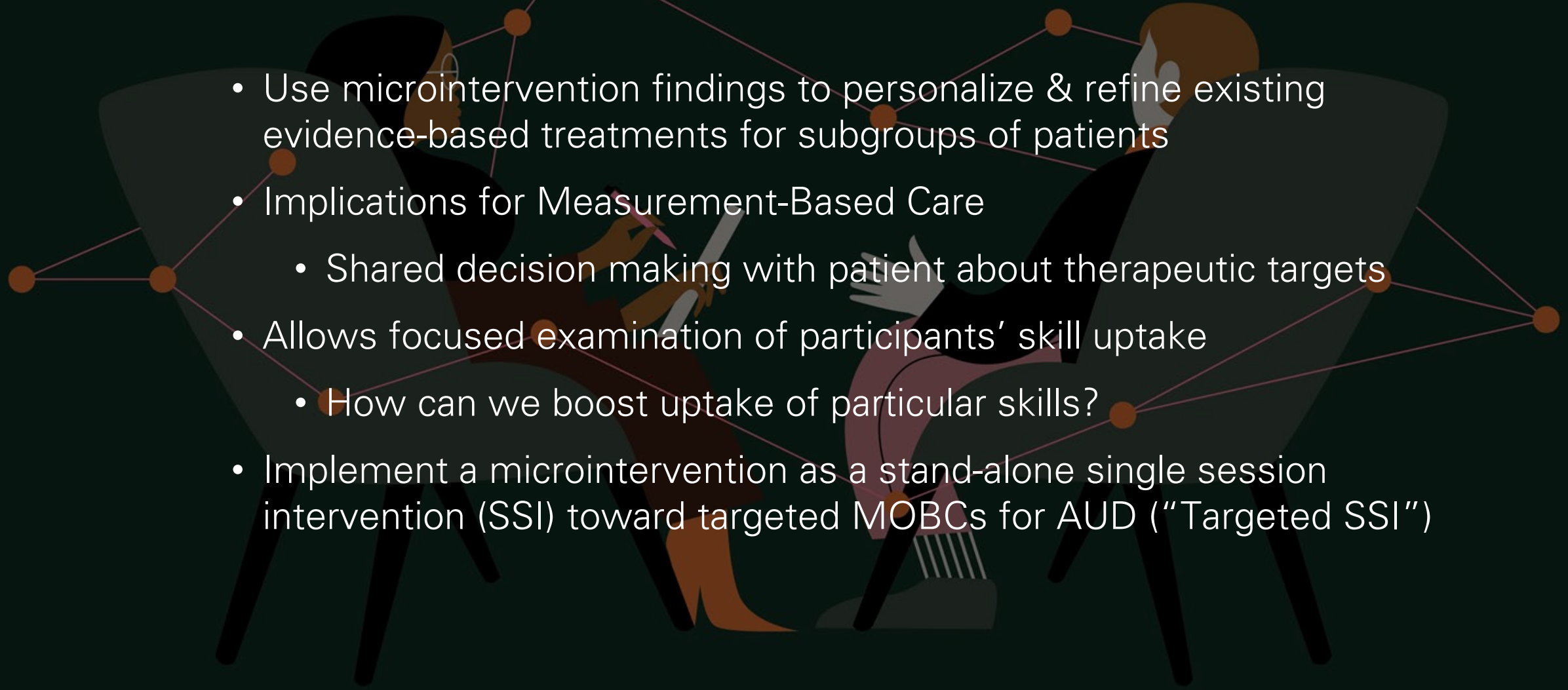


For women who completed less homework, *higher* negative affect was associated with *more drinks* on a given day.

For women who completed more homework, *higher* negative affect was associated with *fewer drinks* on a given day.

t= -3.79, p< 0.001

Implementation Implications: Microintervention Design



- Use microintervention findings to personalize & refine existing evidence-based treatments for subgroups of patients
- Implications for Measurement-Based Care
  - Shared decision making with patient about therapeutic targets
- Allows focused examination of participants' skill uptake
  - How can we boost uptake of particular skills?
- Implement a microintervention as a stand-alone single session intervention (SSI) toward targeted MOBCs for AUD ("Targeted SSI")

Implementation Implications: Female Veterans

- An individual affect regulation strategy, taught in a single session, leads to improved negative affect AND reduced affect-related drinking
  - Even if alcohol is not a focus of that session
  - Regardless of co-occurring emotional disorders
- Variation in skill uptake can impact efficacy
  - Discussing practice and use of the skill with patients can translate into better outcomes

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- Emily Starratt, M.A.

