Healing the Opioid Crisis with **Mindfulness-Oriented Recovery Enhancement**: Outcomes and Mechanisms of An Evidence-Based Therapy for Chronic Pain, Opioid Misuse, & Addiction

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4/6/23

Disclosures

- **Dr. Garland is a licensor to BehaVR LLC**

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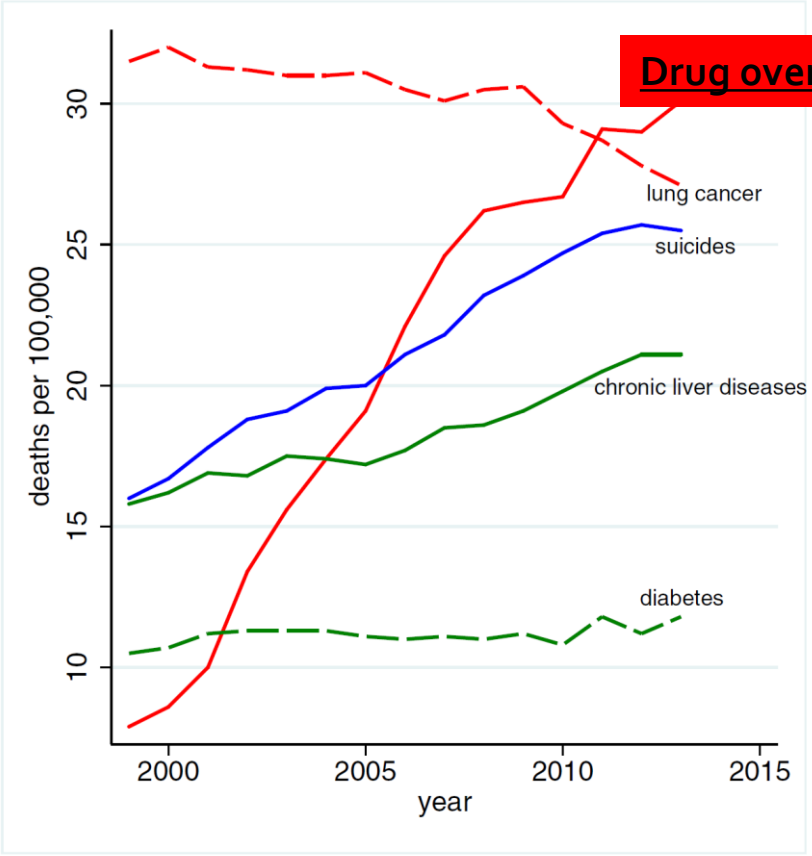
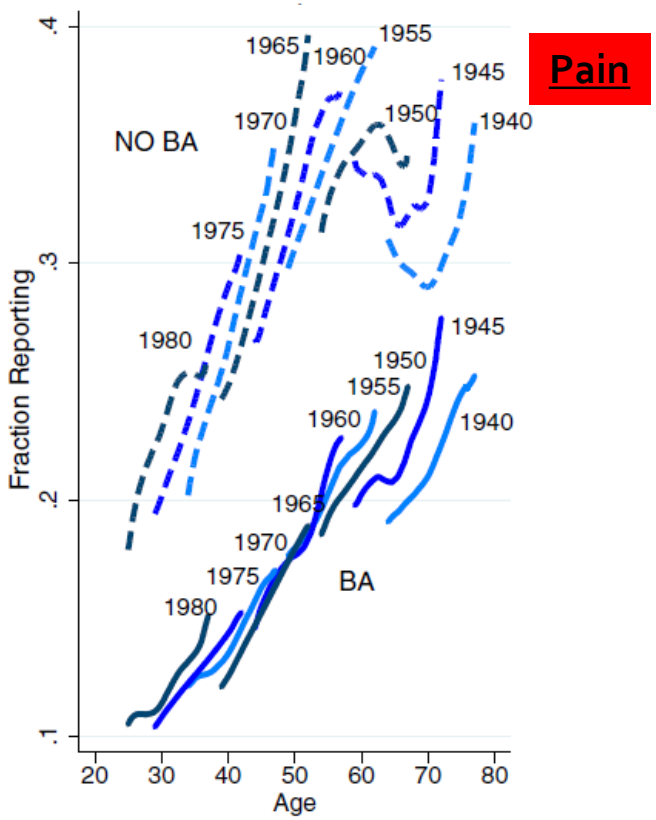
The content of this activity may include discussion of off label or investigative drug uses.
The faculty is aware that is their responsibility to disclose this information.

Target Audience

- The overarching goal of PCSS is to train healthcare professionals in evidence-based practices for the prevention and treatment of opioid use disorders, particularly in prescribing medications, as well for the prevention and treatment of substance use disorders.

Chronic Pain and Opioid Addiction: Diseases of Despair

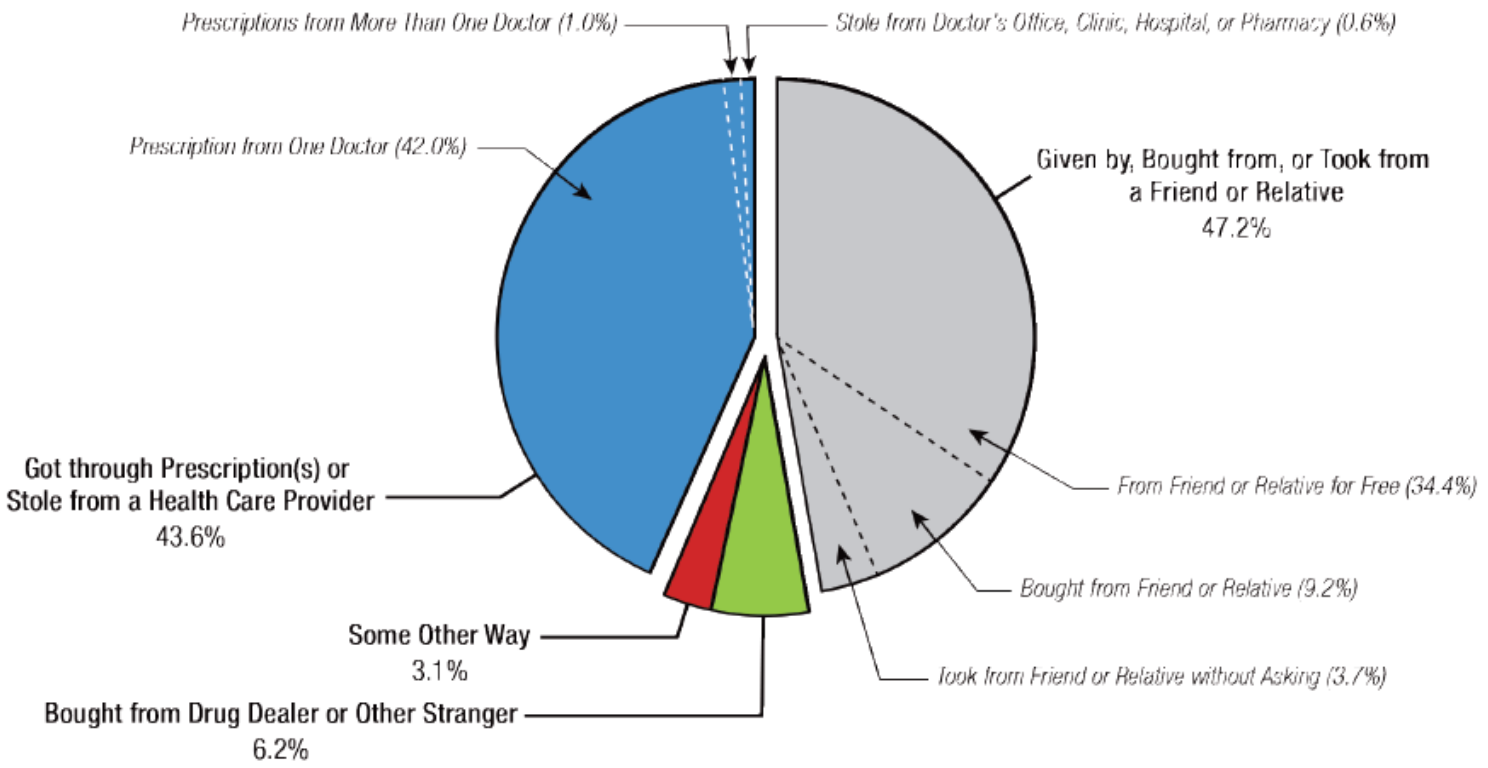




- The opioid crisis and chronic pain have been empirically linked to the rising tide of morbidity and mortality (↑ 0.5% a year since 1998) observed among white U.S. adults
- Opioid addiction and chronic pain are ***DISEASES OF DESPAIR*** fueled by hopelessness and meaninglessness

Case & Deaton, 2015, *Proceedings of the National Academy of the Sciences*
Case, Deaton, & Stone, 2020, *Proceedings of the National Academy of the Sciences*

Opioid Misuse Remains a Significant Problem



9.3 Million People Aged 12 or Older Who Misused Pain Relievers in the Past Year

43.6% of those who misused opioids obtained those opioids through prescriptions or a health care provider

In 2020, 9.3 million Americans engaged in *prescription opioid misuse*

902,000 Americans engaged in *heroin use*

2.7 million Americans had an *opioid use disorder*

2.3 million of those had a *prescription opioid use disorder*

"I just don't want to be in pain."

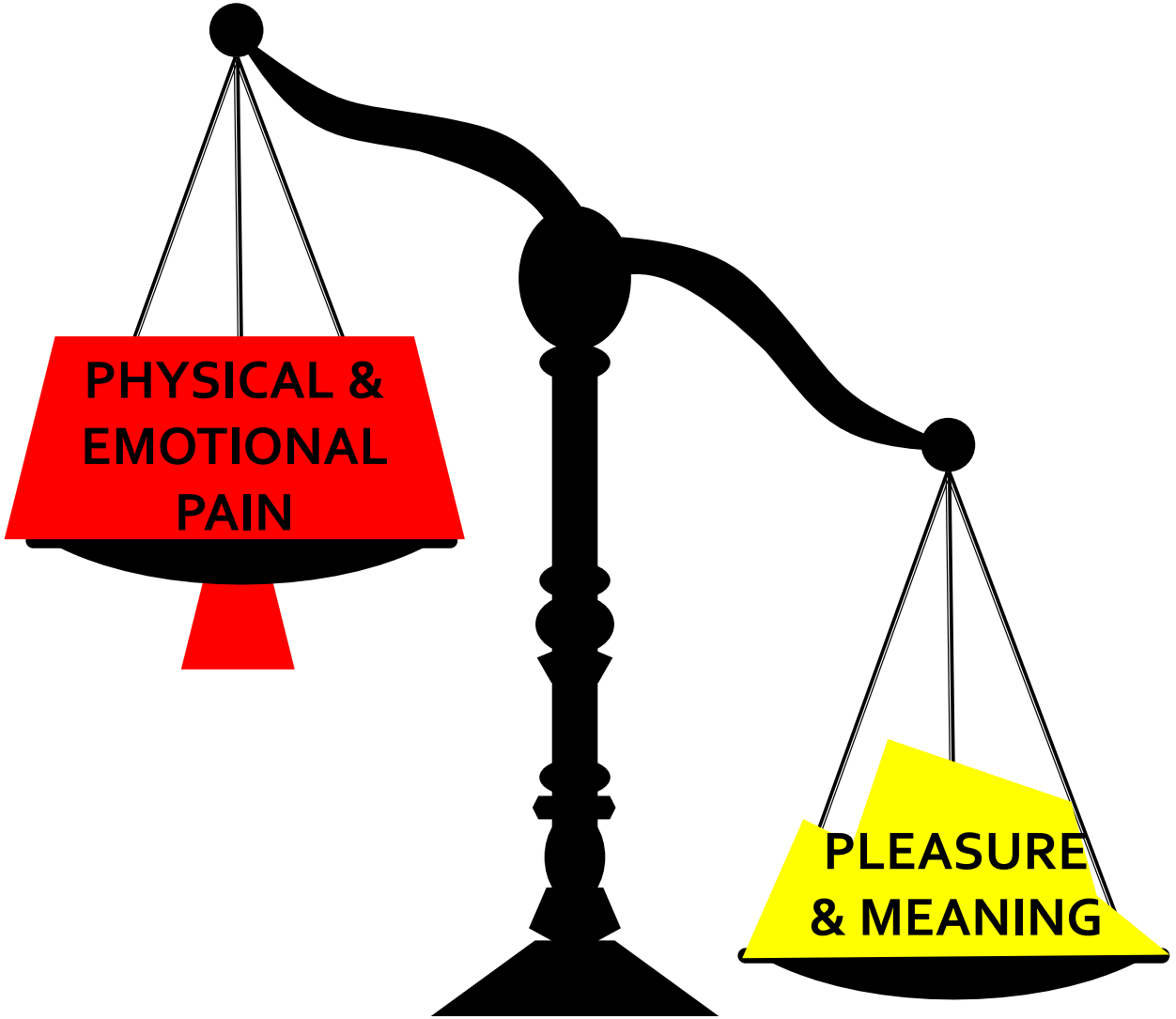
Hedonic Dysregulation in Pain, Pleasure, and Addiction

- Pleasure and pain have been considered opposites on a hedonic balance

adjective: **hedonic**
1. Relating to or considered in terms of pleasant (or unpleasant) sensations.

noun: **dysregulation**
1. Abnormality or impairment in the regulation of a physiological or psychological process

Hedonic Dysregulation in Pain, Pleasure, and Addiction



Hedonic Dysregulation in Pain, Pleasure, and Addiction

ELSEVIER

PERSPECTIVES

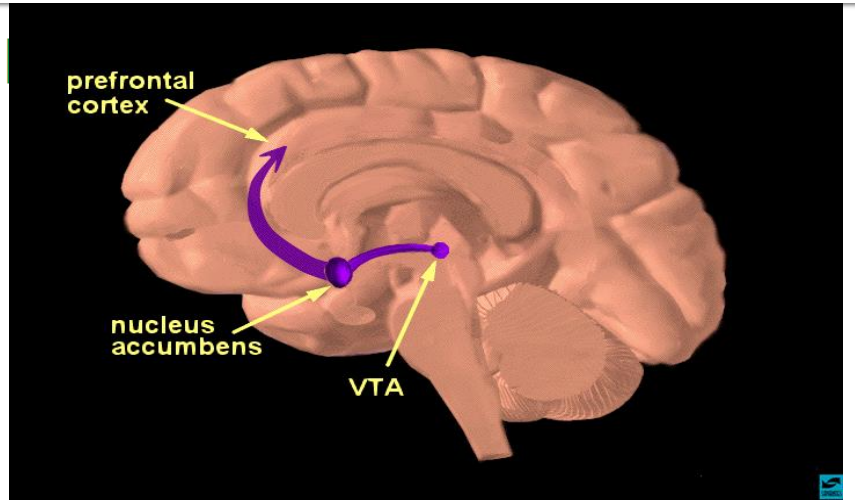
Drug Addiction, Dysregulation of Reward, and Allostasis

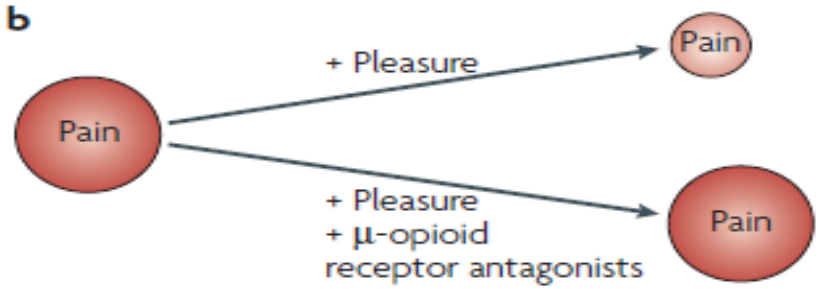
George F. Koob, Ph.D., and Michel Le Moal, M.D., Ph.D.

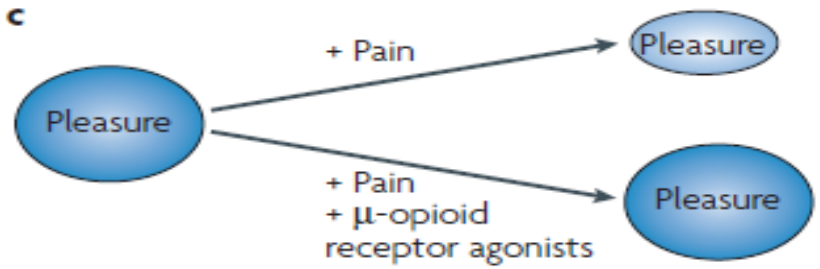
This paper reviews recent developments in the neurocircuitry and neurobiology of addiction from a perspective of allostasis. A model is proposed for brain changes that occur during the development of addiction that explain the persistent vulnerability to relapse long after drug-taking has ceased. Addiction is presented as a cycle of spiralling dysregulation of brain reward systems that progressively increases, resulting in the compulsive use and loss of control over drug-taking. The development of addiction recruits different sources of reinforcement, different neuroadaptive mechanisms, and different neurochemical changes to dysregulate the brain reward system. Counteradaptive processes such as opponent-process that are part of normal homeostatic limitation of reward function fail to return within the normal homeostatic range and are hypothesized to form an allostatic state. Allostasis from the addiction perspective is defined as the process of maintaining apparent reward function stability by changes in brain reward mechanisms. The allostatic state represents a chronic deviation of reward set point and is fueled not only by dysregulation of reward circuits per se, but also by the activation of brain and hormonal stress responses. The manifestation of this allostatic state as compulsive drug-taking and loss of control over drug-taking is hypothesized to be expressed through activation of brain circuits involved in compulsive behavior such as the cortico-striatal-thalamic loop. The view that addiction is the pathology that results from an allostatic mechanism using the circuits established for natural rewards provides a realistic approach to identifying the neurobiological factors that produce vulnerability to addiction and relapse.

[Neuropsychopharmacology 24:97–129, 2001]

- These hedonic neural circuits may be hijacked by addictive drugs (like opioids) through an allostatic process





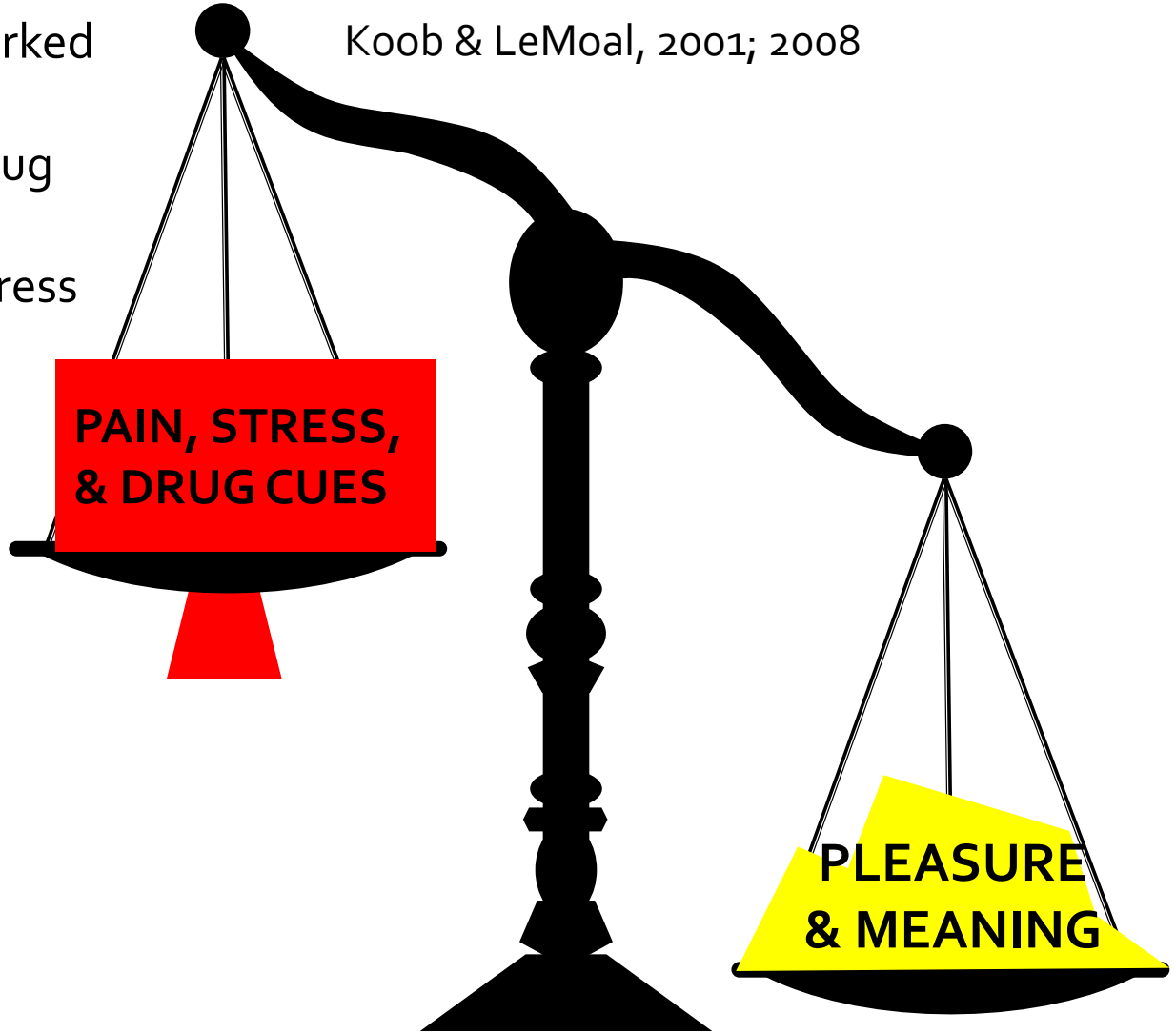


Hedonic Dysregulation in Pain, Pleasure, and Addiction

Hedonic dysregulation is marked by:

- Increased sensitivity to drug cues
- Increased sensitivity to stress and pain
- Decreased sensitivity to natural reward

Koob & LeMoal, 2001; 2008



Hedonic dysregulation promotes comorbid:

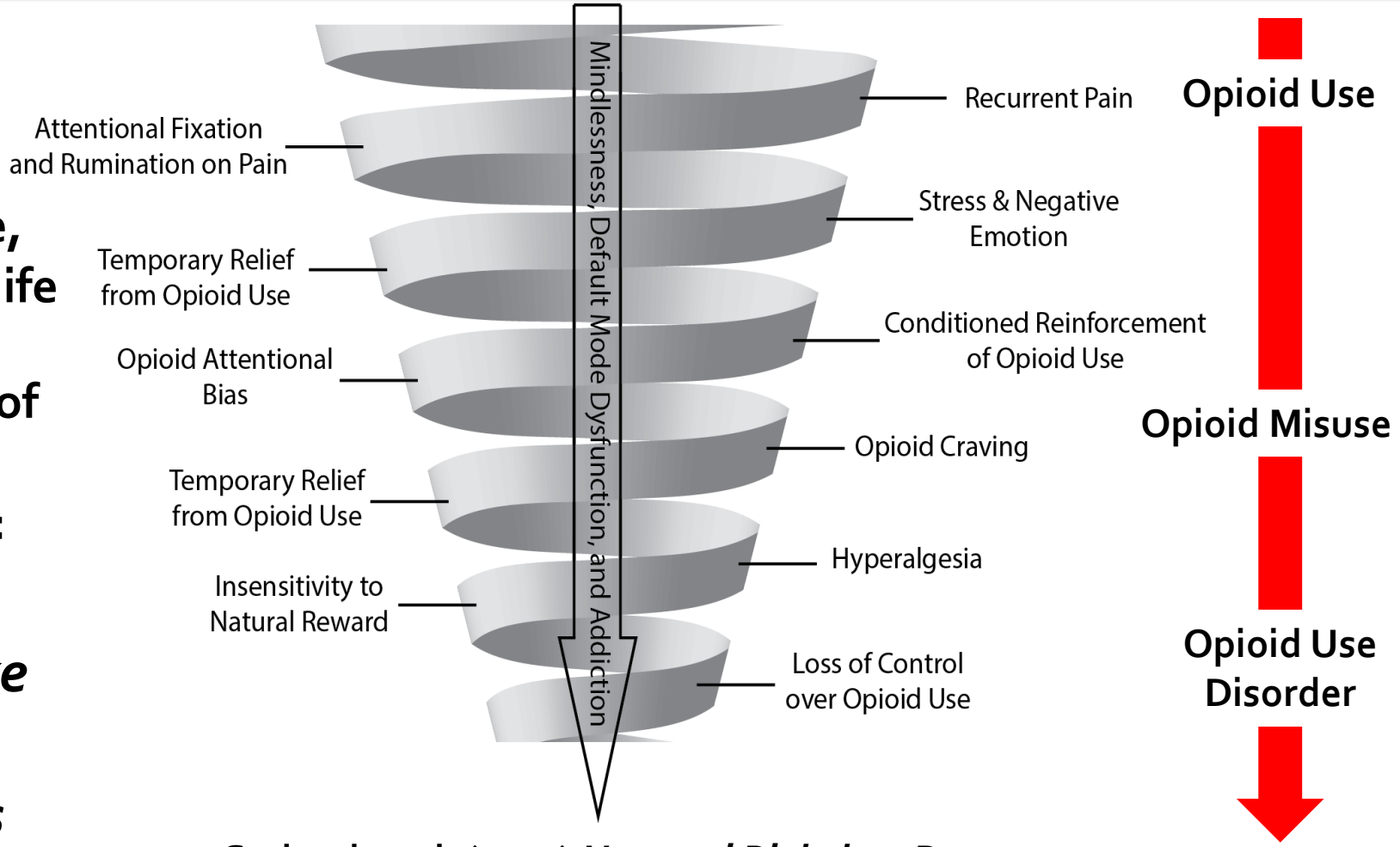
- Addictive behaviors
- Affective disorders
- Chronic pain syndromes

Hedonic Dysregulation Propels the Downward Spiral of Opioid Use to Opioid Misuse and OUD

As the individual becomes more dependent on opioids just to feel okay, they become less able to extract a sense of healthy pleasure, joy, and meaning out of everyday life

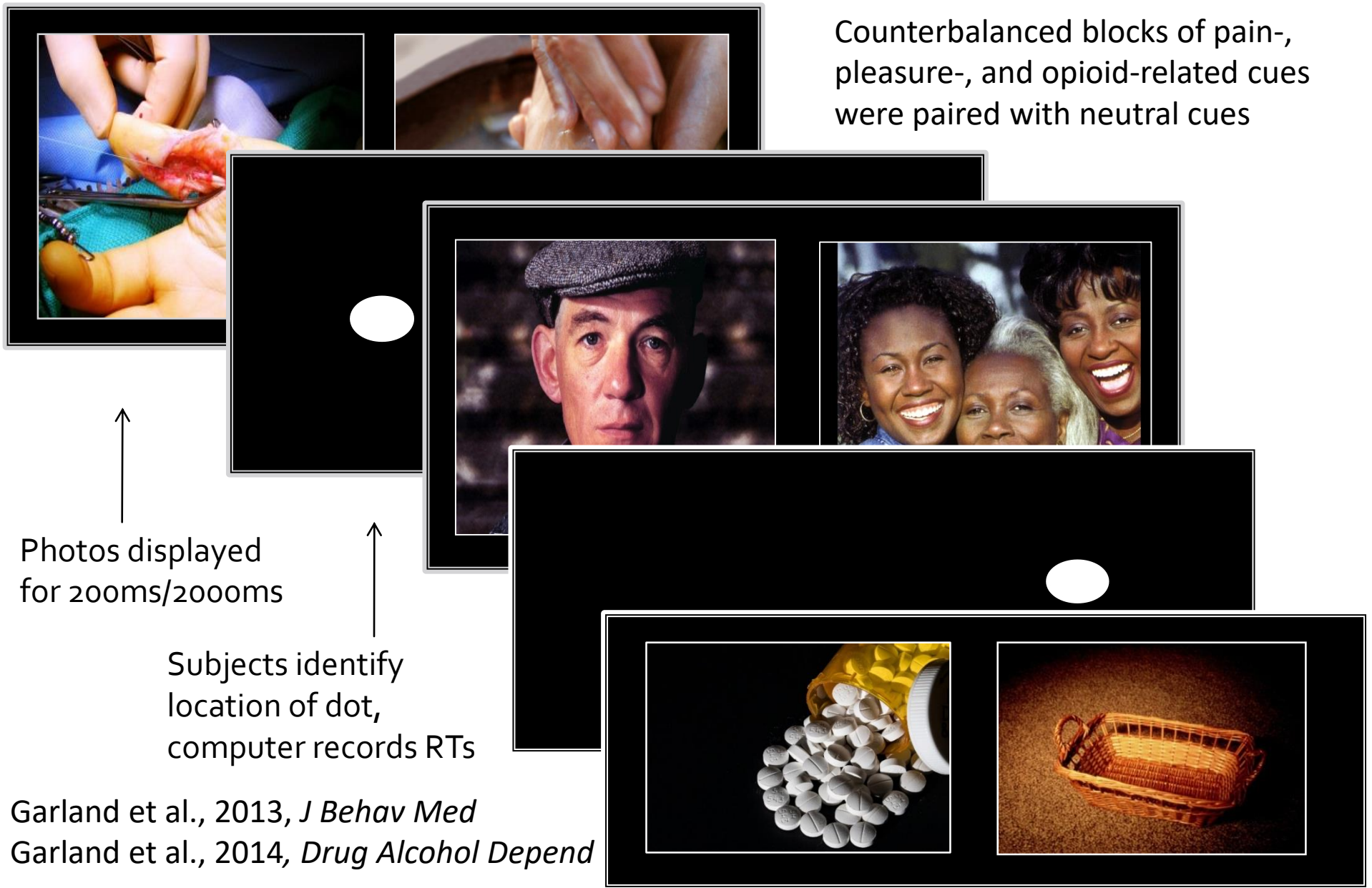
The downward spiral leads to loss of self-control (i.e., *self-regulation*), resulting in opioid dose escalation:

So why can some patients take opioids as prescribed, and others go on to misuse opioids or become addicted to them?



Garland et al. (2013) *Neurosci Biobehav Rev*

Measuring Hedonic Dysregulation in Chronic Pain and Opioid Misuse with the Dot Probe Task



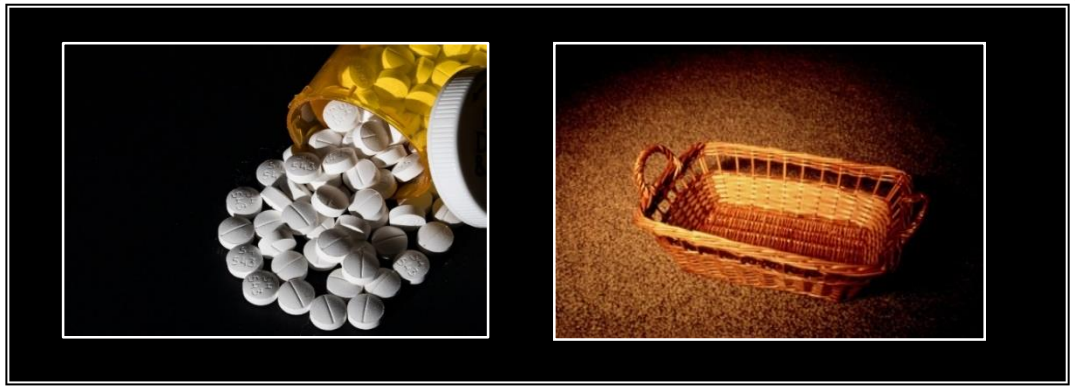
Counterbalanced blocks of pain-, pleasure-, and opioid-related cues were paired with neutral cues

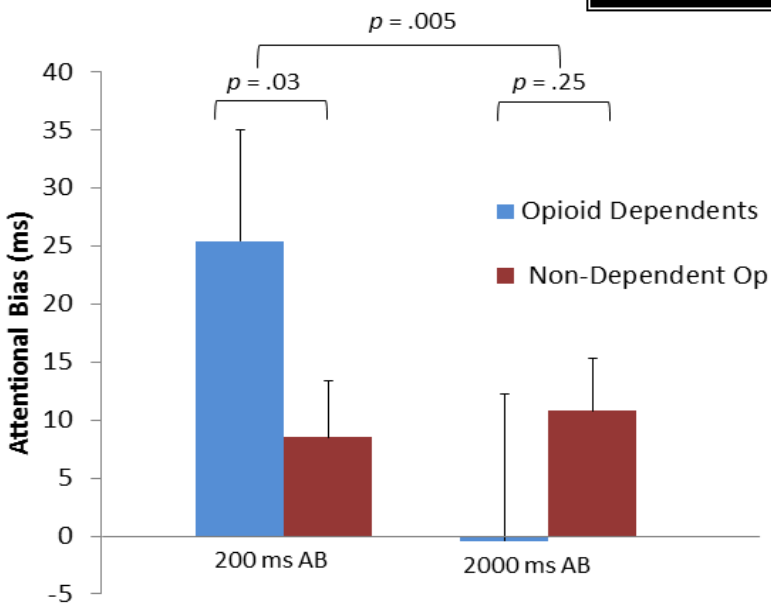
Photos displayed for 200ms/2000ms

Subjects identify location of dot, computer records RTs

Garland et al., 2013, *J Behav Med*
Garland et al., 2014, *Drug Alcohol Depend*

Opioid Misuse is Linked with Attentional Bias and Increased Sensitivity to Opioid-Related Cues

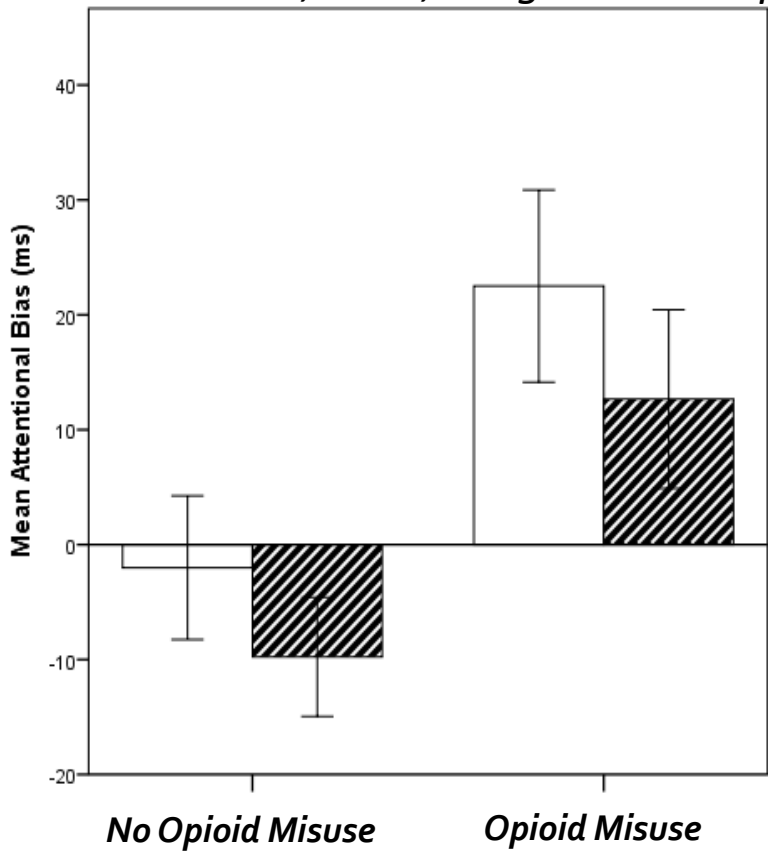




Garland et al., 2013, J Behav Med

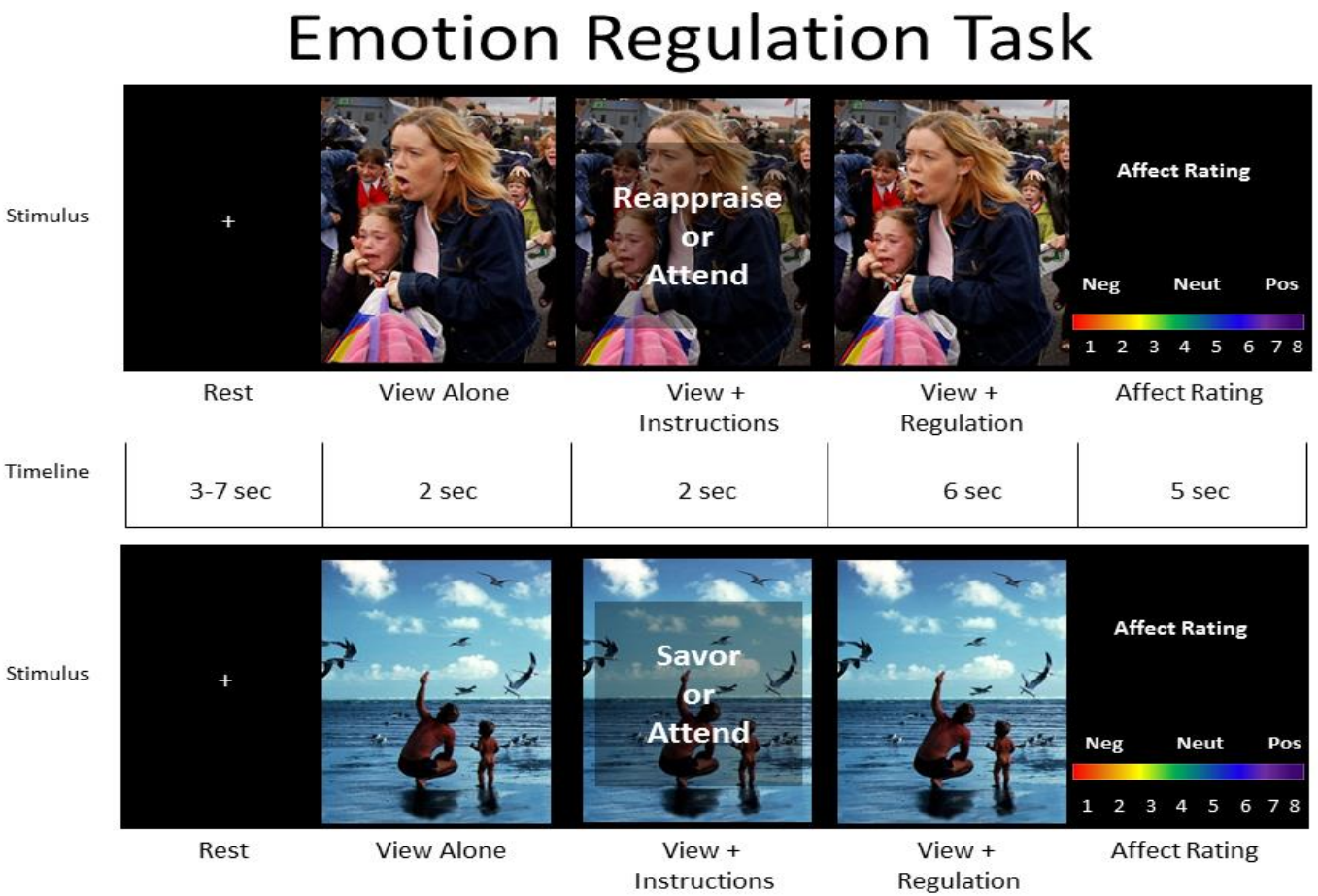
People with chronic pain and OUD have greater opioid attentional bias than people with pain without OUD

Garland et al., 2014, Drug Alcohol Dep



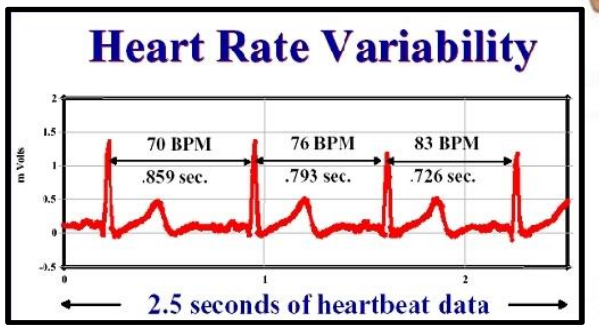
Opioid attentional bias significantly predicted opioid misuse 20 weeks following the end of treatment

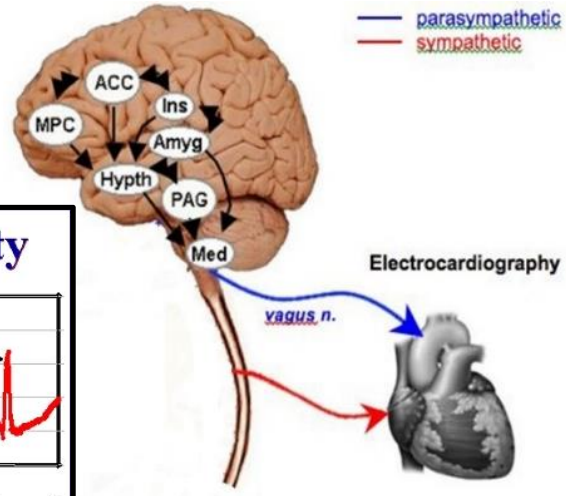
Measuring Hedonic Dysregulation with the Emotion Regulation Task



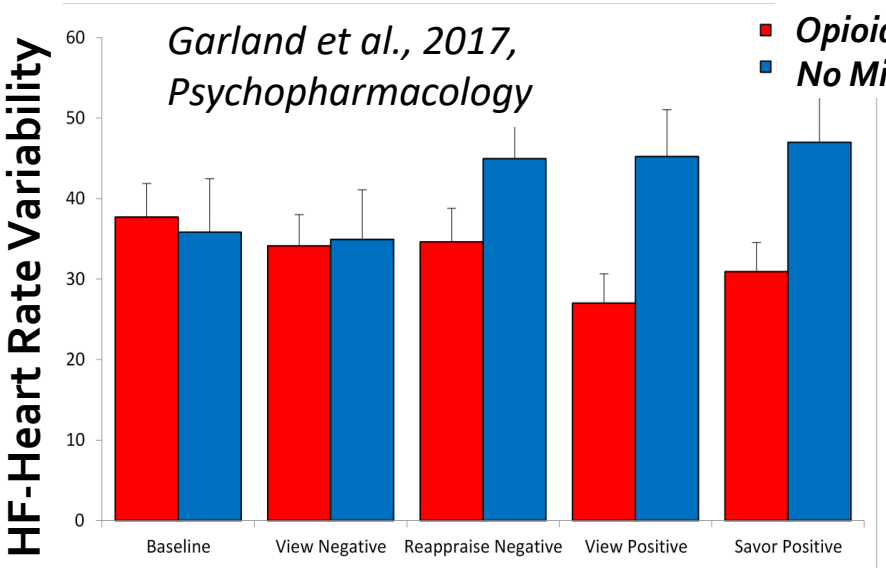
Reappraisal: reframing the meaning of a stressful life event to see that event as benign, a source of growth, or a learning opportunity

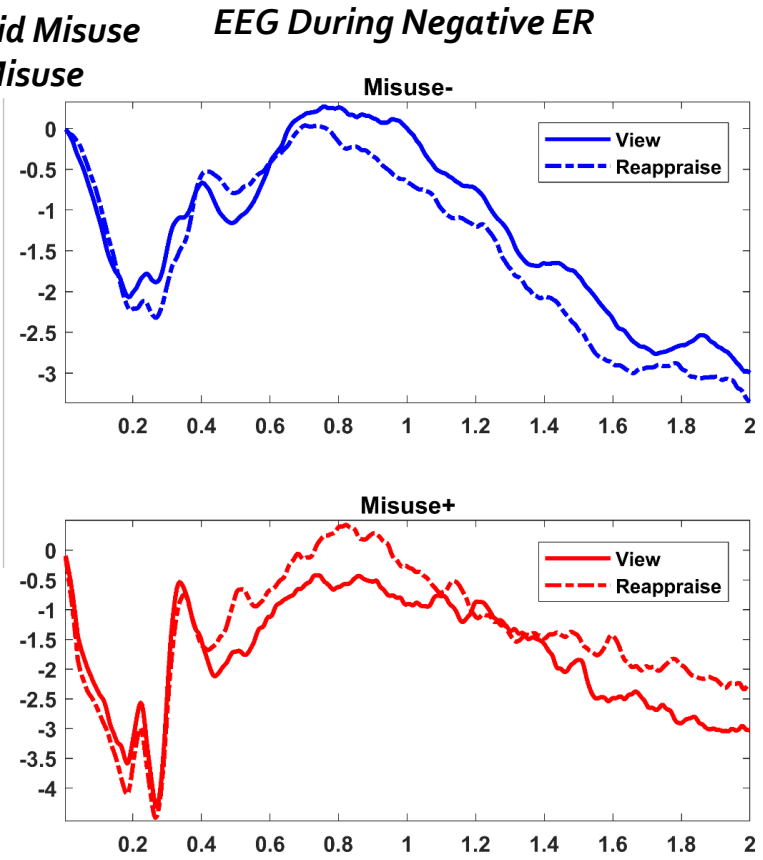
Savoring: focusing attention on the pleasant sensory features of an object or event, or its higher-order affective meaning, to increase the sense of reward obtained from that event