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- Tosca Braun, Ph.D.
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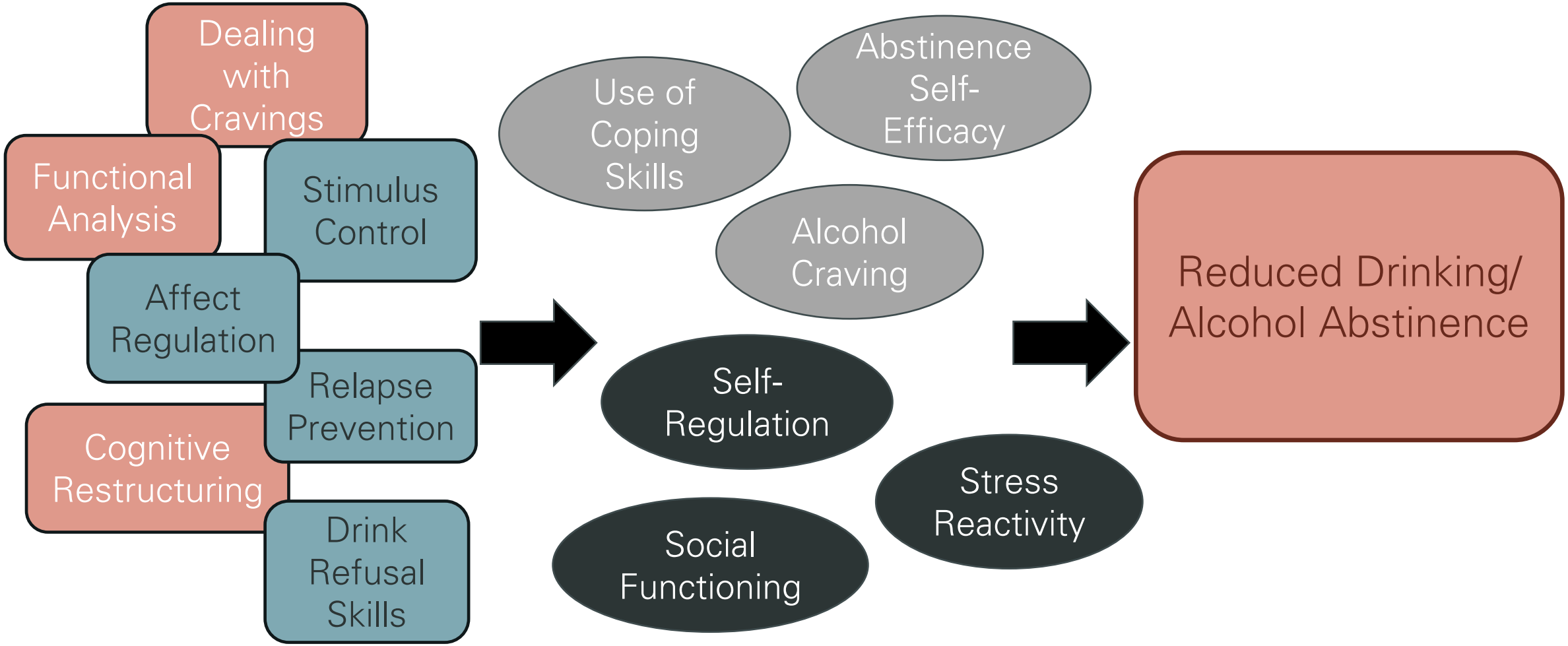
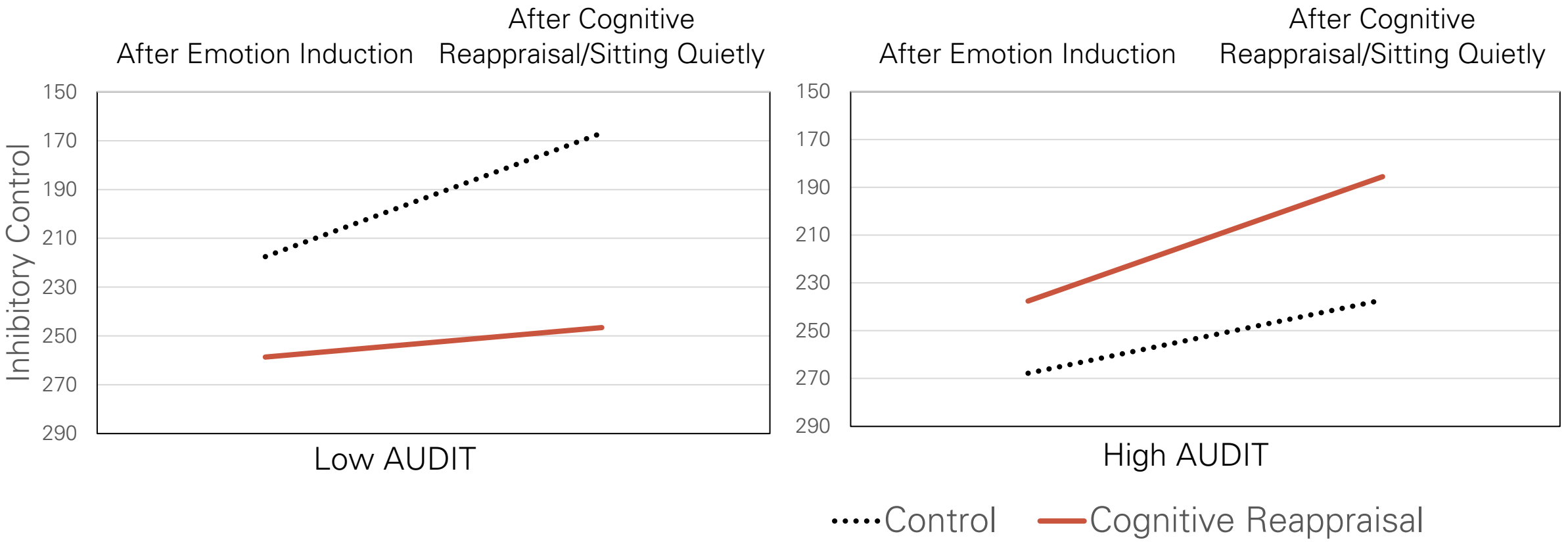
Thank you!

Extra Slides for Talk


Dealing with Cravings
Functional Analysis
Stimulus Control
Affect Regulation
Relapse Prevention
Cognitive Restructuring
Drink Refusal Skills
Use of Coping Skills
Abstinence Self-Efficacy
Alcohol Craving
Self-Regulation
Stress Reactivity
Social Functioning
Reduced Drinking/ Alcohol Abstinence

Proximal Effects of Condition on Inhibitory Control



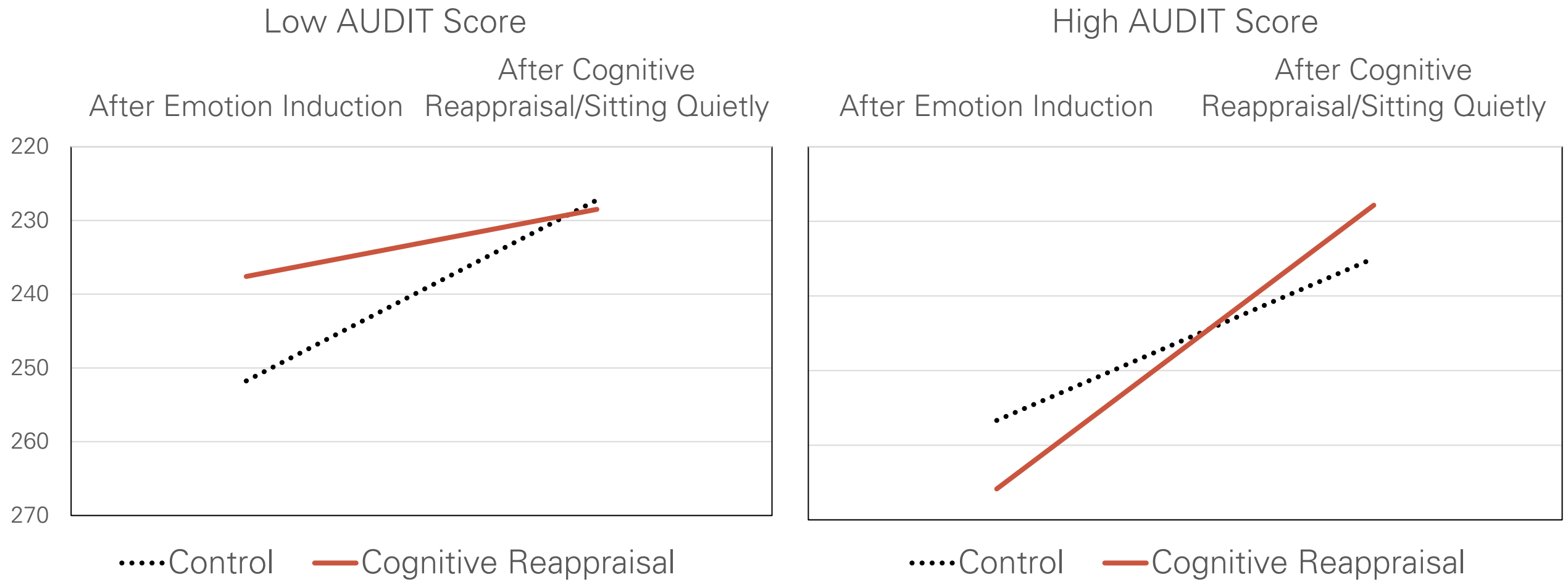
Women with more severe AUD Symptoms benefitted from Cognitive Reappraisal;
Those with less severe AUD Symptoms benefitted from Sitting Quietly

n= 50 female participants // Condition*AUDIT*Time F=3.57, *p*=.020

Holzhauer, Epstein, Smelson, & Mattocks (2021) *JSAT*

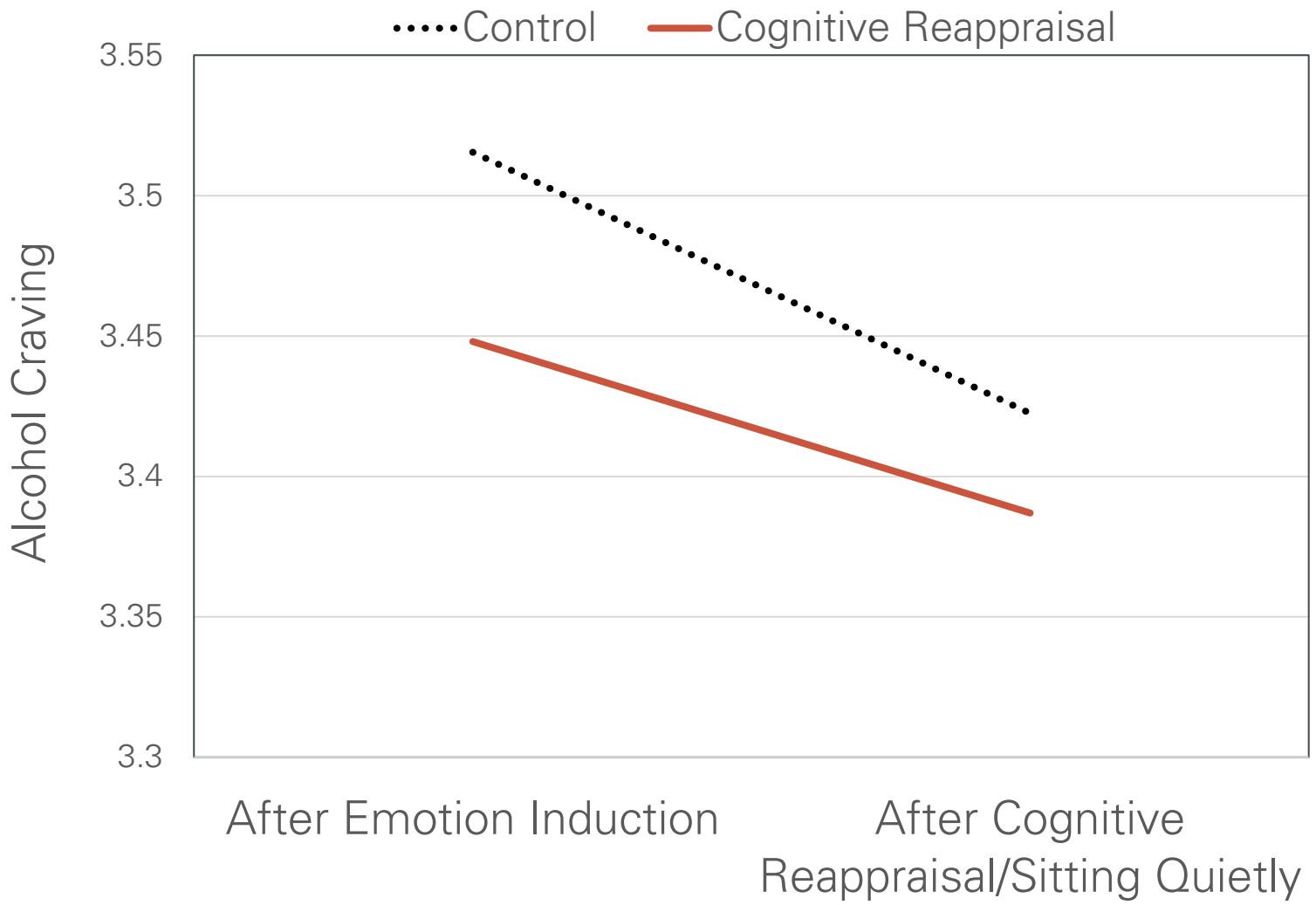
Cognitive Reappraisal to target women veteran's alcohol misuse: Mechanisms and moderators of change