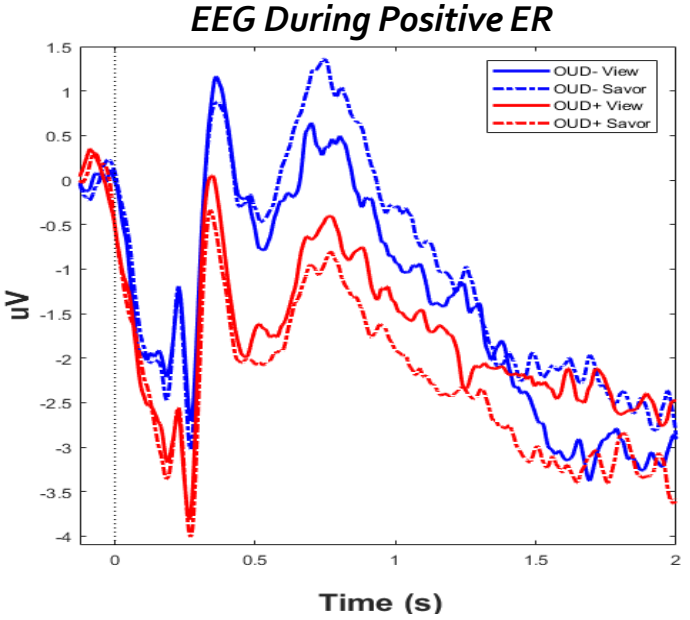




Opioid Misuse is Linked with Insensitivity to Natural Reward and Deficient Emotion Regulation



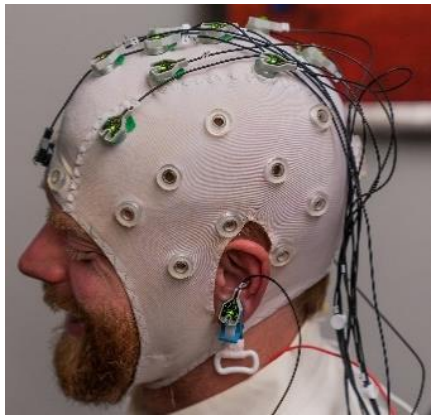




Opioid misuse and OUD are associated with a blunted capacity to increase healthy positive emotions, as revealed by neurophysiology

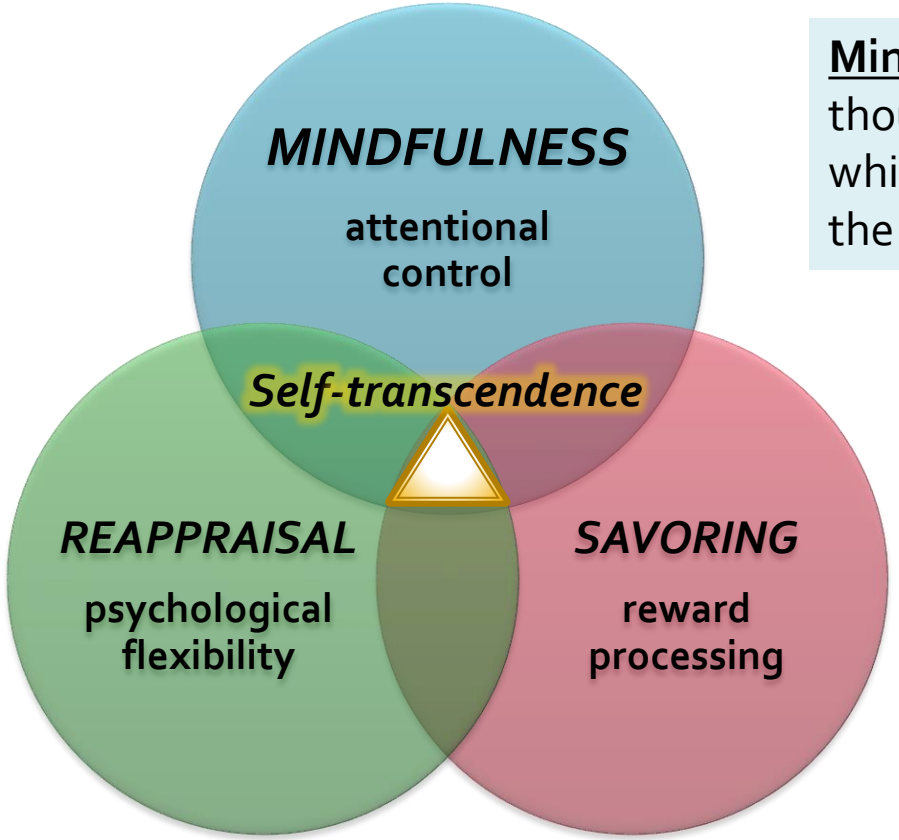
Hudak et al., 2022, Biological Psychiatry

Deficits in negative and positive emotion regulation are associated with craving and predict future opioid misuse



Targeting Chronic Pain and Opioid Misuse with Mindfulness-Oriented Recovery Enhancement

Mindfulness-Oriented Recovery Enhancement (MORE) is an integrative therapy for addiction, stress, and chronic pain that unites



Mindfulness: nonreactive attention to thoughts, emotions, and sensations while metacognitively reflecting upon the field of awareness itself

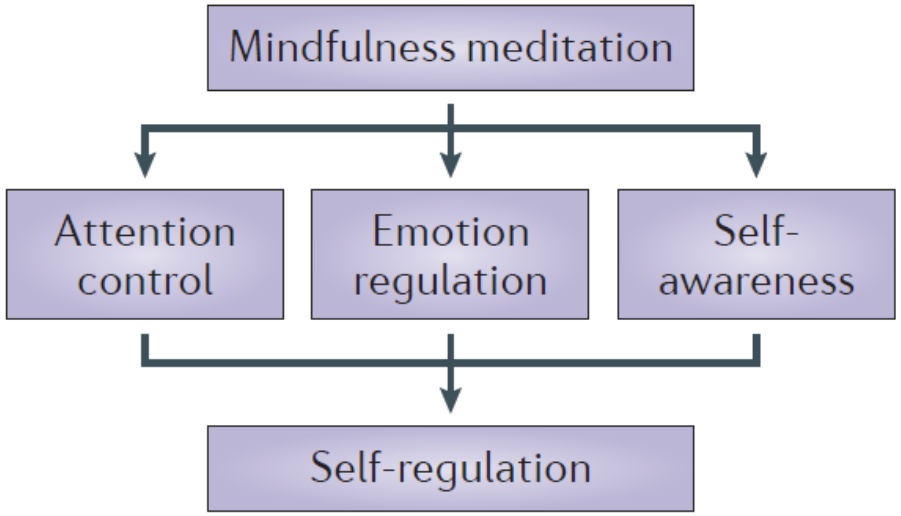
Reappraisal: reframing the meaning of a stressful life event to see that event as benign, a source of growth, or a learning opportunity

Savoring: focusing attention on the pleasant sensory features of an object or event, or its higher-order affective meaning, to increase the sense of reward obtained from that event

What is Mindfulness? An Operational Definition

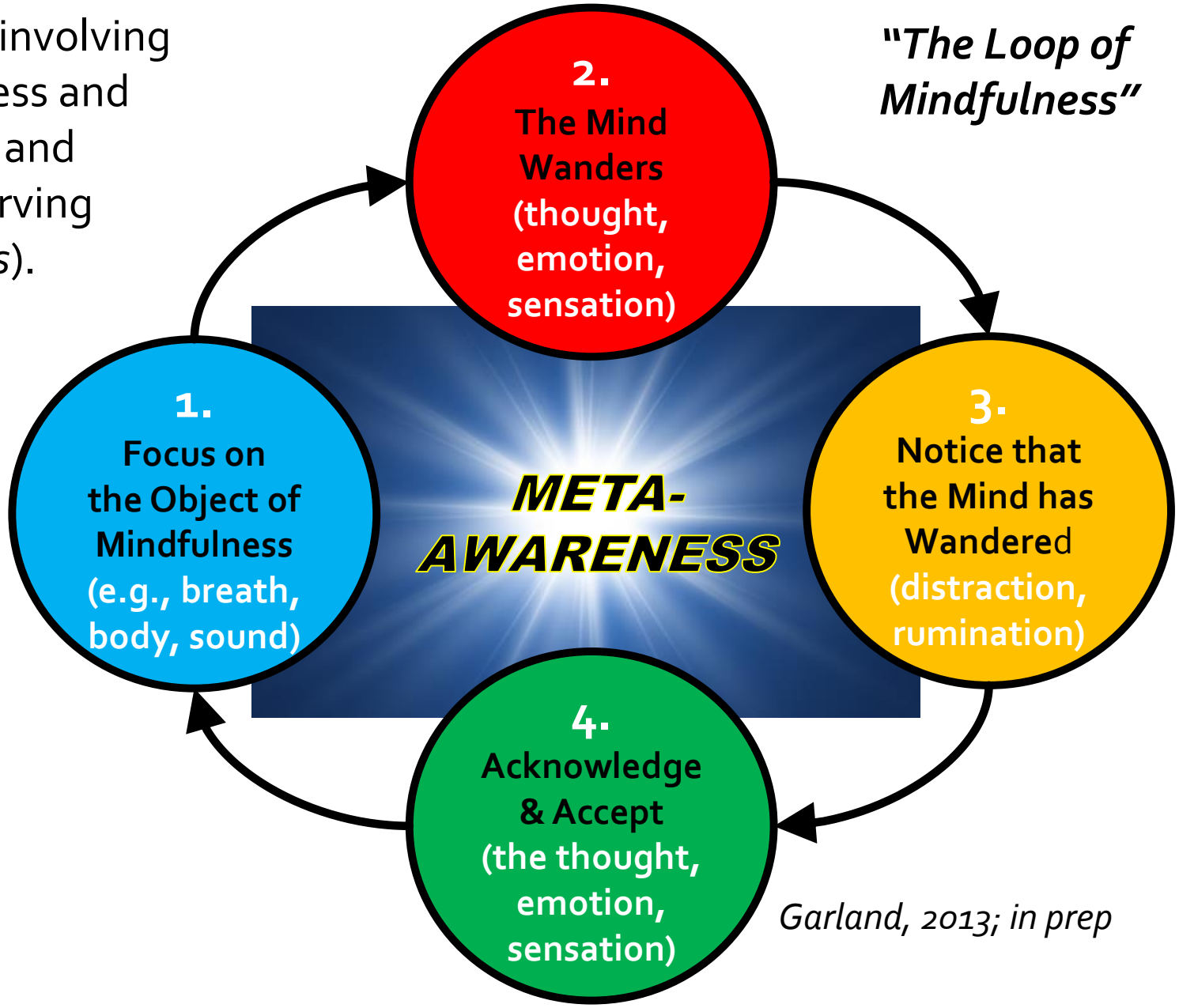
Mindfulness - a form of mental training involving the practice (i.e., meditation) of awareness and acceptance of one's thoughts, emotions and sensations in the present moment, observing them like a witness (i.e., *meta-awareness*).

Mindfulness is not a mere relaxation technique – it's primary mechanism of action is not relaxation, but rather:



Tang, Holzel, & Posner, 2015, *Nat Neurosci*

"The Loop of Mindfulness"



Garland, 2013; in prep

Time over the course of the MORE intervention

COMPONENTS

- Mindfulness
- Reappraisal
- Savoring
- Transcendence

MECHANISMS

Daily ***mindful breathing*** and ***body scan meditations*** strengthen attentional control and meta-awareness

TARGETS

- ain Severity & nterference
- Emotional Distress
- pioid Misuse
- Opioid Use Disorder

MORE is an 8-session manualized group therapy program

MORE has been tested for:

- **Opioids (Garland et al 2014, 2019, 2022; Cooperman et al 2021)**
- **Alcohol (Garland et al 2010)**
- **Illicit drugs (Garland et al 2016)**
- **Smoking (Froeliger et al 2017)**
- **Obesity (Thomas et al 2018)**
- **Internet addiction (Li et al 2017)**

Garland, 2016, *Annals of NY Acad Sci.*

MORE Session Structure for Chronic Pain, Opioid Misuse, and OUD

Session Topic

1. MINDFULNESS OF NOCI[illegible]NG
2. MINDFULNESS O[illegible]
3. MINDFUL REA[illegible]
4. MINDFUL SA[illegible]
5. MINDFULNES[illegible]
6. OVERCOMING CR[illegible]
7. MINDFULNESS TO MEAN[illegible]NCE
8. MINDFUL RECOVERY PLAN

Purpose

1. Clarify whether opioid use is driven by craving or need for pain relief
2. Prevent unnecessary opioid dosing by providing a non-opioid means of pain relief
3. Increase commitment to MAT

Group sessions are 2 hours long:

- Formal mindfulness meditation
- Debrief and group process
- Psychoeducation/didactic material
- Experiential exercise
- Homework
  - 15 minutes of mindfulness, reappraisal, and savoring practice/day
  - 3 minute mindful breathing before taking medicine

STOP: Mindfulness Before Drug Use or MAT

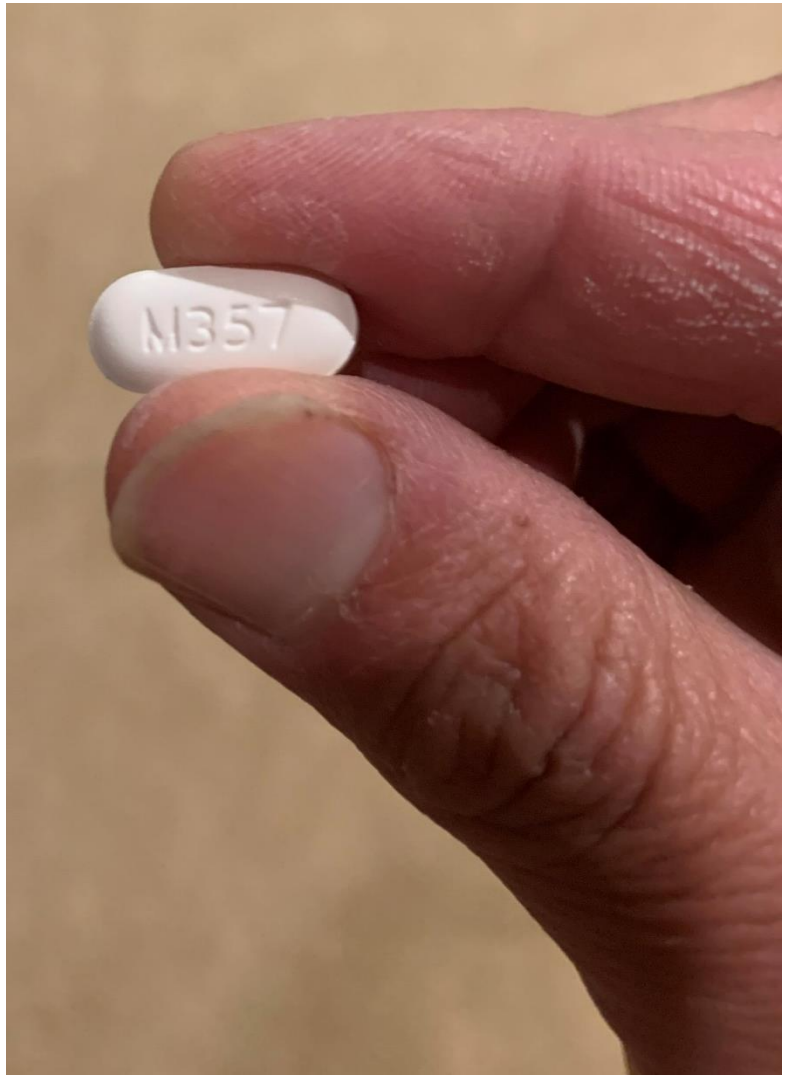
1. **S**top right before you take your medicine or drugs.
2. **T**ake a few minutes to practice mindful breathing.
3. **O**bserve your thoughts, feelings, and body sensations.

In particular, notice how your attention becomes distracted by sight of the drug (*attentional bias*), thoughts or feelings about the drug, or cravings to take the drug.

Observe: "You can have an urge, but you don't have to give into it."

Return the focus back to the breath to re-center yourself as needed.

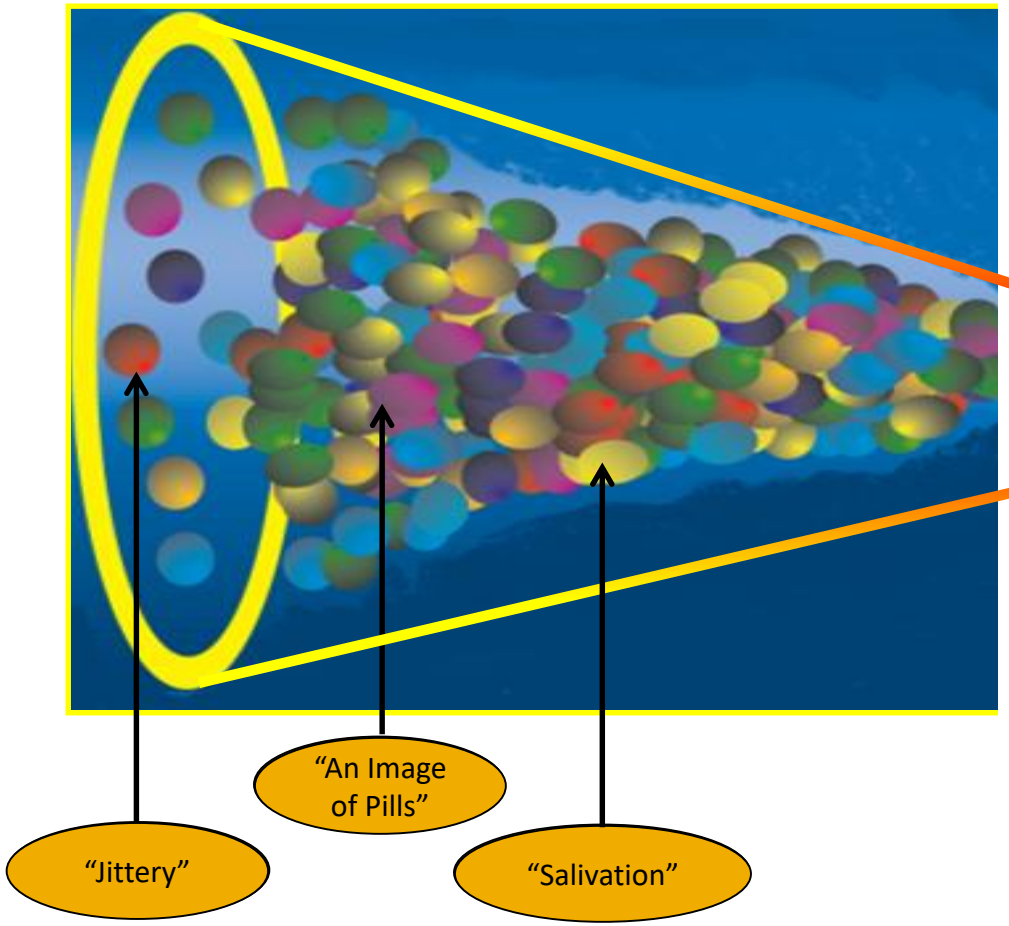
4. **P**roceed with intention. If you do choose to take the drug, recognize that you are putting a powerful chemical in your body. It deserves respect, attention, and awareness. If you choose to take MAT, contemplate how it is saving your life.



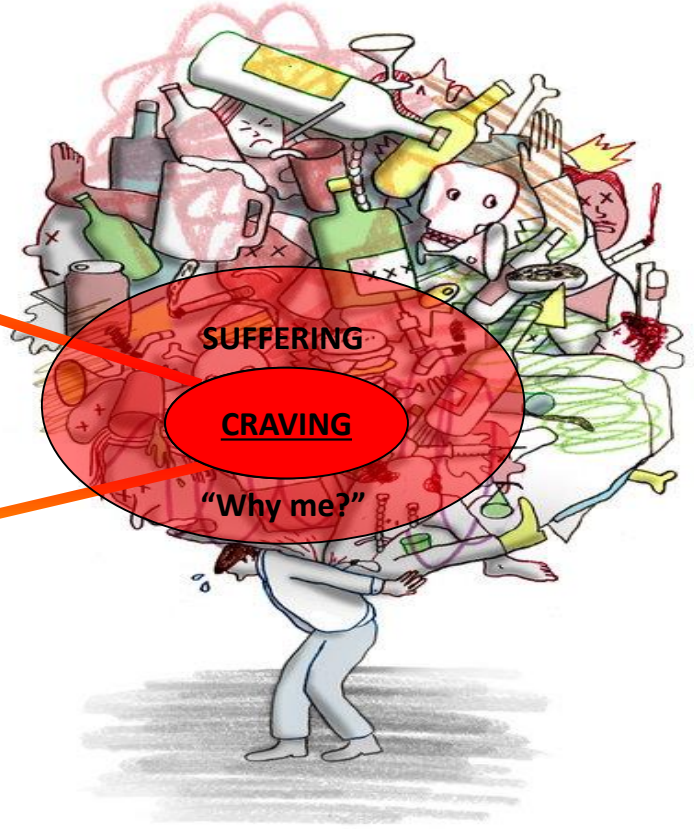
Mindfully Deconstructing Pain and Craving through Interoceptive Awareness

"ZOOMING IN"

Metacognitive Awareness Observes Somatic Sensations With Less Emotional Reactivity



Pain as an Emotionally-Laden, Monolithic, Unremitting Experience



Garland, 2021, *PAIN*

The Antidote to Despair: Amplifying Pleasure, Joy, and Meaning Through Mindful Savoring

Mindful savoring aims to:

- *Amplify reward processing*
- *Boost positive emotions*
- *Elicit meaning in life*
- *Cultivate self-transcendence*

Try It Yourself: Savoring Exercise

Anyone can benefit from a mindfulness "savoring" exercise like this one. Follow these steps at home.

Credit: Eric Garland, Ph.D., LCSW, University of Utah, and the NIH HEAL Initiative

1. Take a few breaths. Concentrate on how your breath sounds and feels.
2. Think of a pleasant object or event — a beautiful landscape, an exercise or activity you love, or the taste of a favorite food.
3. Focus on the details of this object or event: the sights, sounds, smells, textures, and temperature.
4. Notice how your body and mind respond when you think about these details.
5. Imagine you are breathing in and absorbing those positive feelings "like water seeping into soil."
6. If your mind wanders during this exercise or if negative thoughts or feelings arise, let them go, and gently return your focus to the pleasant object or event.