Main Effects of Condition on Inhibitory Control



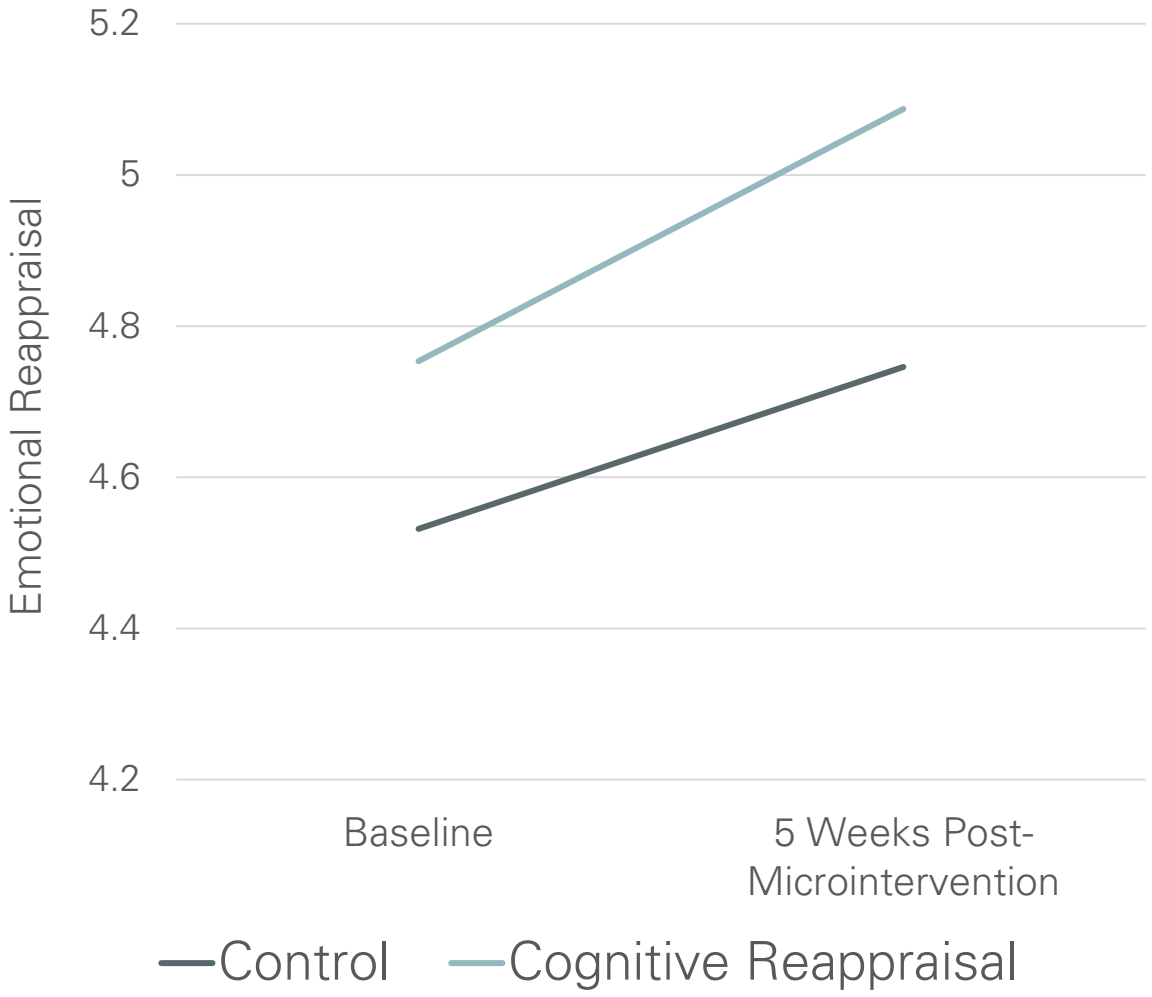
RM GLM// *n*= 81 female participants // Condition*Time*AUDIT F= 4.53, p= .04, Cohen's f= .21

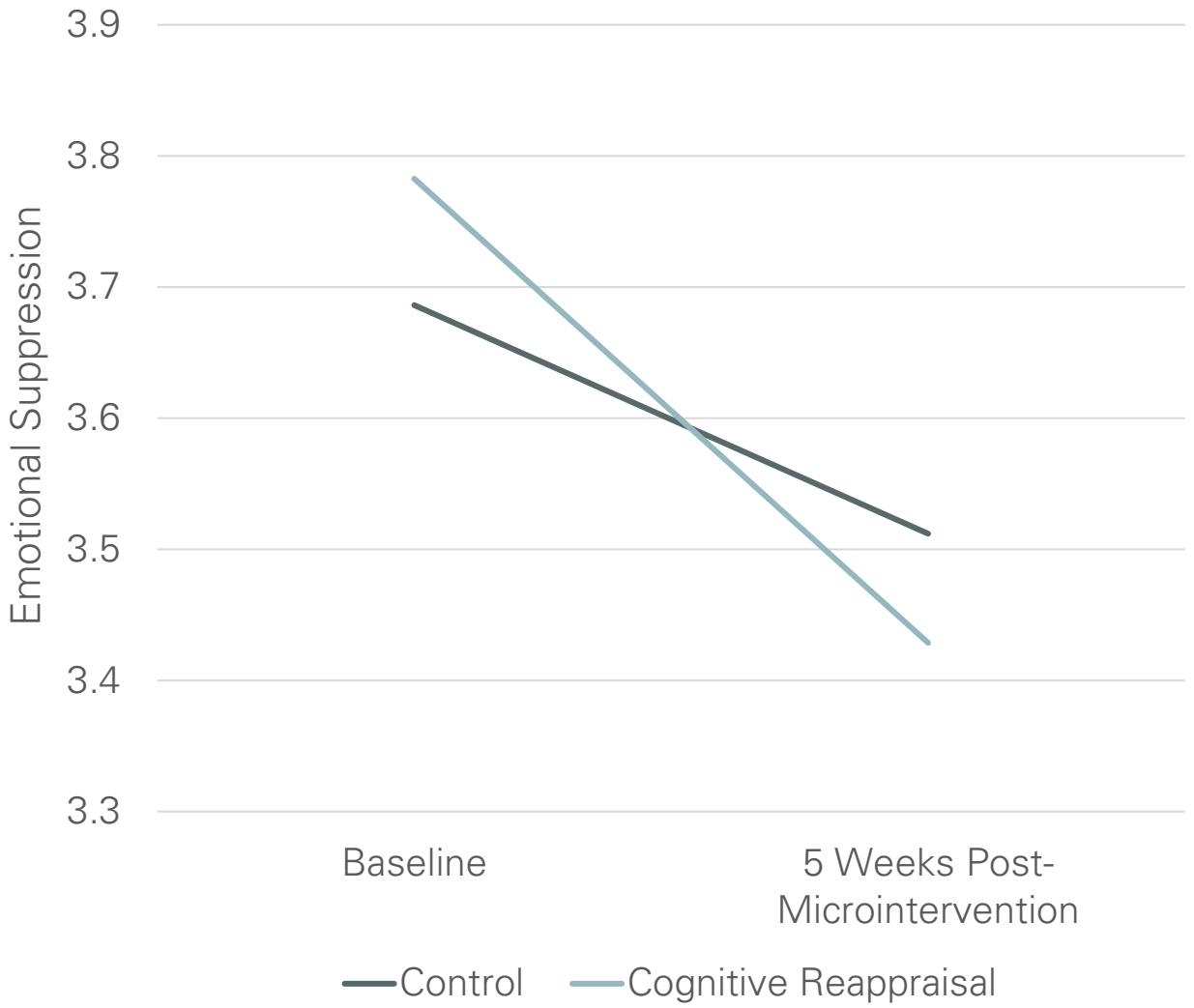
Main Effects of Microintervention on Alcohol Craving



RM GLM// *n*= 88 female participants // Condition*Time F= 0.013, p= .91, Cohen's f=.00

Distal Main Effects of Microintervention: Does ER improve?





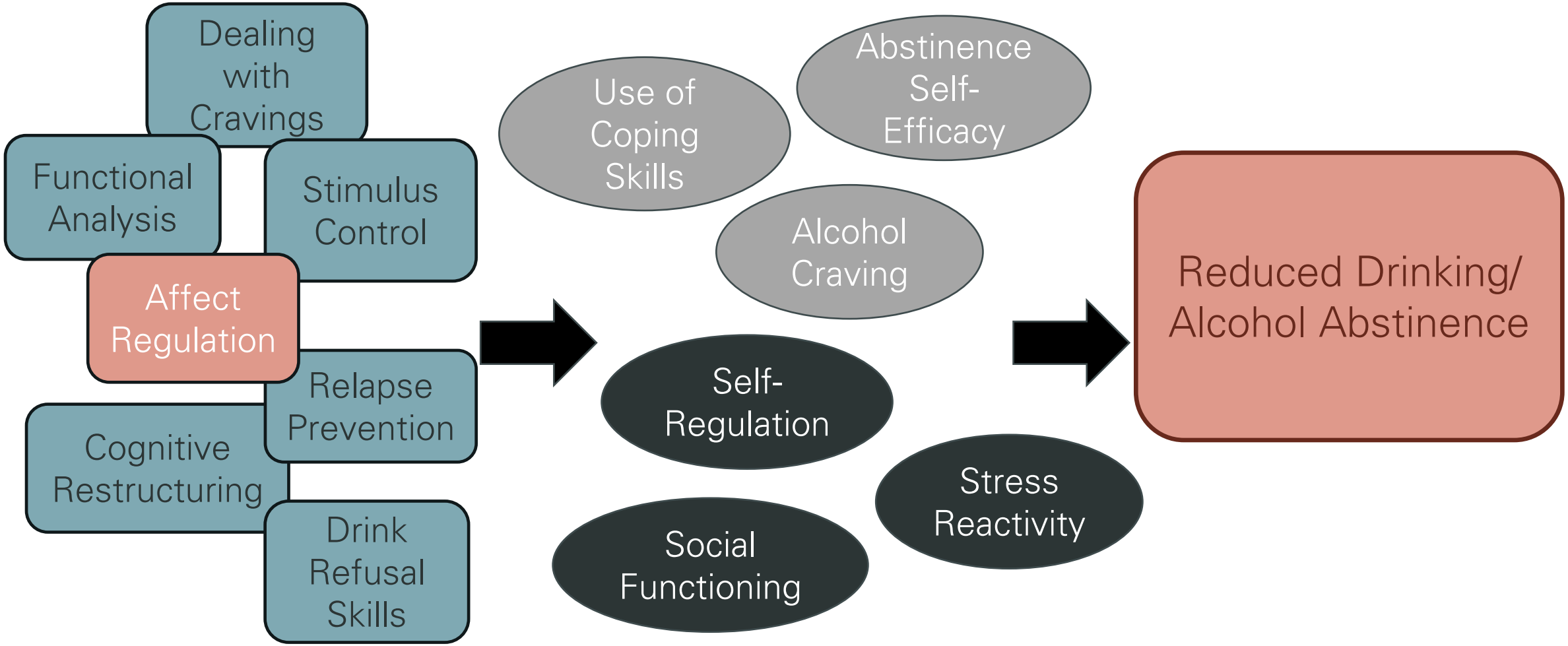
Emotional Reappraisal
n= 42 // Condition*Time F= 0.55, p= .46, Cohen's F = pes .014