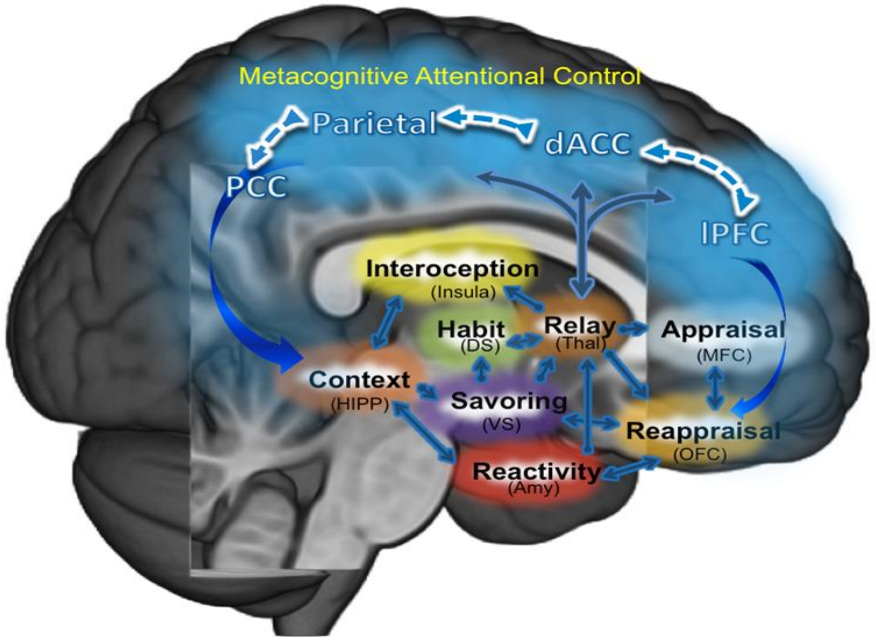
Infographic by NIH-NCCIH
National Center for Complementary and Integrative Health

The Restructuring Reward Hypothesis (Garland, 2016)

- MORE aims to modify associative learning mechanisms hijacked during addiction by strengthening top-down cognitive control functions to restructure bottom-up reward learning from valuation of drug rewards to valuation of natural rewards.

Restructuring reward hypothesis: shifting valuation from drug-related reward to valuation of natural reward will reduce craving and addictive behavior (Garland, 2016, *Annals NY Acad Sci*)

- Restructuring reward learning in addiction may be essential: the person in recovery must re-learn what is and is not important in life, reevaluating the meaning of conditioned stimuli and automatic, conditioned responses.



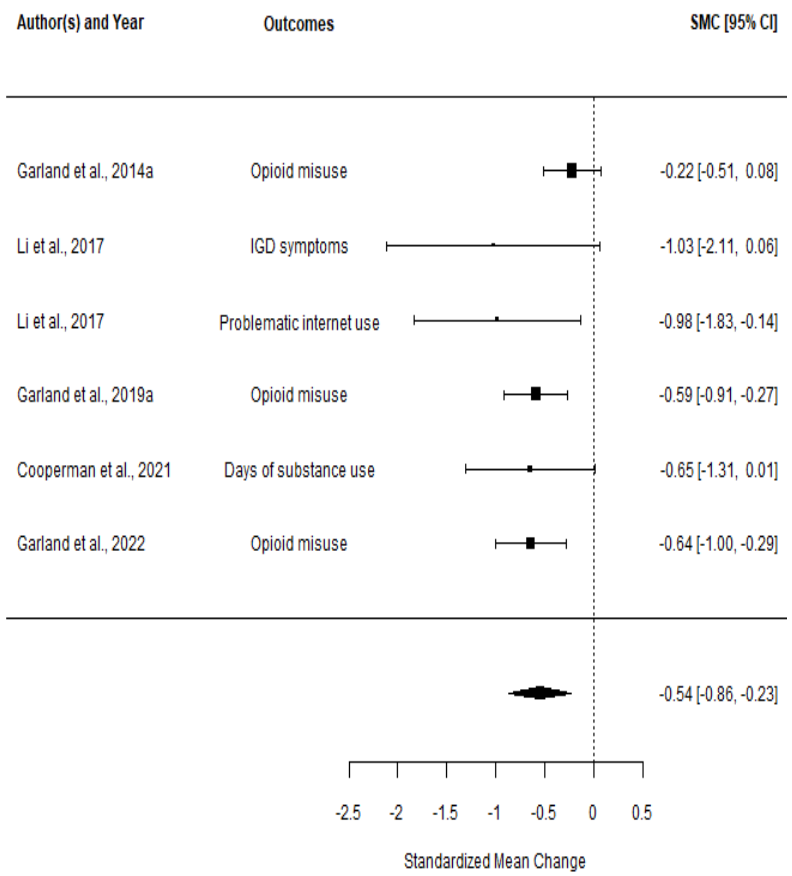
Neurocognitive Model of Mindfulness-Centered Regulation
Garland, Froeliger, & Howard, 2013, *Frontiers in Psychiatry*

Restructuring of reward processing may arise from restoring feedback between frontoparietal structures essential to metacognition/attention and limbic-striatal circuits crucial to learning/motivation.

MORE Meta-Analysis (Parisi et al., 2022)

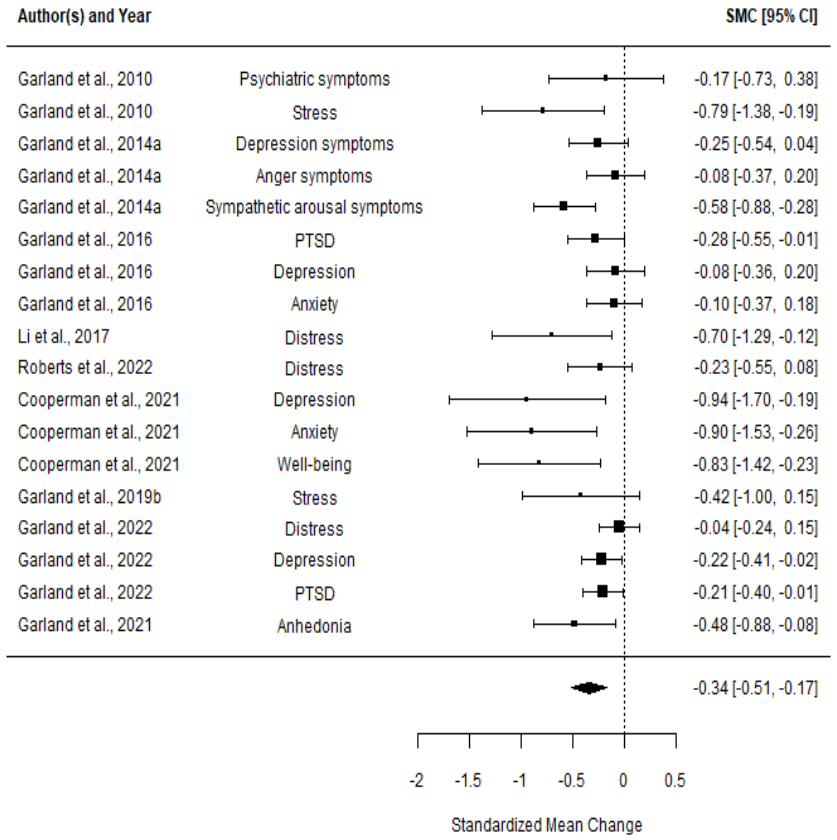
Addictive Behaviors

Effect size: -.54, p=.007



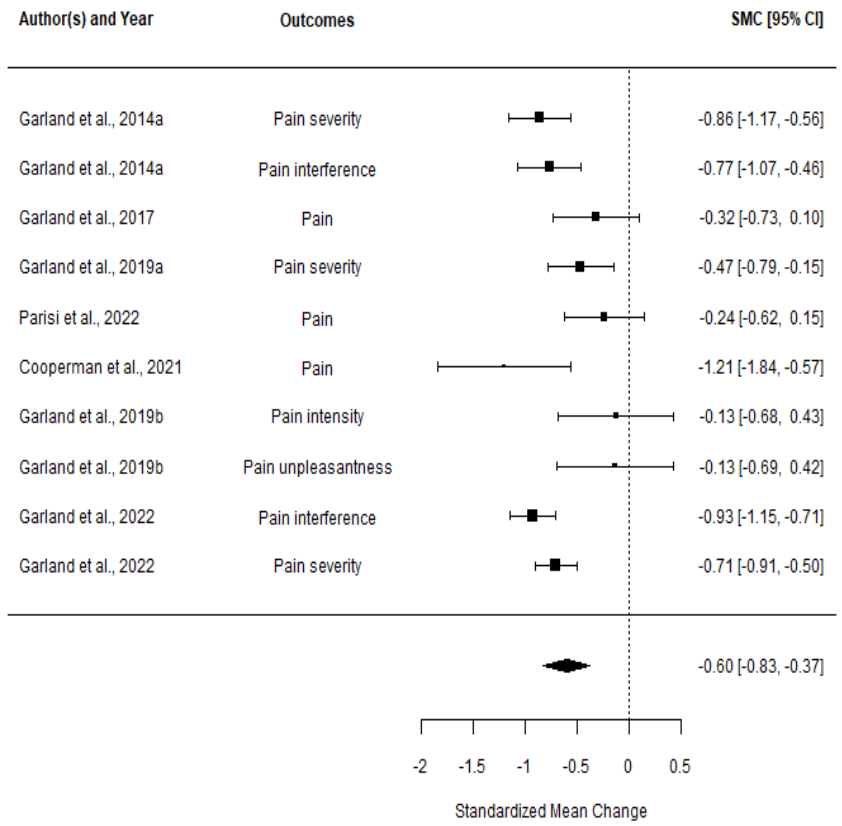
Psychiatric Symptoms

Effect size: -.34, p<.001



Chronic Pain

Effect size: -.65, p<.001



First NIH-Funded Stage 2 RCT of MORE for Chronic Pain and Opioid Misuse

Journal of Consulting and Clinical Psychology

0022-006X/14/$12.00 DOI: 10.1037/a0035798

Mindfulness-Oriented Recovery Enhancement for Chronic Pain and Prescription Opioid Misuse: Results From an Early-Stage Randomized Controlled Trial

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University of North Carolina at Chapel Hill

J Behav Med (2015) 38:327–336
DOI 10.1007/s10865-014-9607-0

Neurophysiological evidence for remediation of reward processing deficits in chronic pain and opioid misuse following treatment with Mindfulness-Oriented Recovery Enhancement: exploratory ERP findings from a pilot RCT

Eric L. Garland · Brett Froeliger · Matthew O. Howard

Psychopharmacology (2014) 231:3229–3238
DOI 10.1007/s00213-014-3504-7

ORIGINAL INVESTIGATION

Effects of Mindfulness-Oriented Recovery Enhancement on reward responsiveness and opioid cue-reactivity

Eric L. Garland · Brett Froeliger · Matthew O. Howard

Contents lists available at ScienceDirect

Drug and Alcohol Dependence

journal homepage: www.elsevier.com/locate/drugalcdep

Full length article

Pain, hedonic regulation, and opioid misuse: Modulation of momentary experience by Mindfulness-Oriented Recovery Enhancement in opioid-treated chronic pain patients

Eric L. Garland[a,*], Craig J. Bryan[a], Patrick H. Finan[b], Elizabeth A. Thomas[a], Sarah E. Priddy[a], Michael R. Riquino[a], Matthew O. Howard[c]

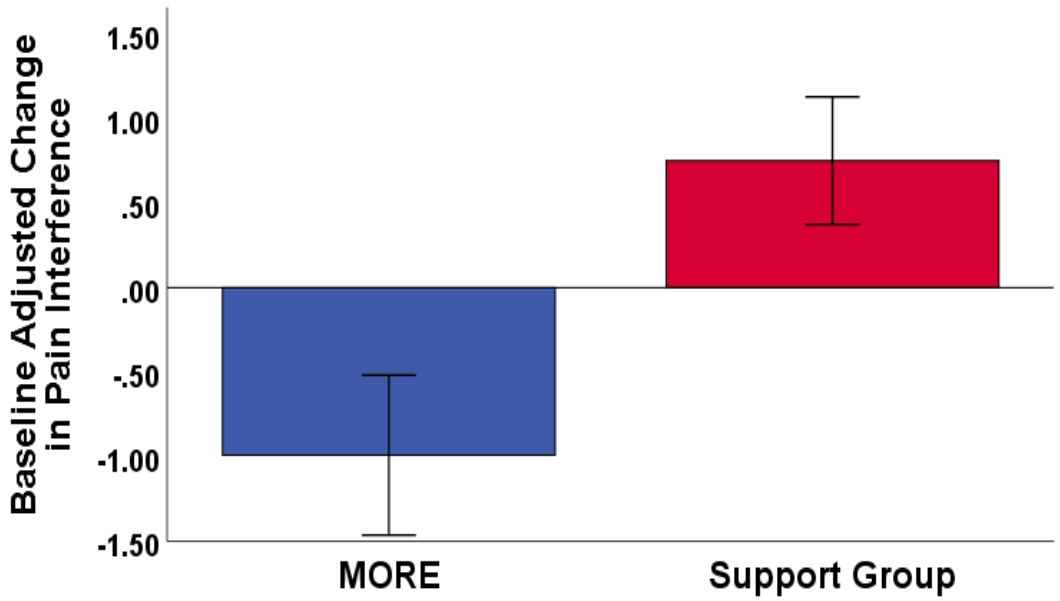
115 chronic pain patients taking prescription opioids for ~ 10 years

72% reported misusing opioids

High rates of depression, anxiety, and PTSD

75% worked part-time or were unemployed

MORE Reduces Chronic Pain Symptoms



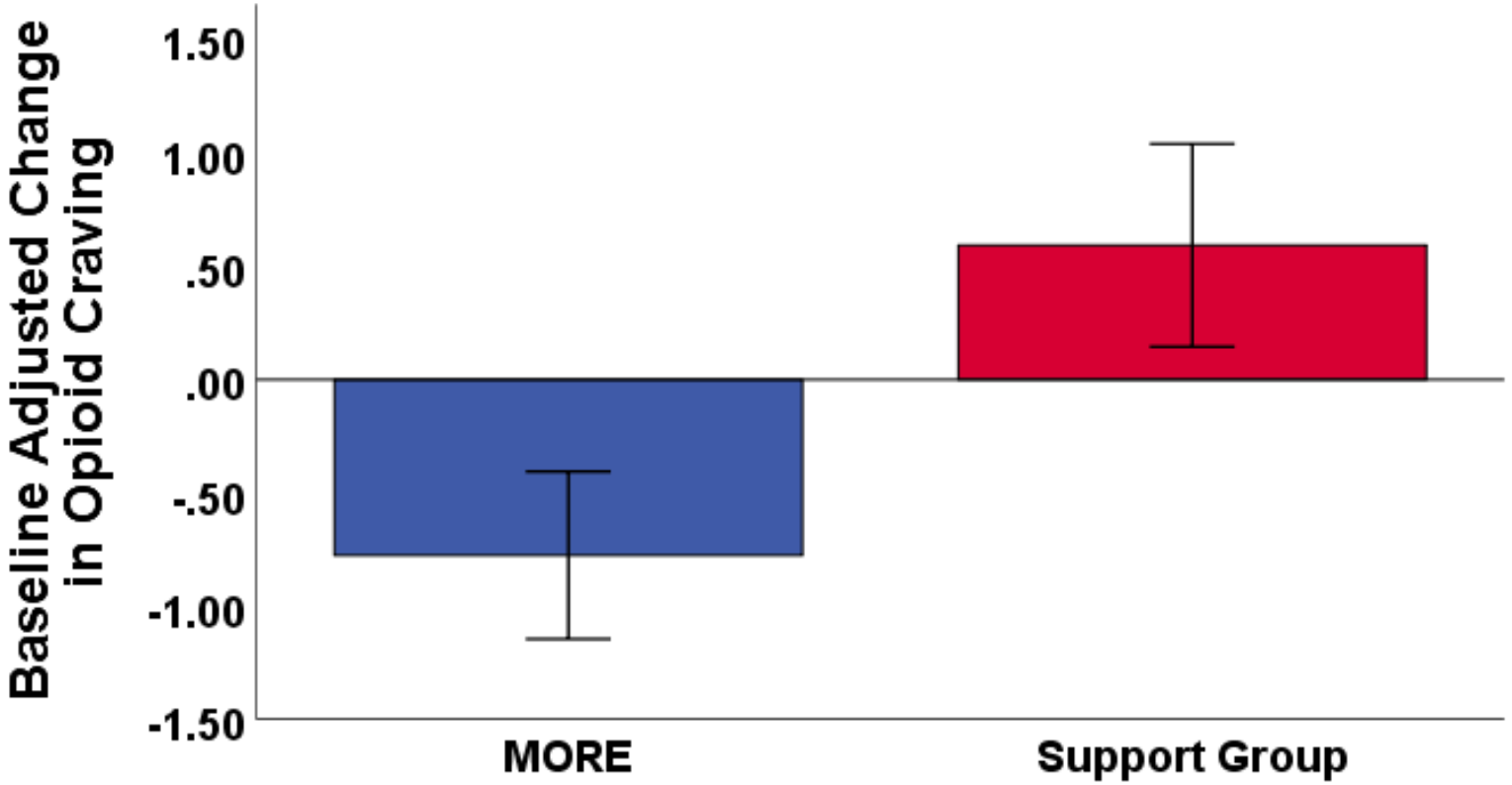
PAIN INTERFERENCE
Follow-Up
β = 1.82, SE = .58, 95% CI [.67, 2.97], *p* = .002

Garland et al., 2014, J Consult Clin Psychol

Pain Interference – How much has pain interfered with:

- **General Activity**
- **Mood**
- **Walking Ability**
- **Normal Work**
- **Relation with Other People**
- **Sleep**
- **Enjoyment of Life**

MORE Reduces Opioid Craving



OPIOID CRAVING

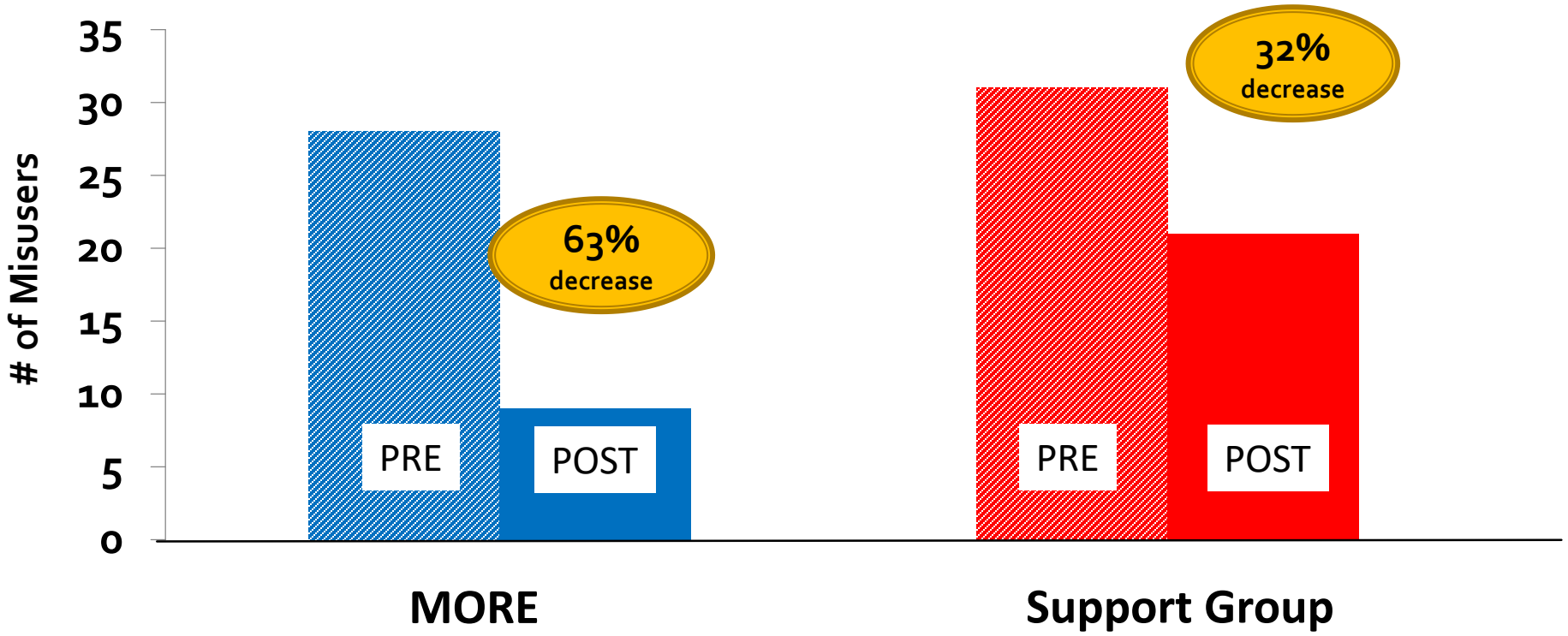
Pre-Post
β = 1.39, SE = .62, 95% CI [.15, 2.63], *p* = .02

Controlling for pre-post change in pain severity
β = 1.31, SE = .63, 95% CI [.05, 2.57], *p* = .043