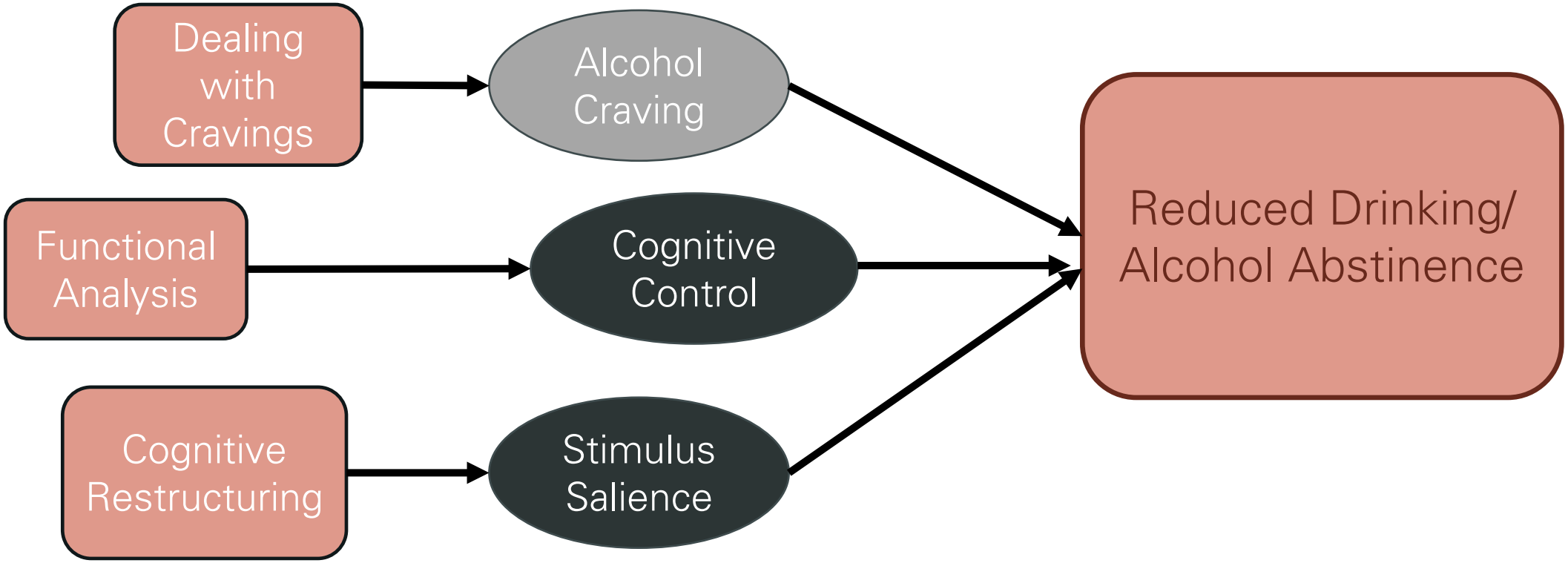
Emotional Suppression
n= 42 // Condition*Time F= 4.93, p= .03, Cohen's F = pes .11

Effects of CBT Microinterventions on Mechanisms of Change among Adults with AUD:

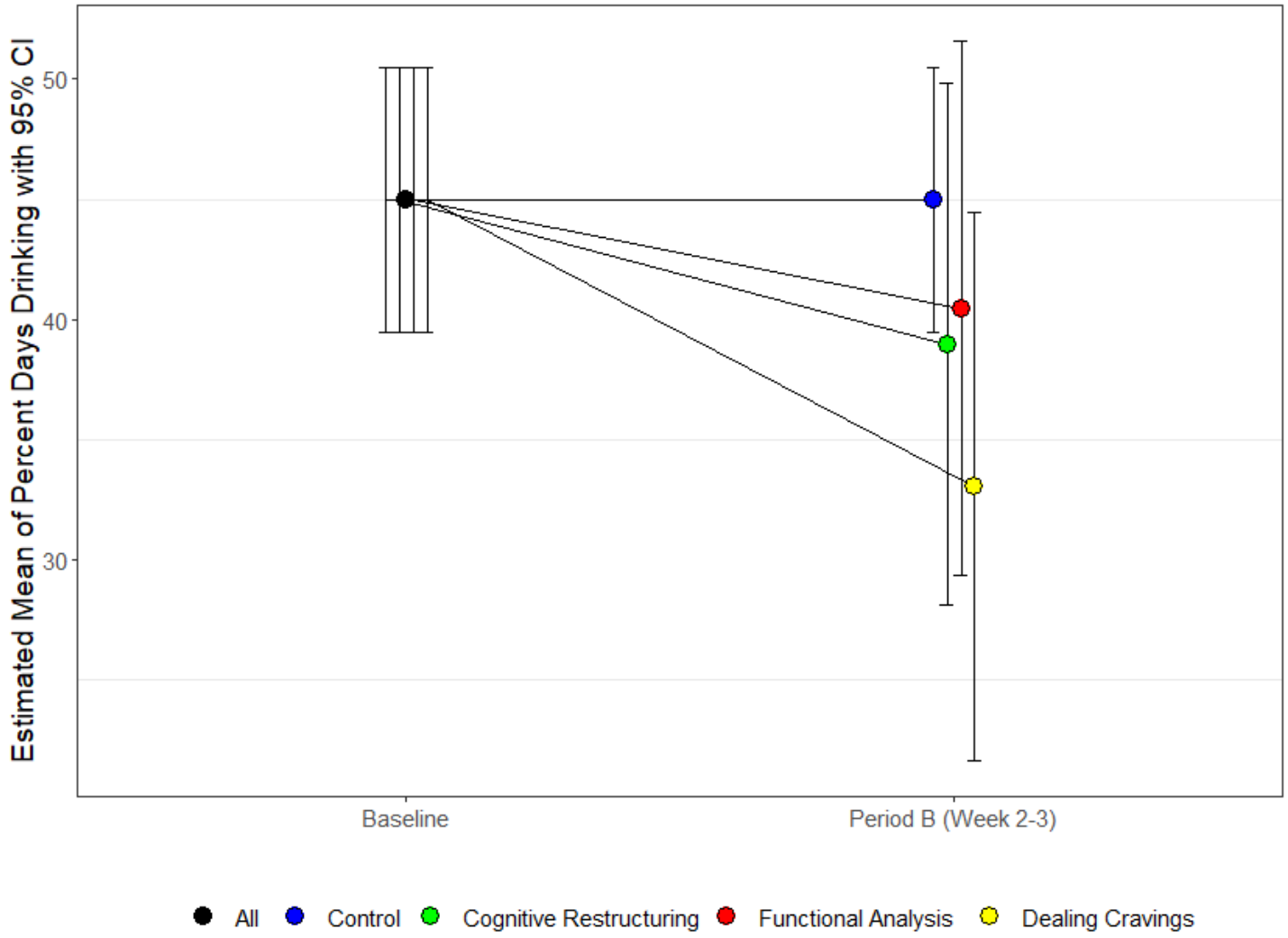
Using Eye Tracking to Measure Pre-Post Cognitive Control, Stimulus Salience, and Alcohol Craving