Garland et al., 2014, J Consult Clin Psychol

MORE Reduces Opioid Misuse

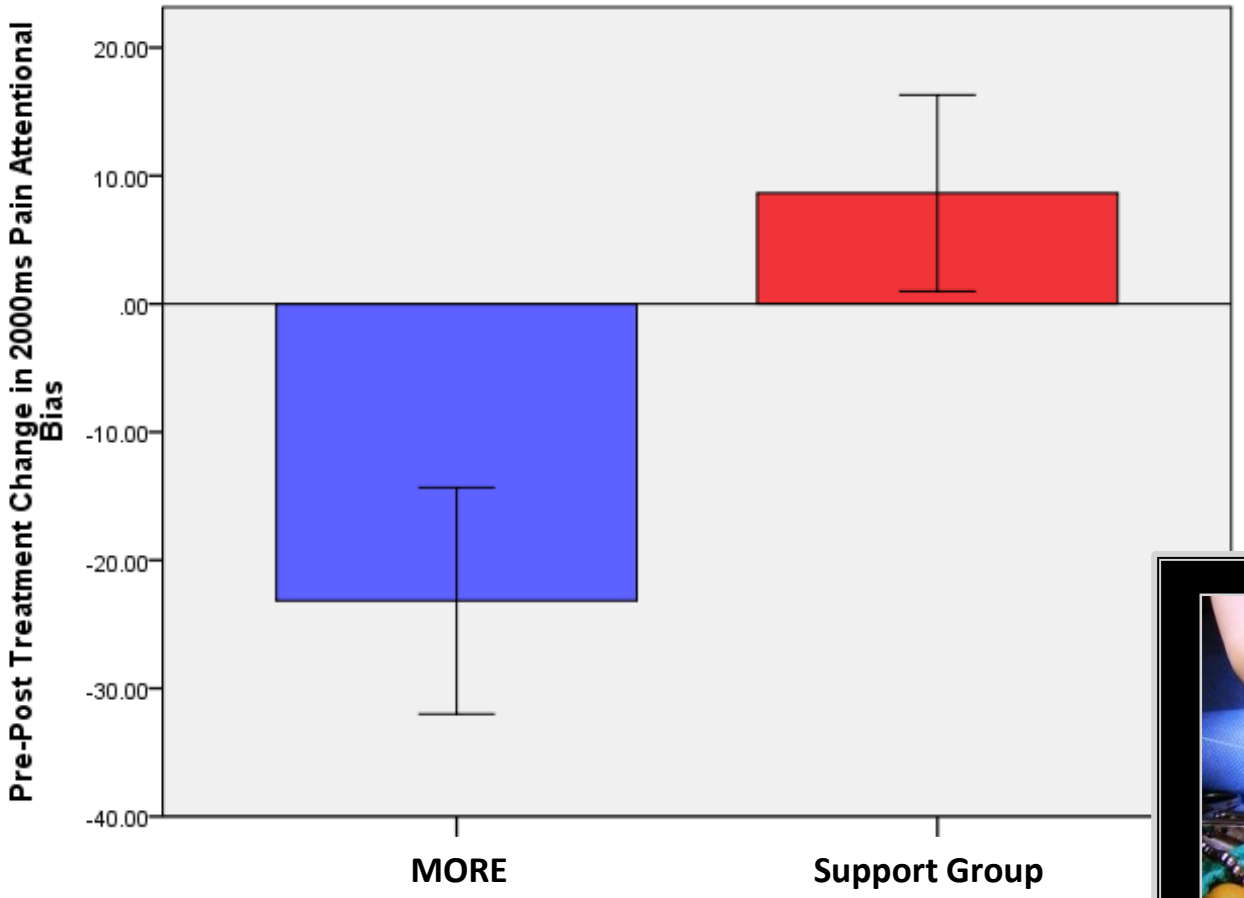
- Relative to the support group, ***a greater number of misusers participating in MORE no longer met criteria for misuse following treatment***, $\chi^2 = 3.74$, $p = .05$



Garland et al., 2014, JCCP

Measuring Hedonic Dysregulation in Chronic Pain and Opioid Misuse with the Dot Probe Task

MORE Decreases Pain Attentional Bias

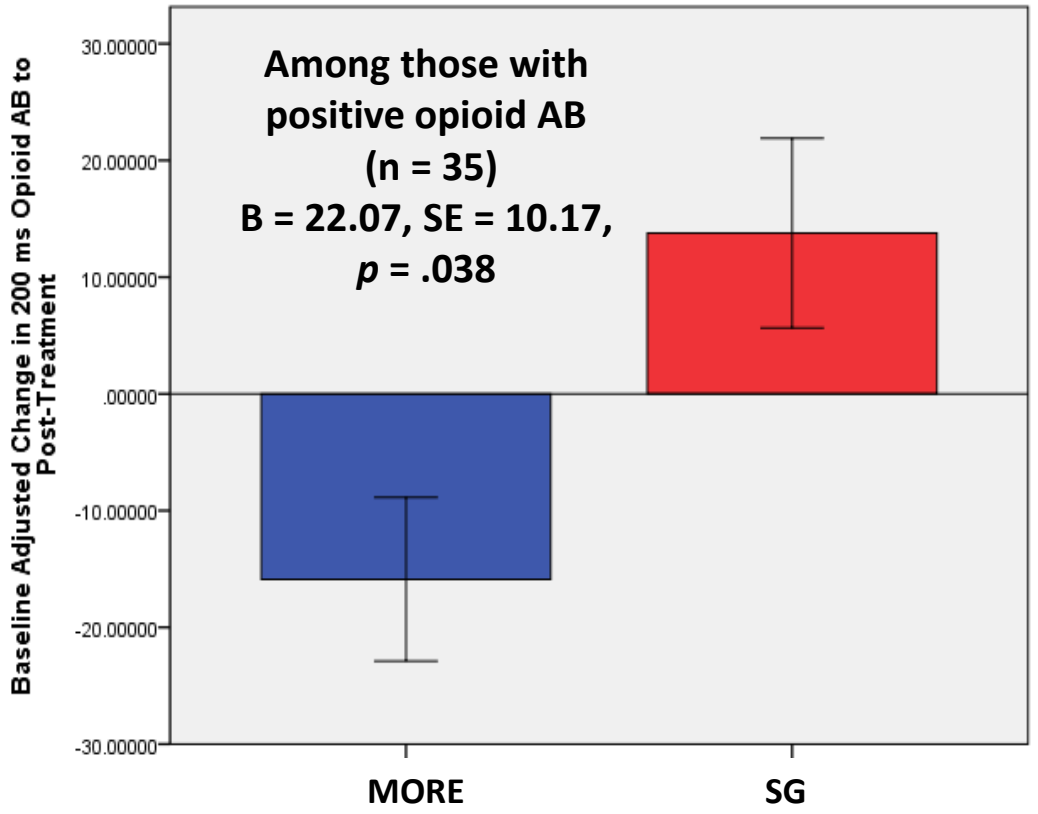


PAIN ATTENTIONAL BIAS

***F*(1,62.57) = 11.15,**
***p* = .001**

Garland & Howard, 2013
Psychotherapy & Psychosomatics

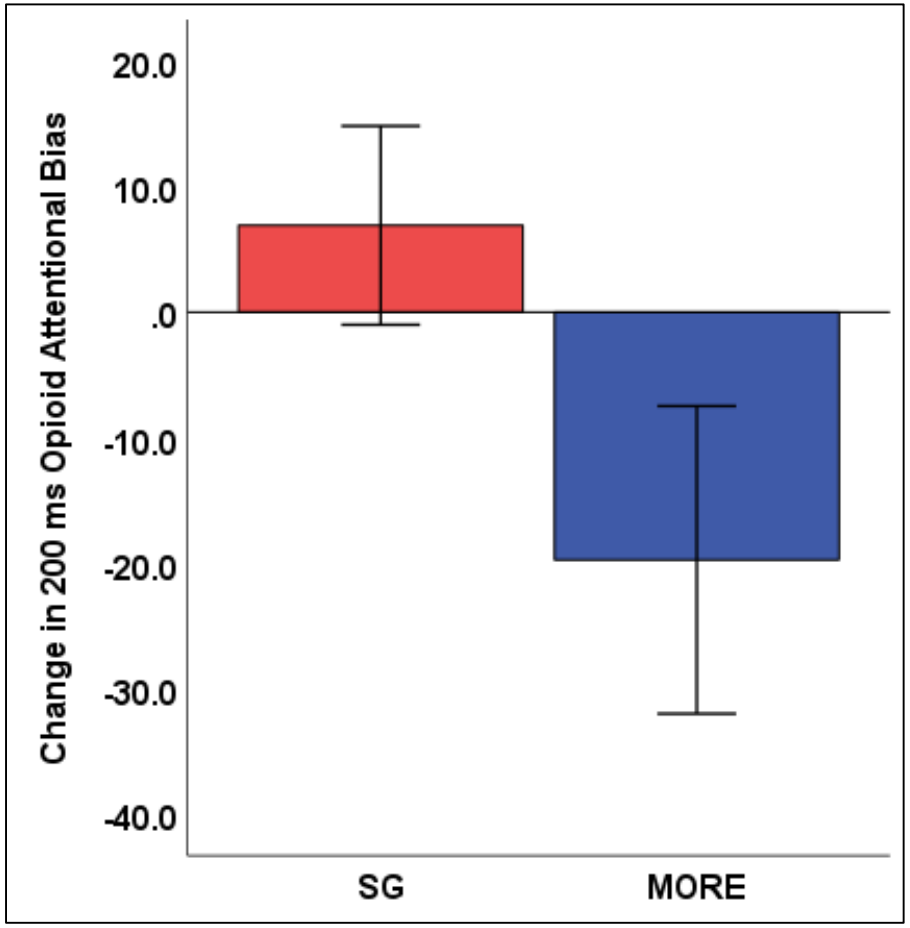
MORE Decreases Opioid Attentional Bias



Garland, Baker, & Howard, 2017, JSSWR

N=128

B = -29.89, SE = 13.18, *p* = .025



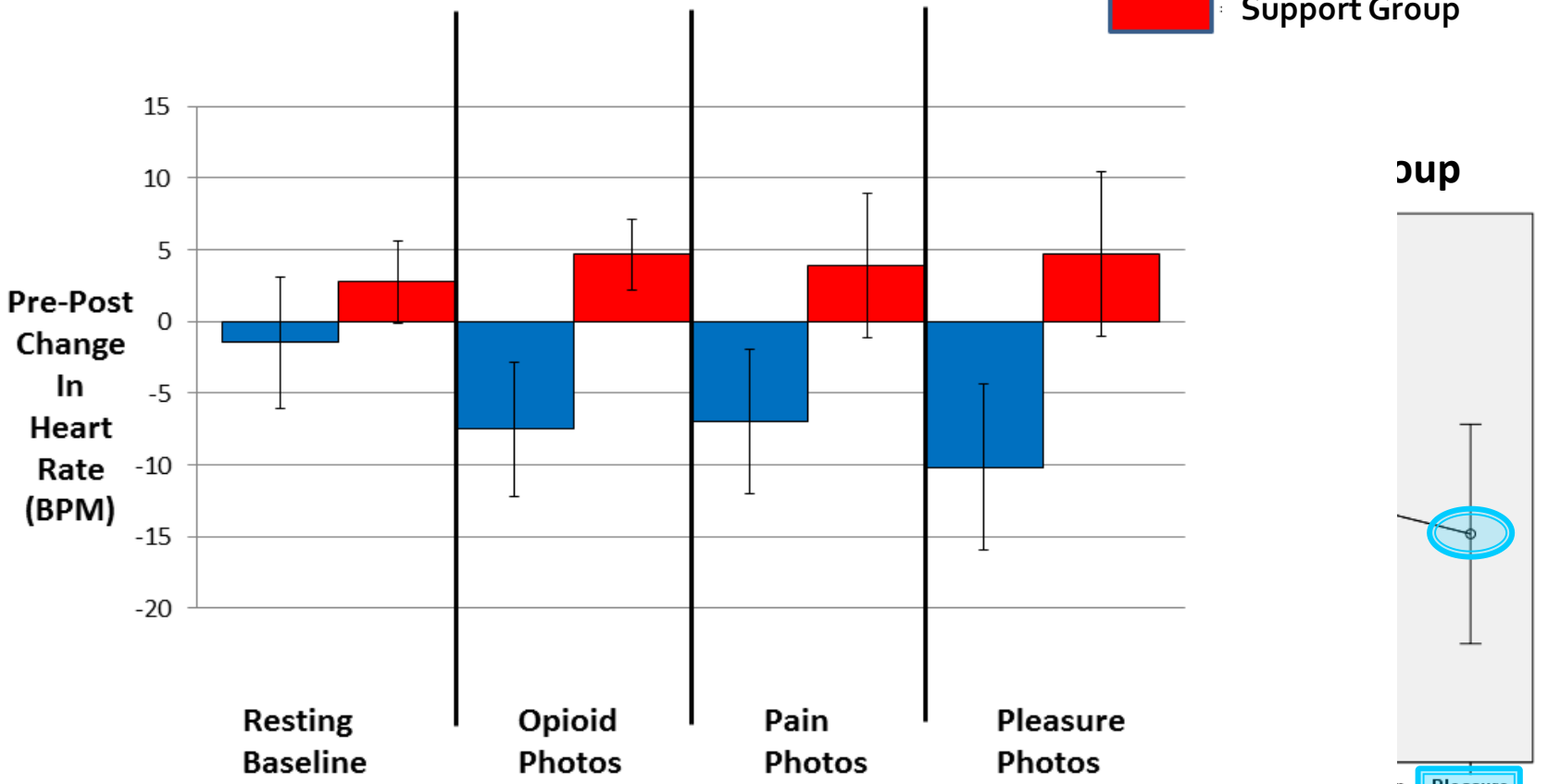
Garland, et al., 2023, in prep.

Patients with greater reductions in opioid AB experienced the largest decreases in opioid misuse by follow-up, β = .07, SE = .03, *p* = .017

MORE Enhances Autonomic Control During Attention to Emotional Cues and Increases Physiological Sensitivity to Natural Rewards?

Group X Time X Condition, $F(1,46) = 5.20$, $p = .005$, $\eta^2_{partial} = .10$.

- **Decreased drug & pain HR was correlated with decreased arousal**
- **Decreased pleasure HR was correlated with increased arousal**

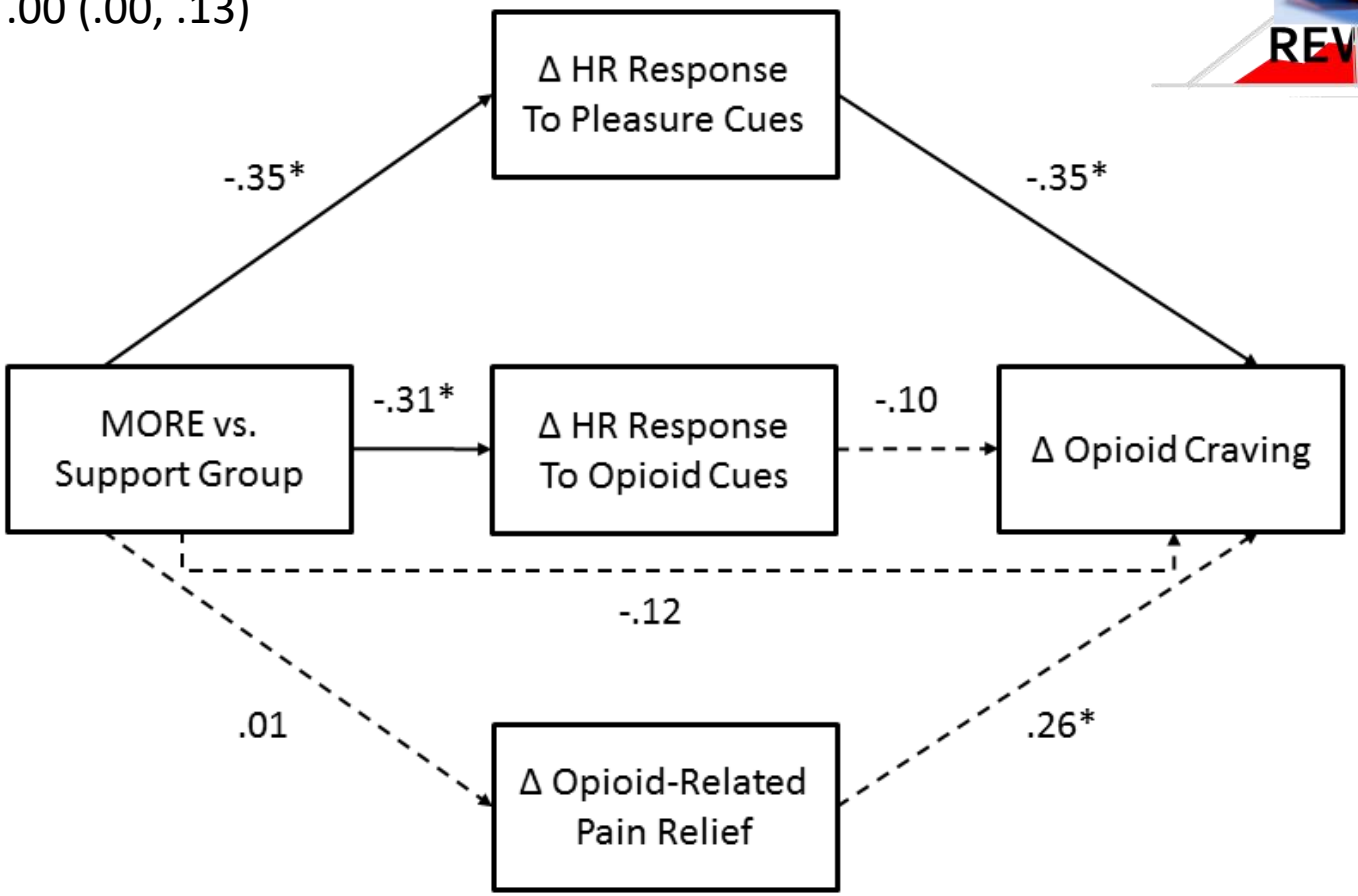


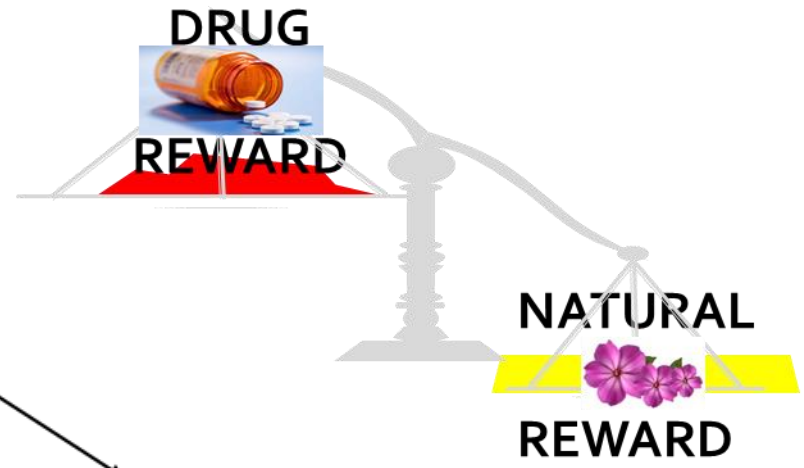
Garland et al., 2014, Psychopharmacology

MORE Reduces Opioid Craving by Enhancing Natural Reward Processing

χ^2/df = .92; CFI = 1.00;
RMSEA = .00 (.00, .13)

Indirect effect, z = 2.43, p = .015

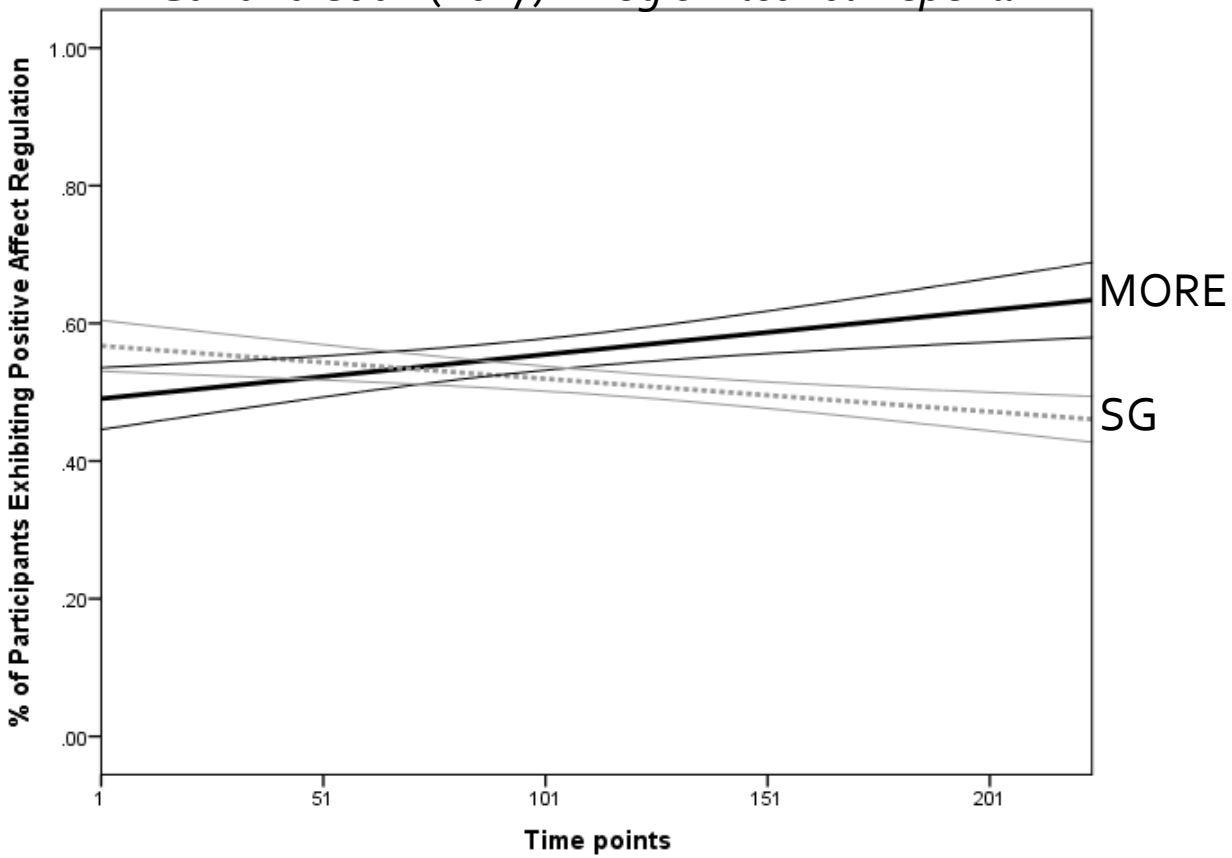


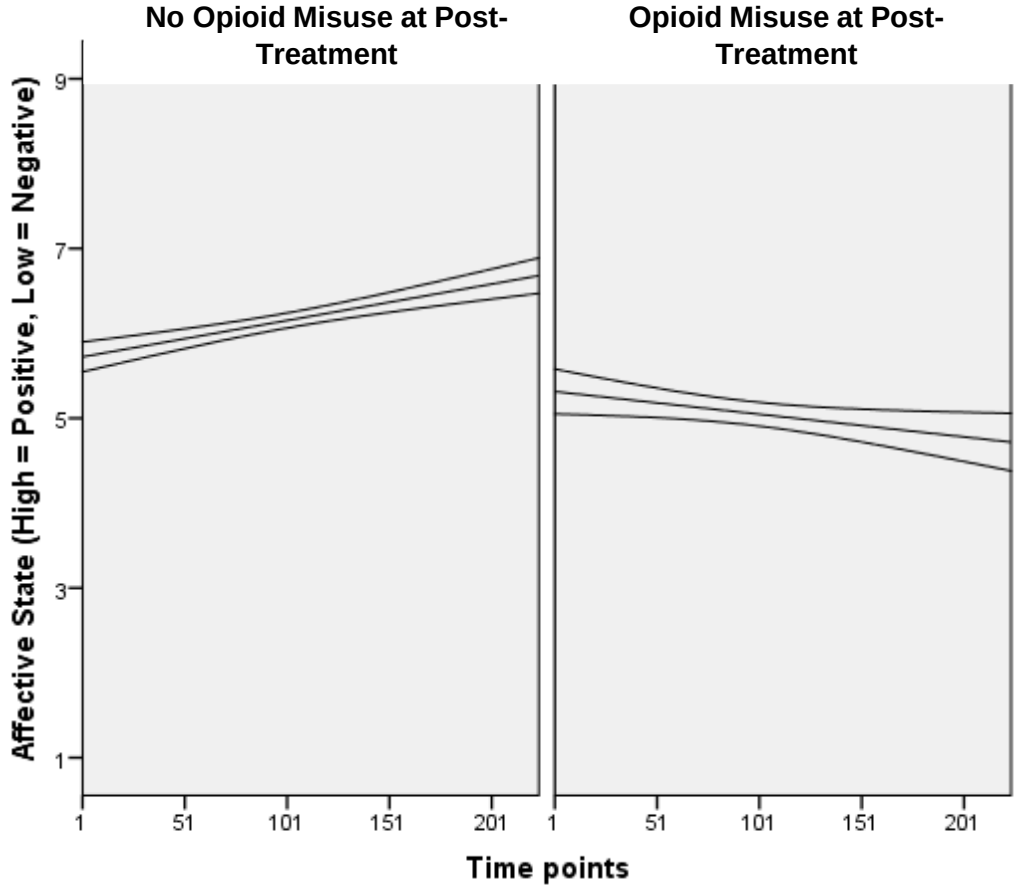


Garland et al., 2014, Psychopharmacology

MORE Improves Pain and Positive Emotions from Moment-to-Moment

Garland et al. (2017). *Drug & Alcohol Depend*





Momentary Pain Intensity Group X Time *B*=-.003 SE=.001, *p*=.01

Momentary Positive Affect Group X Time *B*=.003, *SE*=.001, *p*=.004

Positive Affect Regulation Group X Time Wald χ^2=4.423, *p*=.035 (OR=2.75)

Increases in Positive Affect Predict Decreased Opioid Misuse, Affect X Time *B*=.47, *SE*=.20, *p*=.02

MORE decreases addictive behavior, craving, and drug cue-reactivity

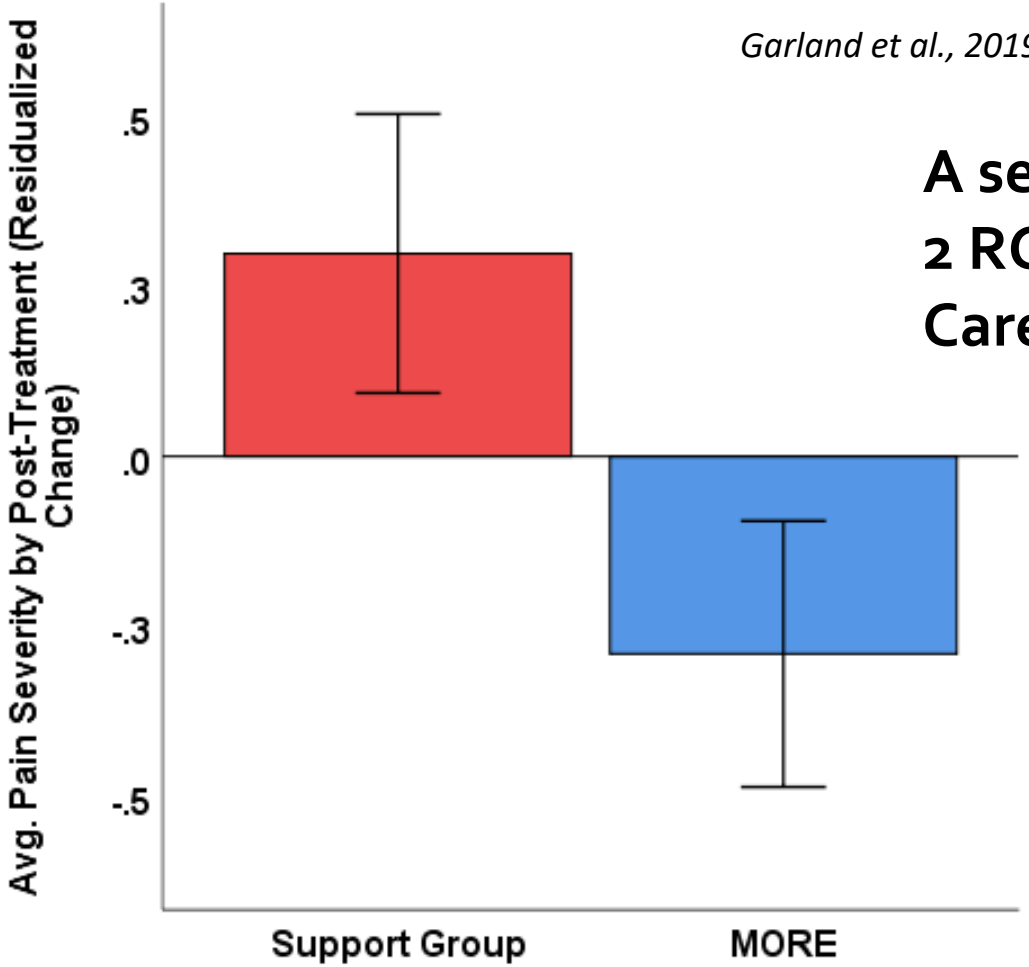
MORE decreases pain

MORE increases positive emotions and natural reward processing

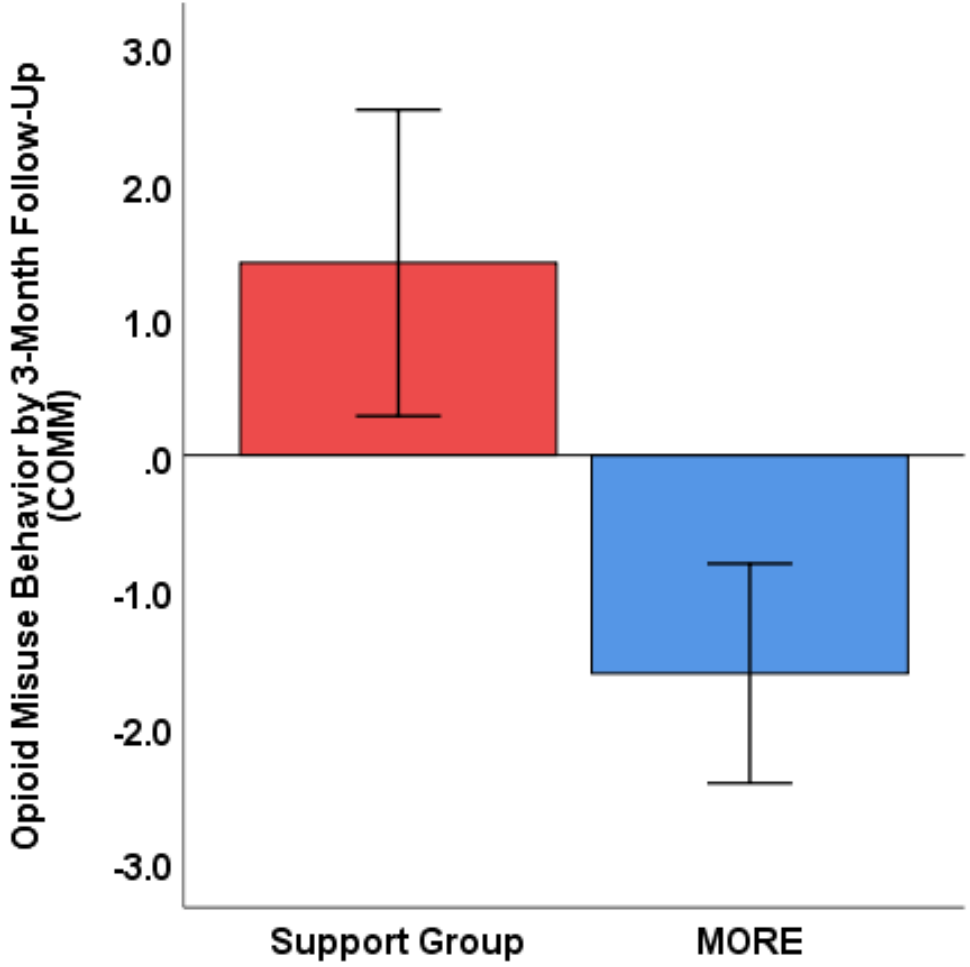
MORE Reduces Pain Severity and Opioid Misuse Risk Among Patients in Primary Care – A Stage 2 RCT Replication

Garland et al., 2019, J Clin Consult Psychol

A second Stage 2 RCT in Primary Care N=95



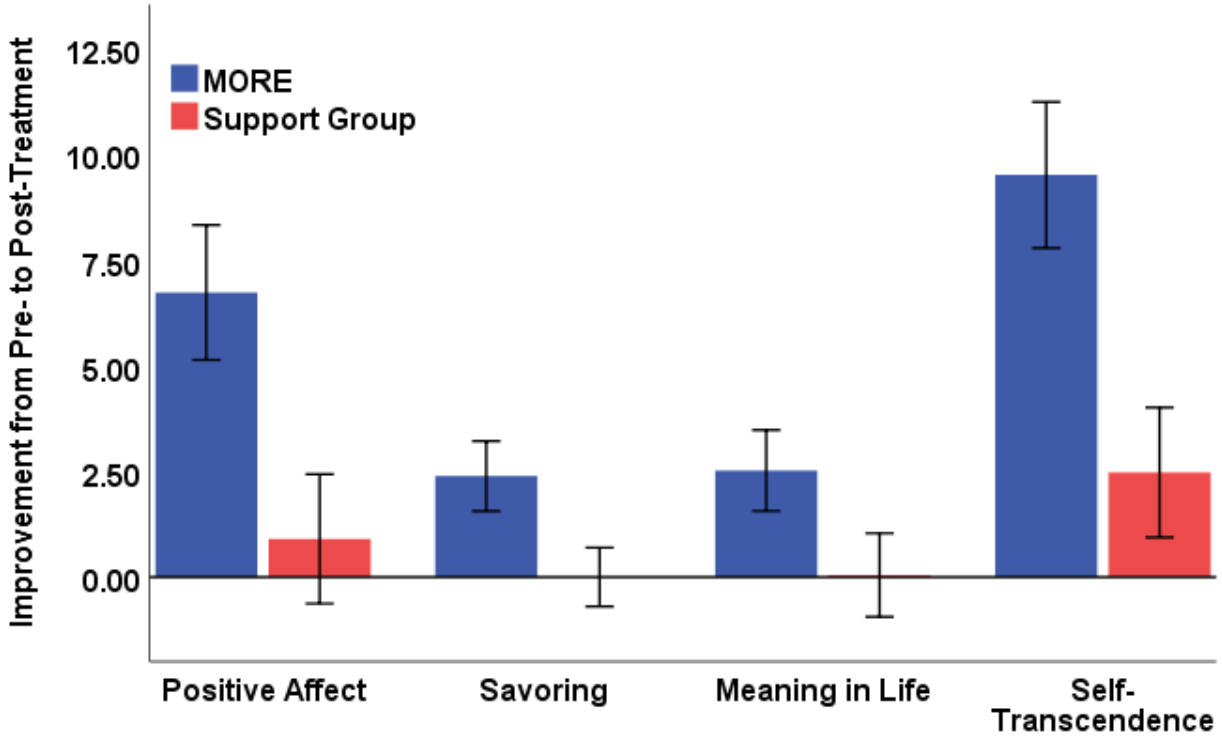
Effect of MORE (vs. SG) on **PAIN SEVERITY:** β = -.25, p = .031



Effect of MORE (vs. SG) on **OPIOID MISUSE:** β = -.31, p = .027

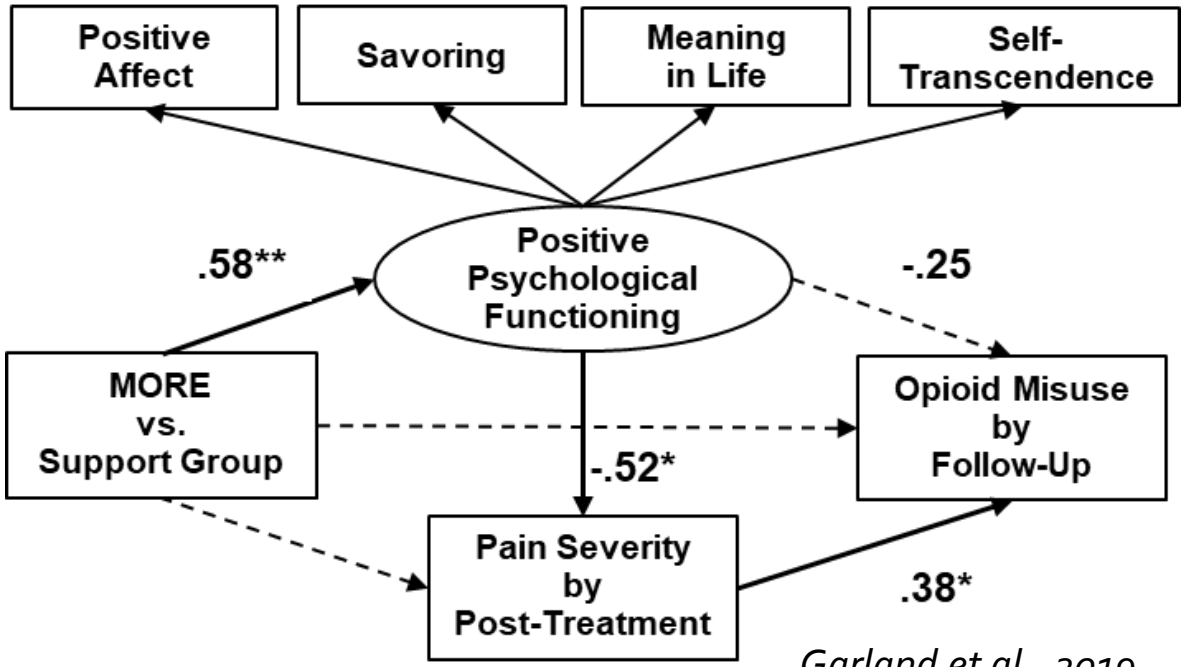
Savoring Joy, Meaning, and Self-Transcendence: MORE Reduces Opioid Misuse by Treating the Disease of Despair

Self-transcendence – sense of connectedness to something greater than the self (Hanley, Nakamura, & Garland, 2018)



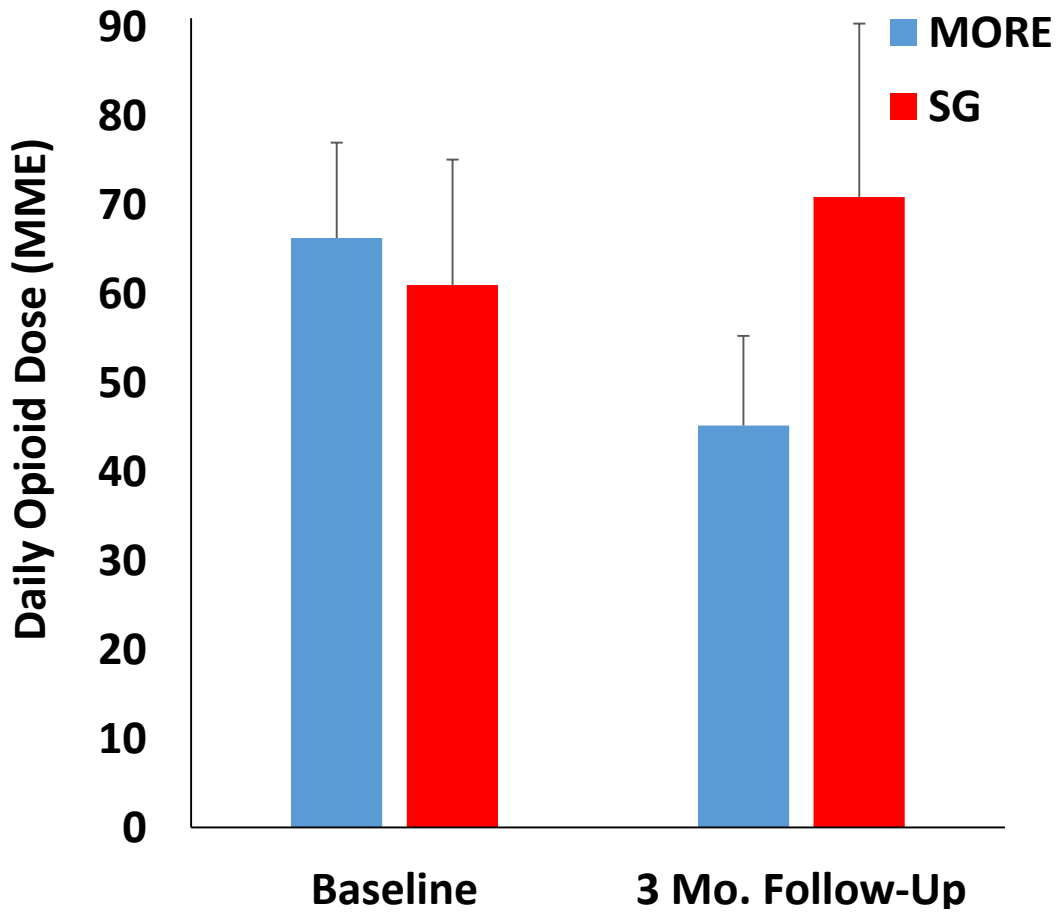
MORE was associated with significantly greater:

- residualized change in **pain severity** at post-treatment (β=-.25, p=.028)
- change in **opioid misuse risk** by 3-month follow-up (β=-.30, p=.032)



Garland et al., 2019, JCCP

MORE Reduces Opioid Use



Stage 2 RCT, N = 95

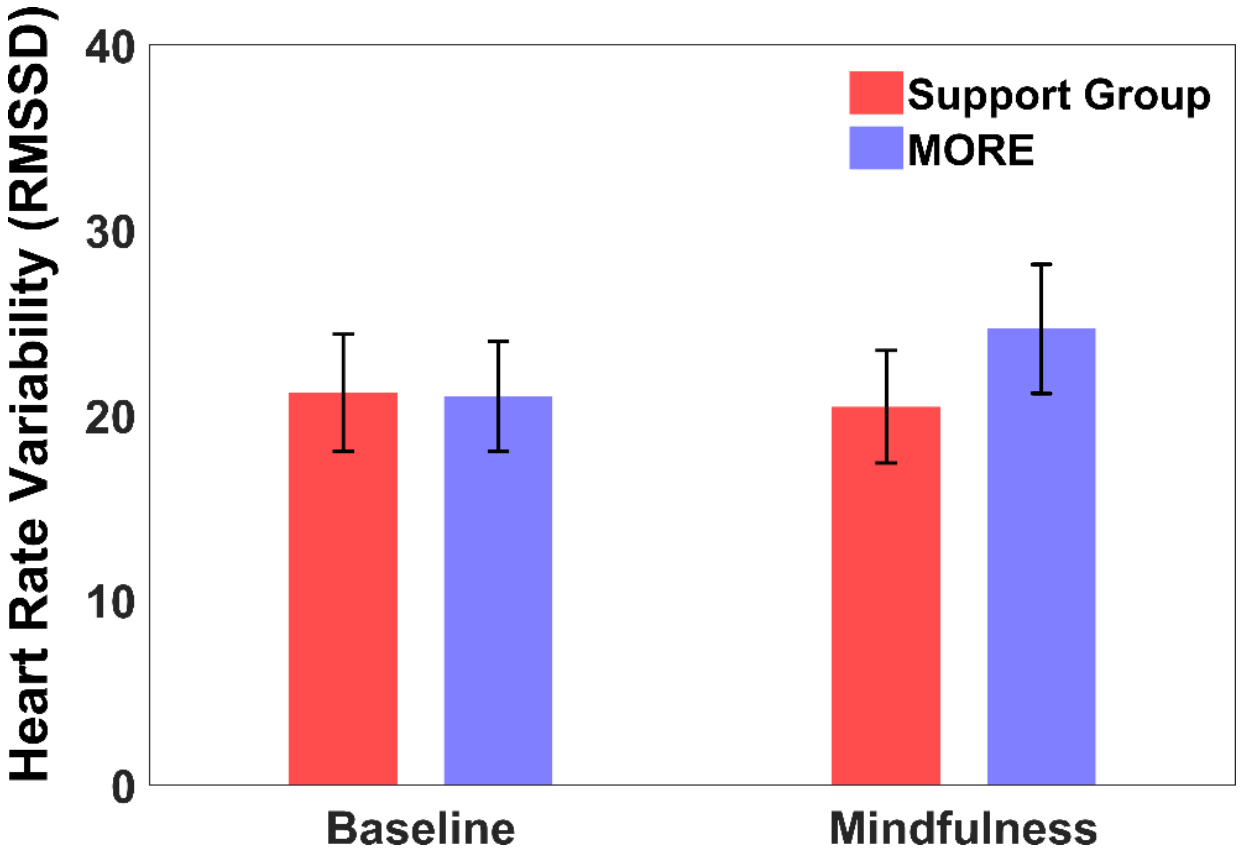
MORE reduces opioid dosing,
Group X Time F=5.35, p=.006, d = 1.07