NIAAA Grant R21AA025488
co-PIS: Epstein & DiGirolamo

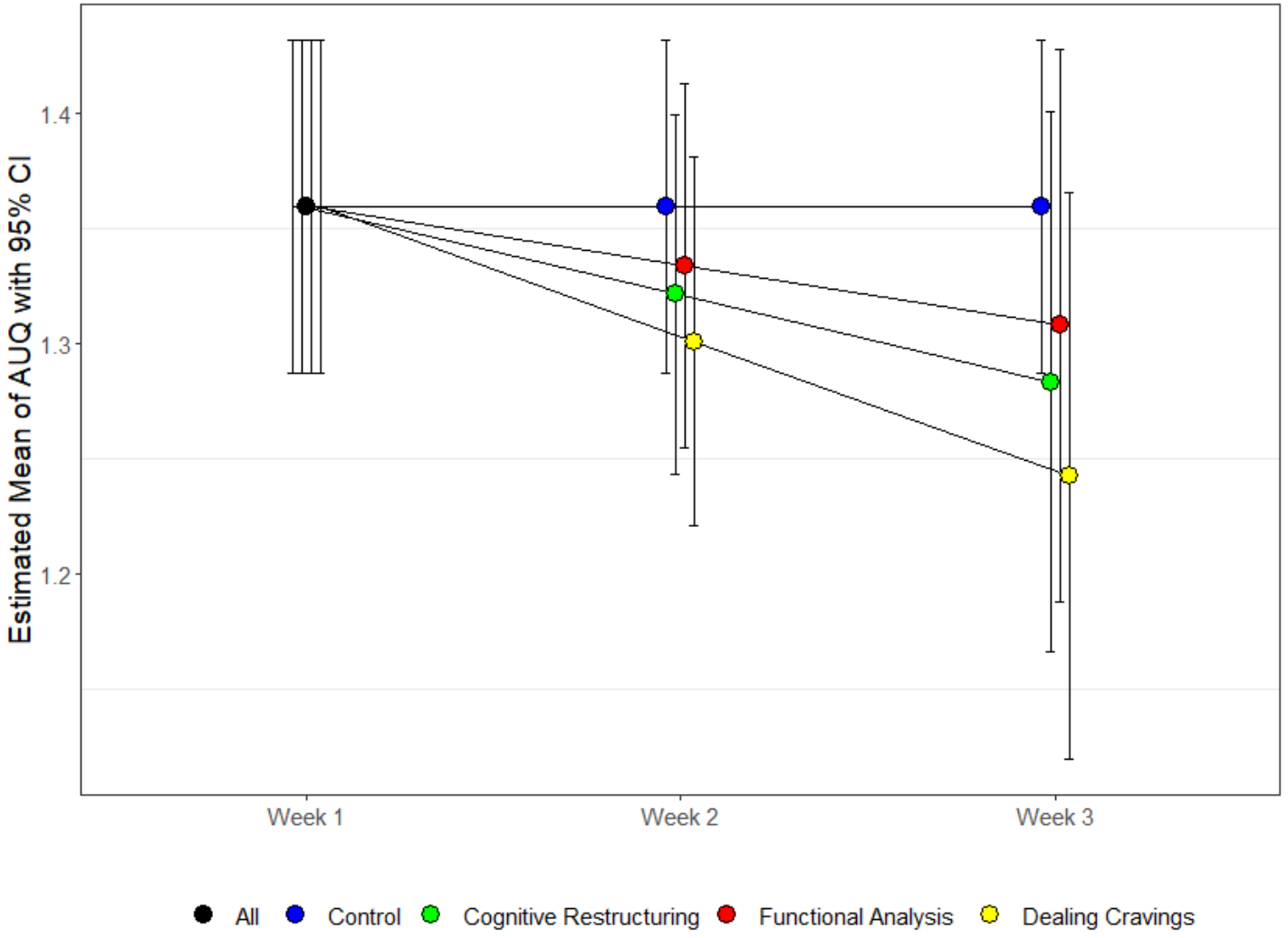

Dealing with Cravings
Functional Analysis
Stimulus Control
Affect Regulation
Relapse Prevention
Cognitive Restructuring
Drink Refusal Skills
Use of Coping Skills
Abstinence Self-Efficacy
Alcohol Craving
Self-Regulation
Stress Reactivity
Social Functioning
Reduced Drinking/ Alcohol Abstinence

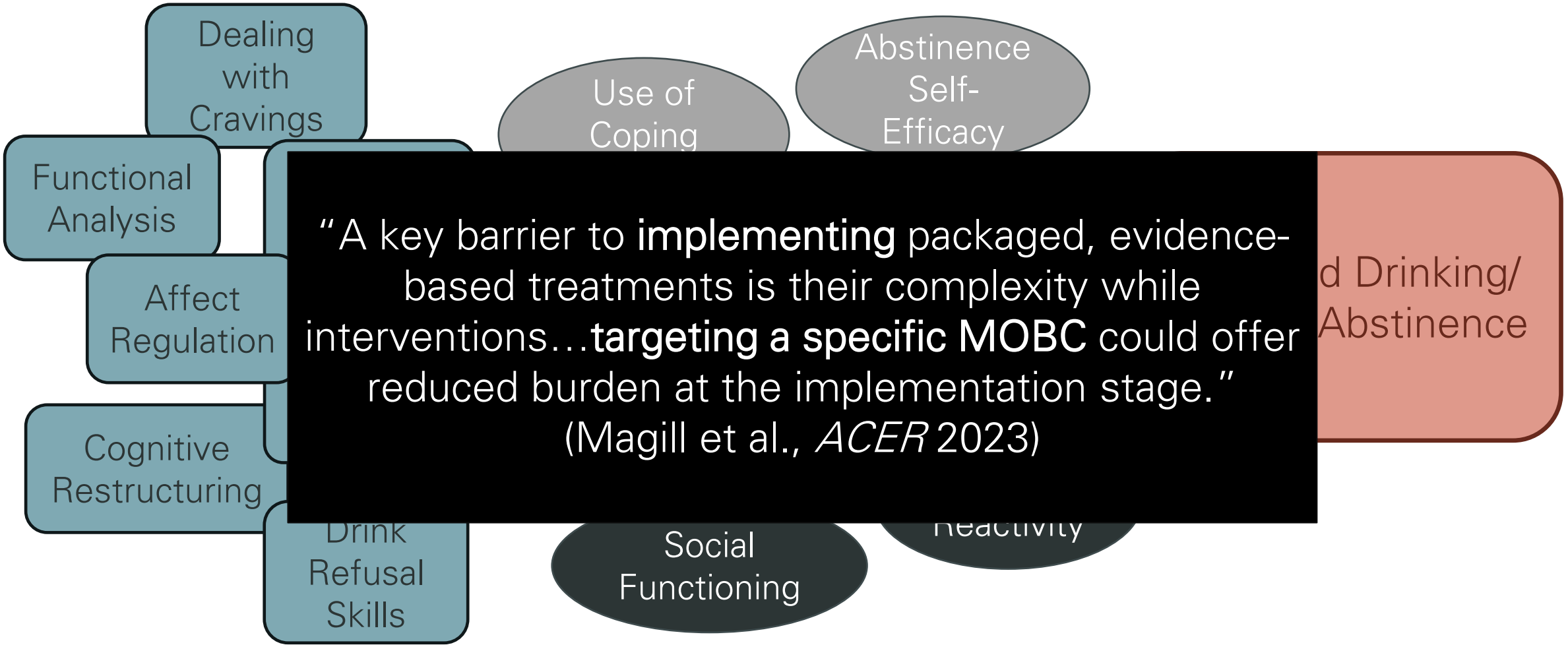

Dealing with Cravings
Alcohol Craving
Functional Analysis
Cognitive Control
Cognitive Restructuring
Stimulus Salience
Reduced Drinking/ Alcohol Abstinence

Dealing with Craving Condition has greatest reduction in Drinking



Dealing with Cravings Condition has greatest reductions in Craving across 3 weeks




Dealing with Cravings
Use of Coping
Abstinence Self-Efficacy
Functional Analysis
Affect Regulation
Cognitive Restructuring
Drink Refusal Skills
Social Functioning
d Drinking/ Abstinence
"A key barrier to **implementing** packaged, evidence-based treatments is their complexity while interventions…**targeting a specific MOBC** could offer reduced burden at the implementation stage."
(Magill et al., *ACER* 2023)