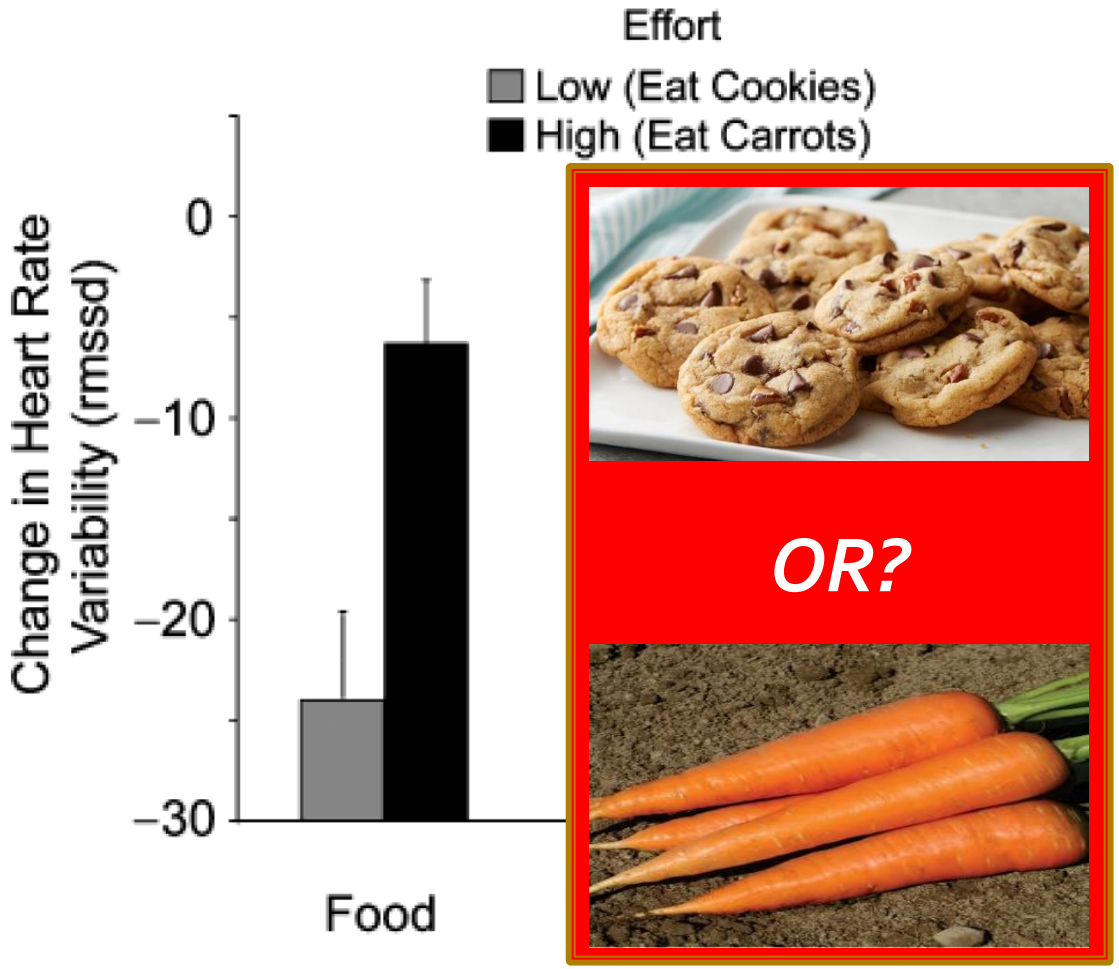
A 32% reduction in opioid dose

Garland, Hudak, Hanley, & Nakamura, 2020, *American Psychologist)*

Opioid Dose Reduction is Mediated by Increasing Self-Regulation of Autonomic Response During Mindfulness

MORE increases HRV, Group X Time $F=5.18$, $p=.026$



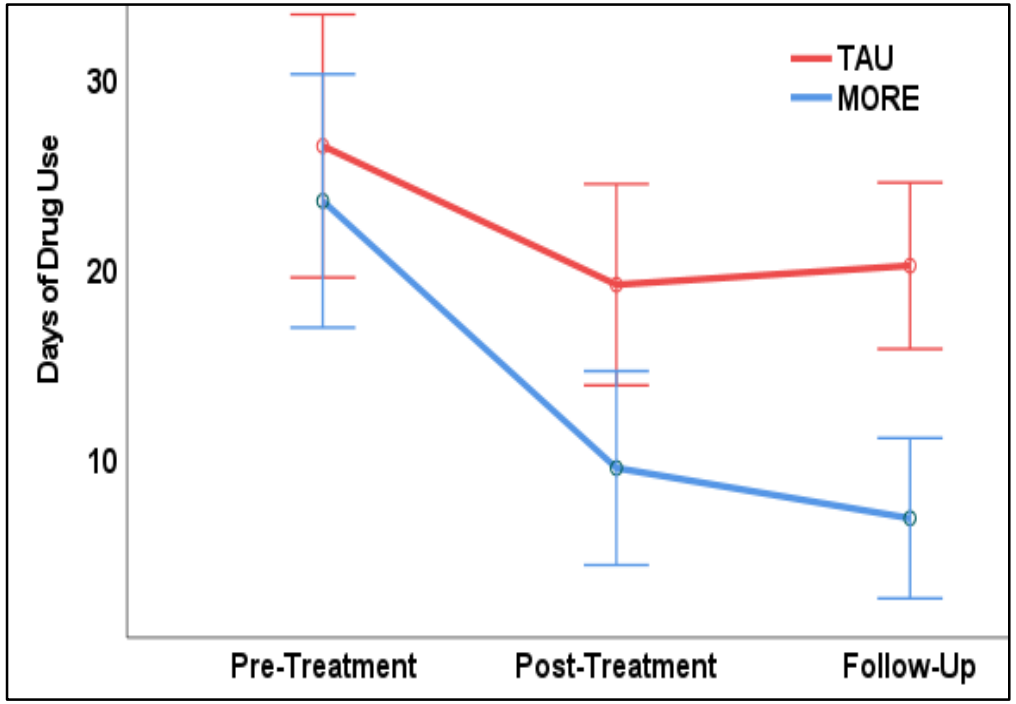


Garland, Hudak, Hanley, & Nakamura, 2020, *American Psychologist*

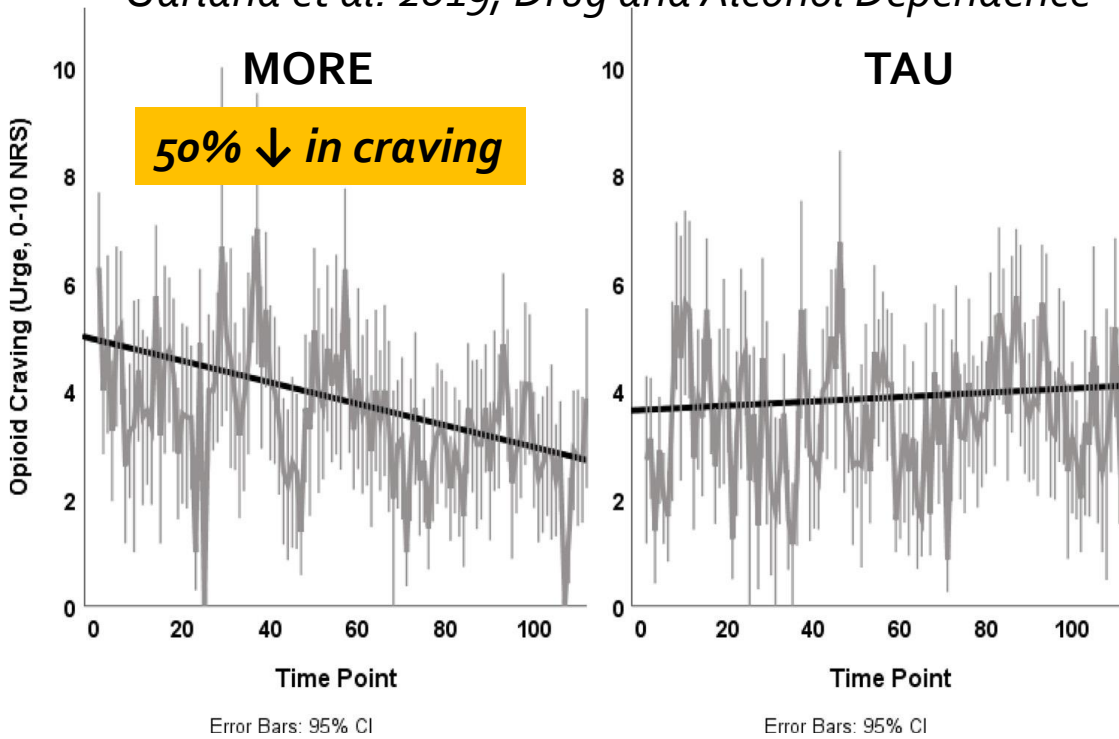
Segerstrom & Nes, 2007

MORE as an Adjunct to Methadone Maintenance in OUD and Pain: Effects on Drug Use: Stage 1 RCT

Cooperman et al. 2021, J Substance Abuse Treatment



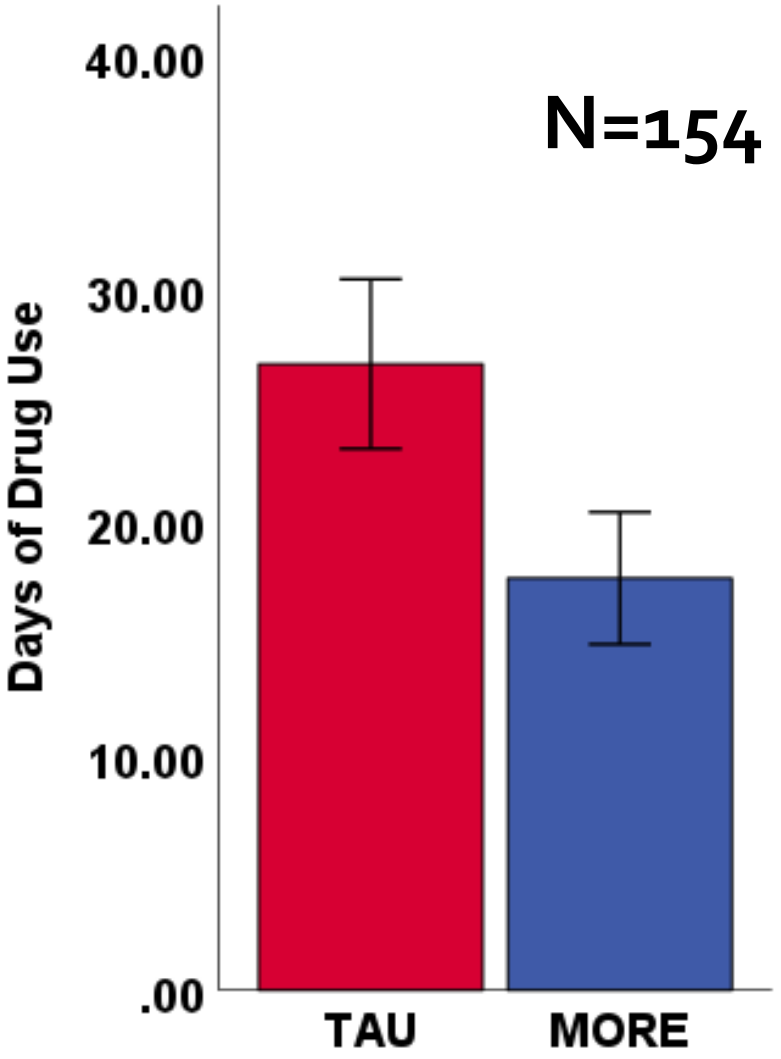
Garland et al. 2019, Drug and Alcohol Dependence



MORE vs TAU on days of opiate use, *F*=4.81, *p*=0.037
MORE vs TAU on days of drug use *F*=4.72, *p*=0.04
MORE vs TAU on chronic pain, *F*=9.34, *p*=.005
MORE vs TAU on depression, *F*=7.14, *p*=0.013

Opioid craving (B=-0.019, SE=.005, p<.00001);
Positive affect (B=.010, SE=.004, p=.017)
Increases in **positive affect** were associated with decreases in **opioid craving** (B=-.49, SE=.04, p<.0001)

Stage 3 RCT of Telehealth MORE plus Methadone Treatment in OUD & Pain: Drug Use and MAT Outcomes



- Patients in MORE had significantly fewer days of drug use than TAU, B=14.5, SE=5.2, p=.006
- Patients in MORE had significantly longer time to relapse to drug use than TAU, HR=.57, p=.016
- A greater number of patients in MORE were adherent to methadone treatment (95.5%) at 16-week follow-up than those in TAU (83.6%), $\chi^2 = 5.10$, p = .024
- Computing a Binary Logistic Model via Generalized Linear Modeling, after controlling for baseline methadone adherence, Patients in MORE had 4.4 times the odds of those in TAU to be adherent to methadone treatment by 16-week follow-up, Treatment B = 1.48, SE = .69, p = .034, OR = 4.39 (95% CI = 1.11, 17.23)

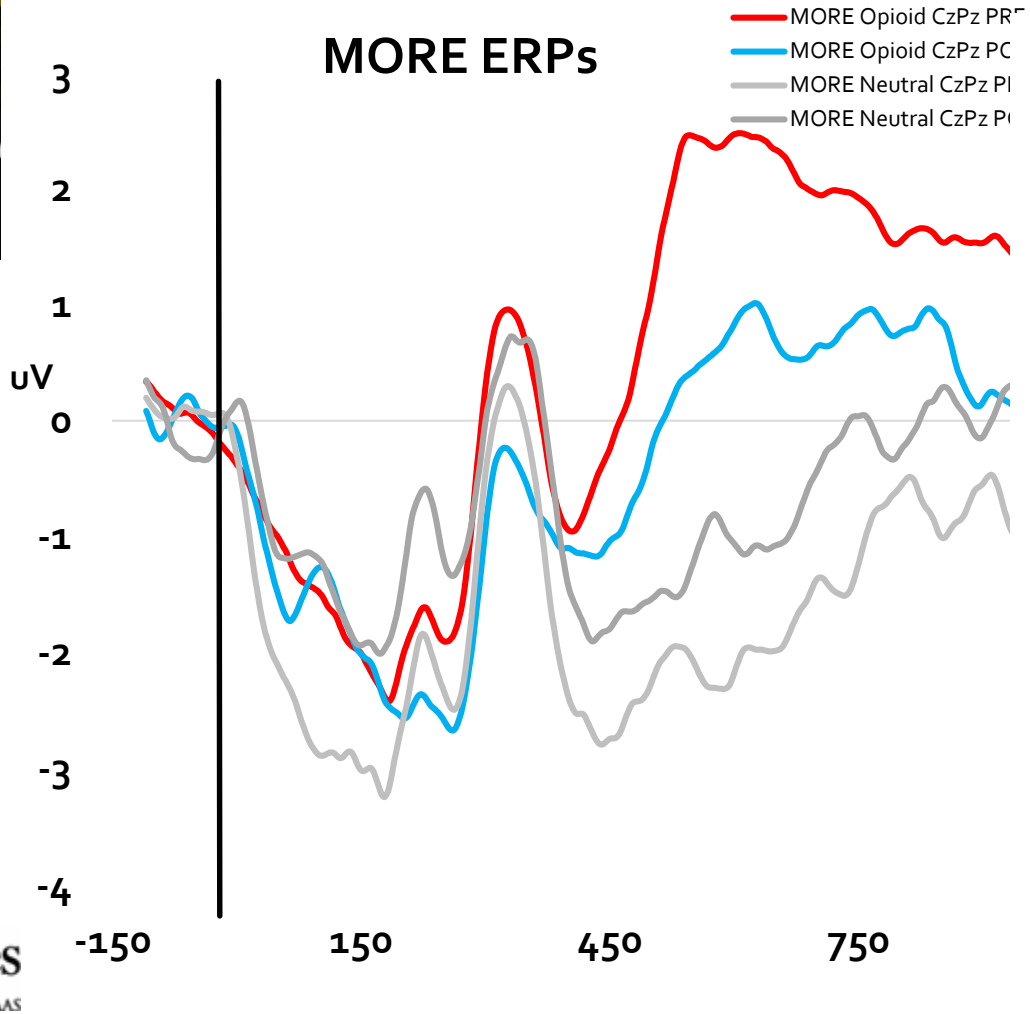
MORE decreases addictive behavior and craving

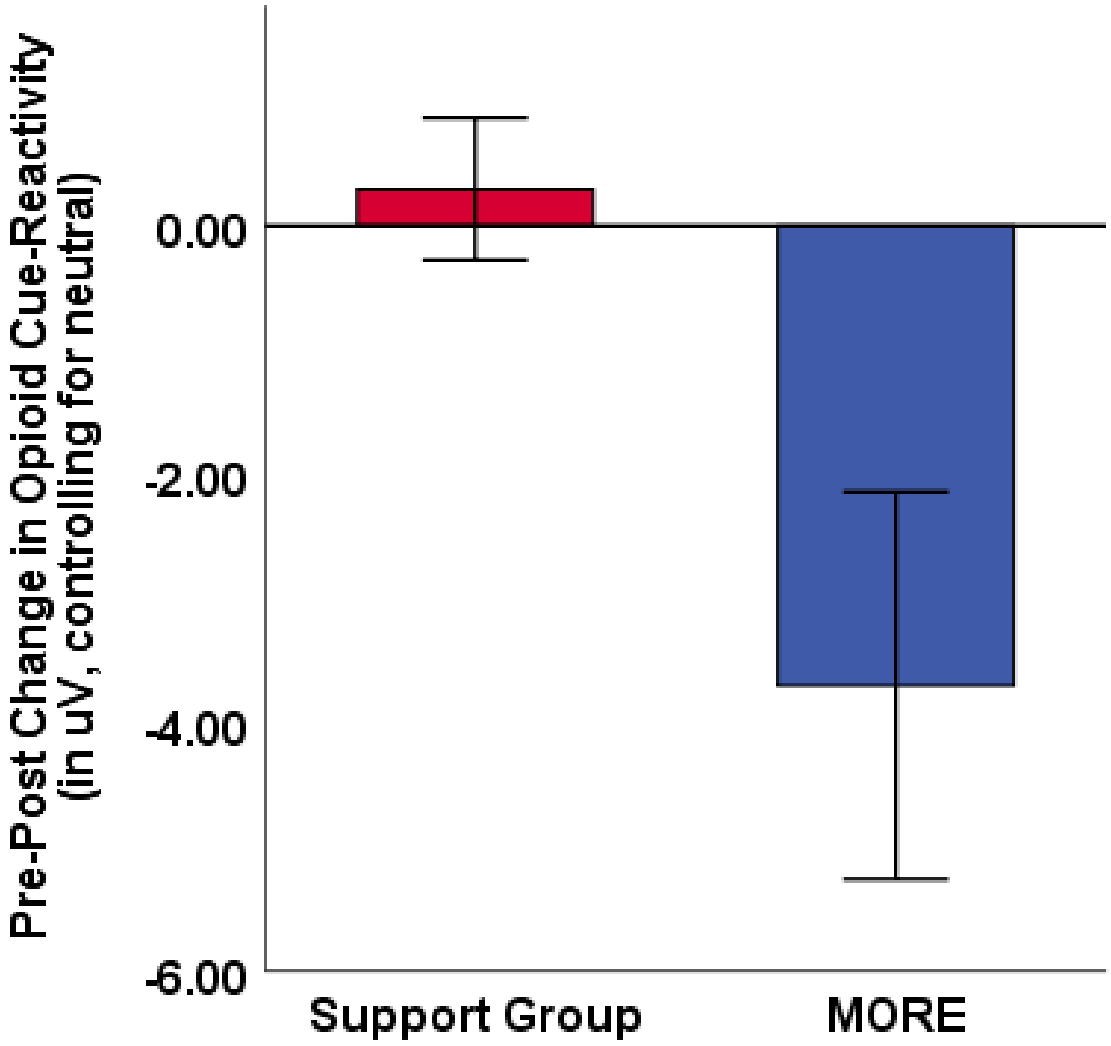
MORE decreases pain

MORE increases positive emotions and meaning in life

MORE increases self-regulation and self-transcendence

MORE Decreases Neurophysiological Indices of Opioid Cue-Reactivity





ScienceAdvances
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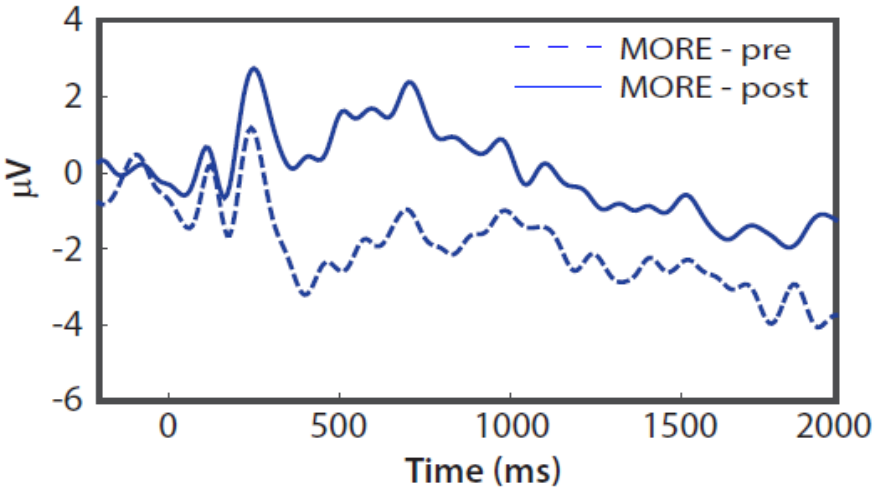
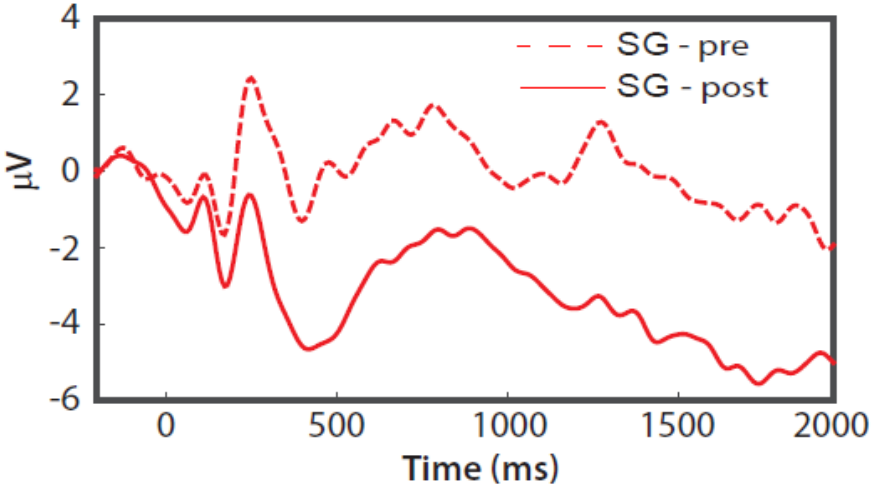
Garland et al., 2019, Science Advances

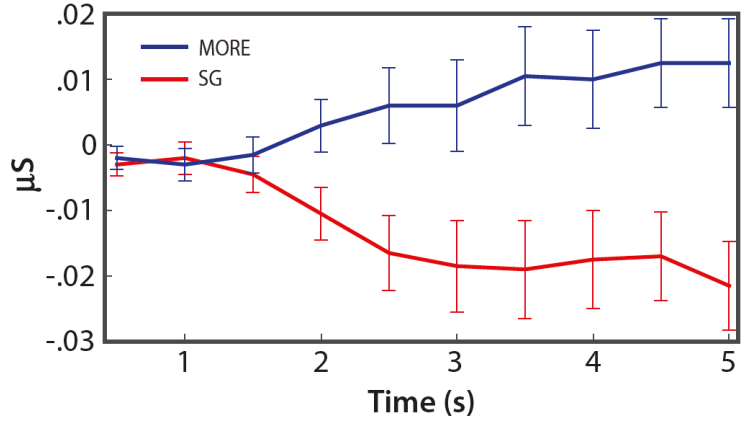
MORE Enhances Neurophysiological and Positive Affective Responses to Natural Rewards



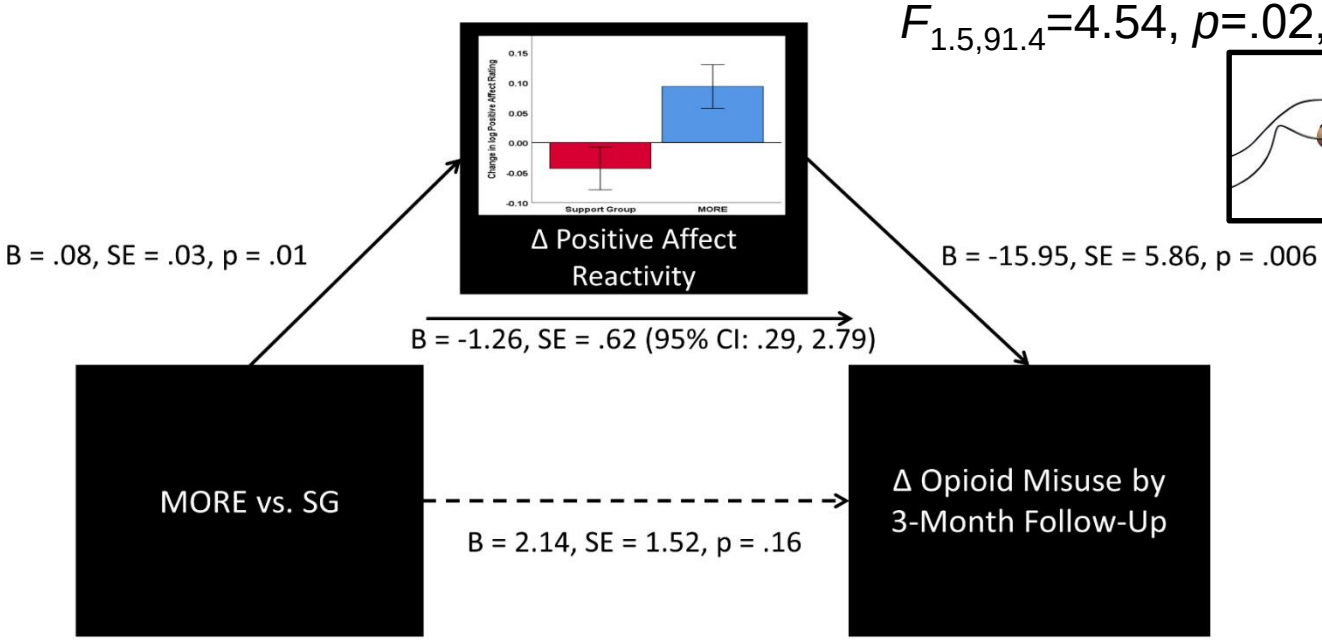
$F_{1,61}$=4.80, p=.03, $\eta_{partial}^2$=.07



Garland et al., 2021, Psychological Medicine



$F_{1.5,91.4}$=4.54, p=.02, $\eta_{partial}^2$=.07



Full Scale RCT of MORE in Primary Care

JAMA Internal Medicine | Original Investigation

Mindfulness-Oriented Recovery Enhancement vs Supportive Group Therapy for Co-occurring Opioid Misuse and Chronic Pain in Primary Care
A Randomized Clinical Trial

Eric L. Garland, PhD; Adam W. Hanley, PhD; Yoshio Nakamura, PhD; John W. Barrett, MD; Anne K. Baker, PhD; Sarah E. Reese, PhD; Michael R. Riquino, PhD; Brett Froeliger, PhD; Gary W. Donaldson, PhD

IMPORTANCE Successful treatment of opioid misuse among people with chronic pain has proven elusive. Guidelines recommend nonopioid therapies, but the efficacy of mindfulness-based interventions for opioid misuse is uncertain.

OBJECTIVE To evaluate the efficacy of Mindfulness-Oriented Recovery Enhancement (MORE) for the reduction of opioid misuse and chronic pain.

DESIGN, SETTING, AND PARTICIPANTS This interviewer-blinded randomized clinical trial enrolled patients from primary care clinics in Utah between January 4, 2016, and January 16, 2020. The study included 250 adults with chronic pain receiving long-term opioid therapy who were misusing opioid medications.

INTERVENTIONS Treatment with MORE (comprising training in mindfulness, reappraisal, and savoring positive experiences) or supportive group psychotherapy (control condition) across 8 weekly 2-hour group sessions.

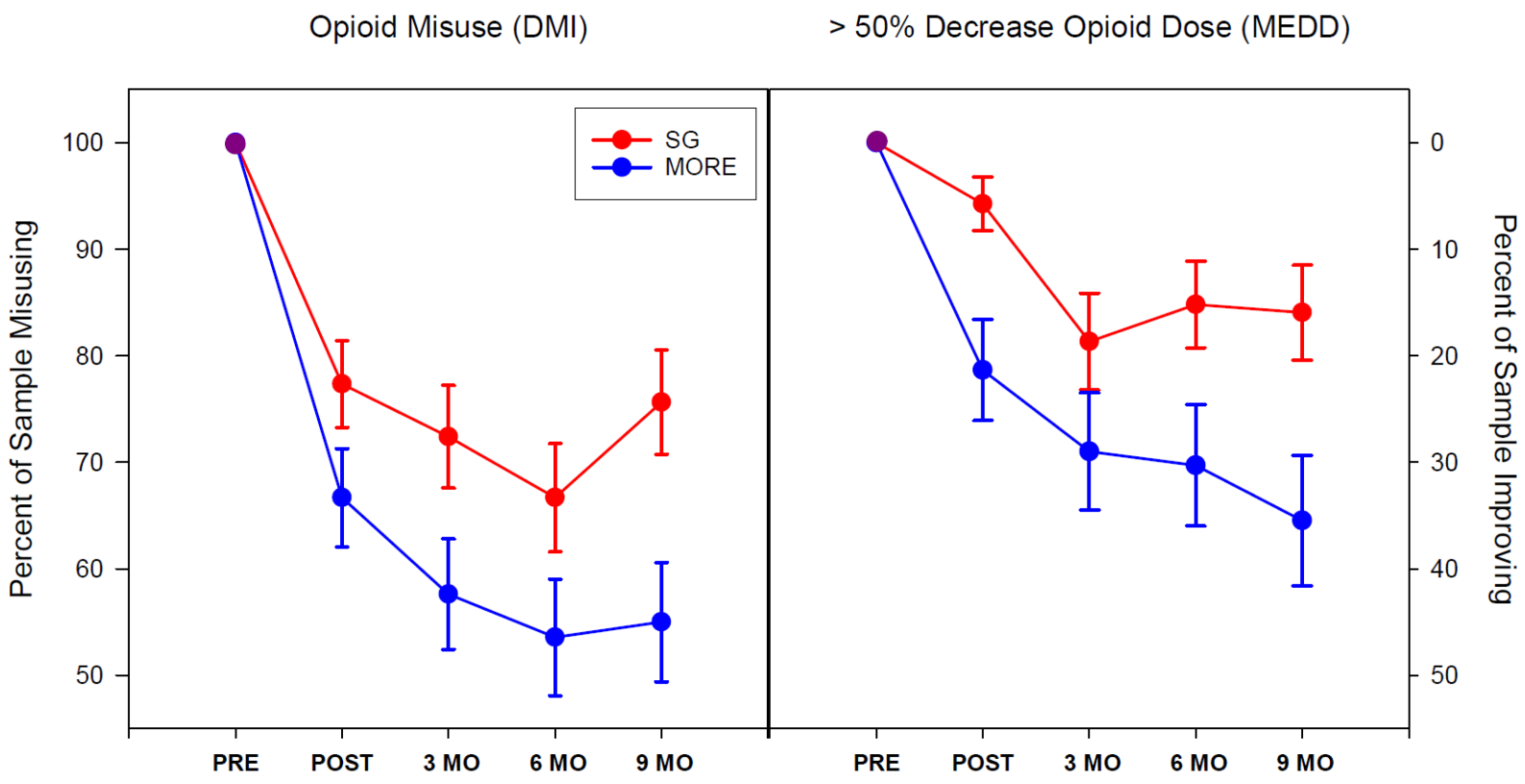
Visual Abstract

Supplemental content

Garland et al., 2022, JAMA Internal Medicine

- Opioid misusing pain patients (N=250)
- 64% female; Age = 51.8; Pain = 5.5 out of 10; in pain for 14.6 years
- COMM score = 17.6; MME = 101.0 mg
- 76% reported two or more pain conditions
  - Low back pain (68%)
  - Osteoarthritis pain (45%)
  - Fibromyalgia (26%)
  - Neuropathic pain (25%)
  - Cervical pain (25%)
  - Extremity pain (24%)
  - Headache pain (16%)
  - Other (11%)
- MDD (68%); OUD (62%); SUD (21%); GAD (20%); PTSD (15%)

MORE Reduces High Dose Opioid Use and Misuse



Garland et al., 2022, JAMA Internal Medicine

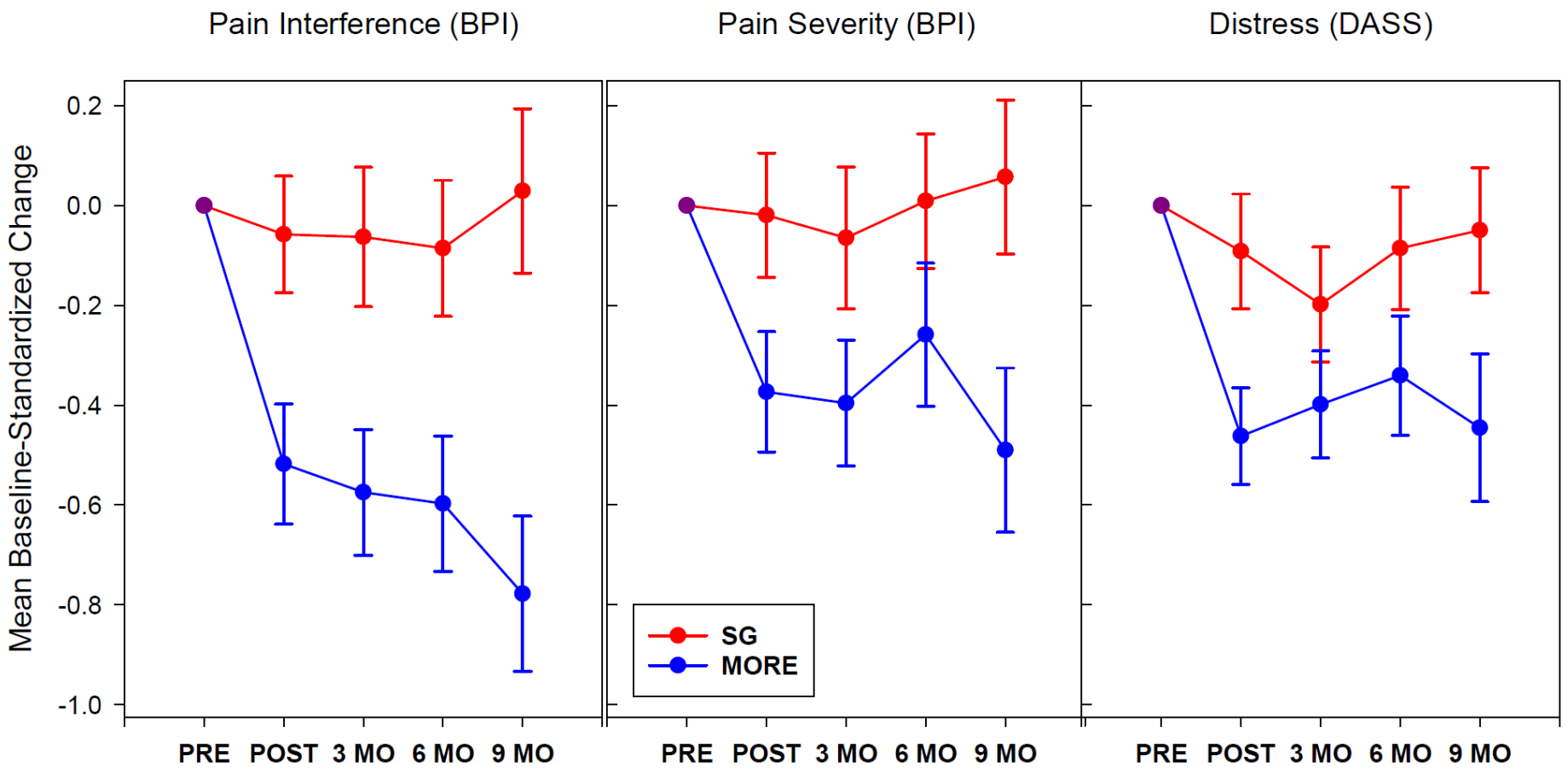
Effect of MORE vs. SG on DMI: self-report, blinded clinical interview, urine screen (p=.01)

MORE reduced opioid misuse at 9 mo. by 45% (OR=2.94)

Effect of MORE vs. SG on opioid dose reduction through 9 mo. follow-up (p=.009); At 9 mo., 36% of those in MORE reduced their dose by half or greater (mean reduction of 76.4±28.6 MME)

Effect of MORE vs SG on EMA of opioid craving, p<.0001

MORE Improves Chronic Pain and Emotional Distress



Garland et al., 2022, JAMA Internal Medicine

Effect of MORE vs. SG on baseline adjusted:

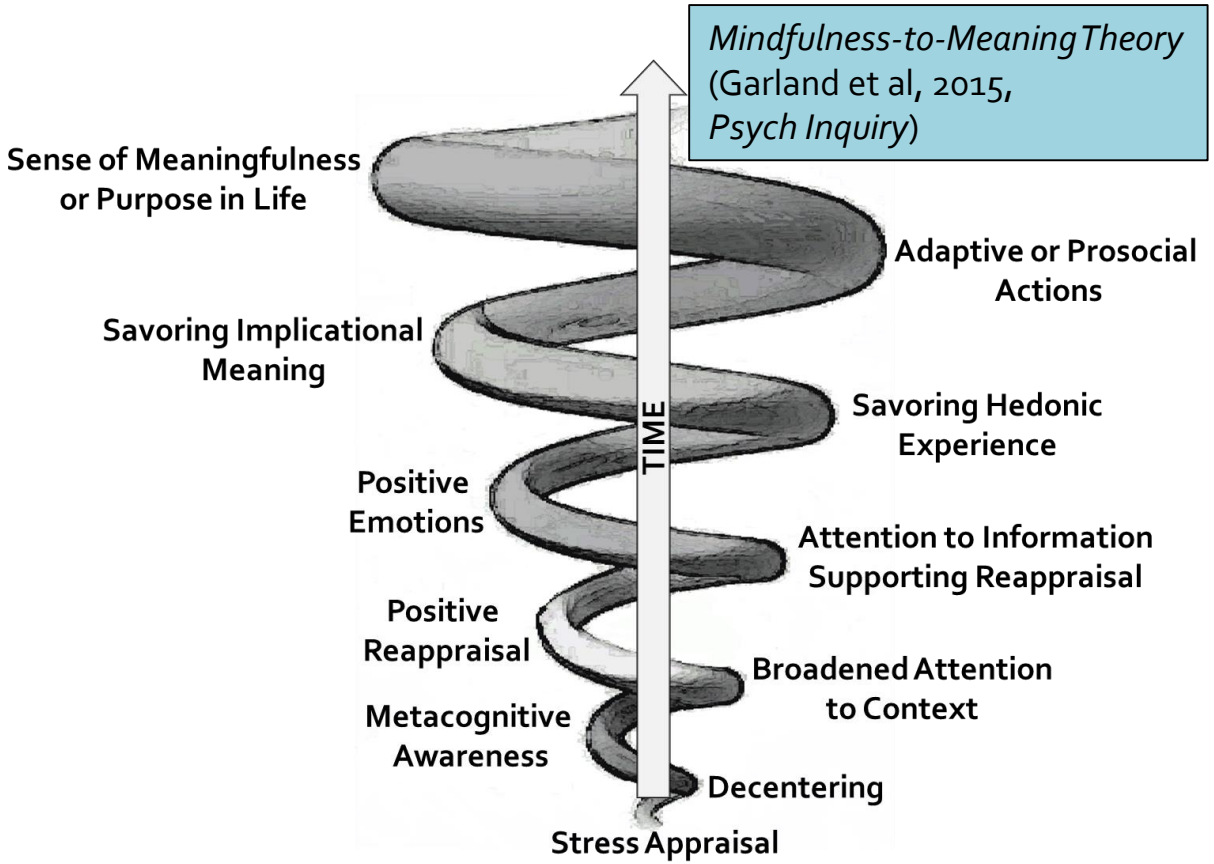
- **Pain severity (p=.003)**
- **Functional interference (p<.001)**
- **Emotional distress (p=.03)**

50% and 58.6% of patients in MORE achieved clinically significant reductions in pain

MORE Improves Multiple Dimensions of Psychological Health

Through 9 mo., MORE led to significantly greater improvements than the SG in:

- **Depression symptoms (p=.004)**
  - **Patients treated with MORE no longer had depression Sx severity surpassing threshold for MDD at 9 mo follow-up**
- **PTSD symptoms (p=.049)**
  - **45% of those with PTSD showed clinically significant reduction in PTSD Sxs (p=.01)**
- **Positive emotions (p=.039)**
- **Meaning in life (p=.049)**
- **Self-transcendence (p=.001)**



A Replication in Veterans – DOD Clinical Trial

- Veterans with chronic pain on long-term opioid therapy (**N=230**)
- Mean pain duration = 19.7 years; mean morphine equivalent opioid dose = 107.0 mg.

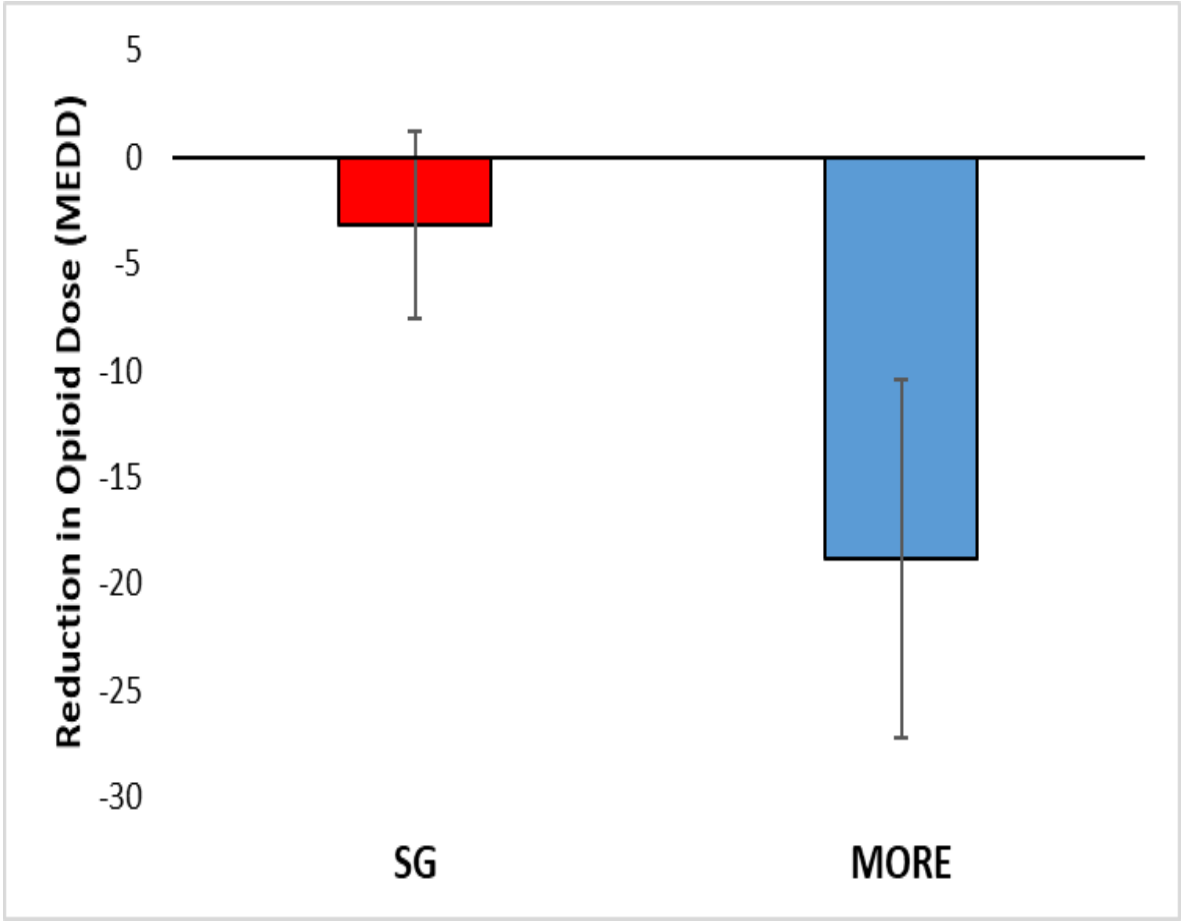
Through an 8-month follow-up
MORE outperformed the SG control on reducing:

- pain-related functional interference (p=.01)
- pain severity (p=.048)
- opioid dose (p=.029):

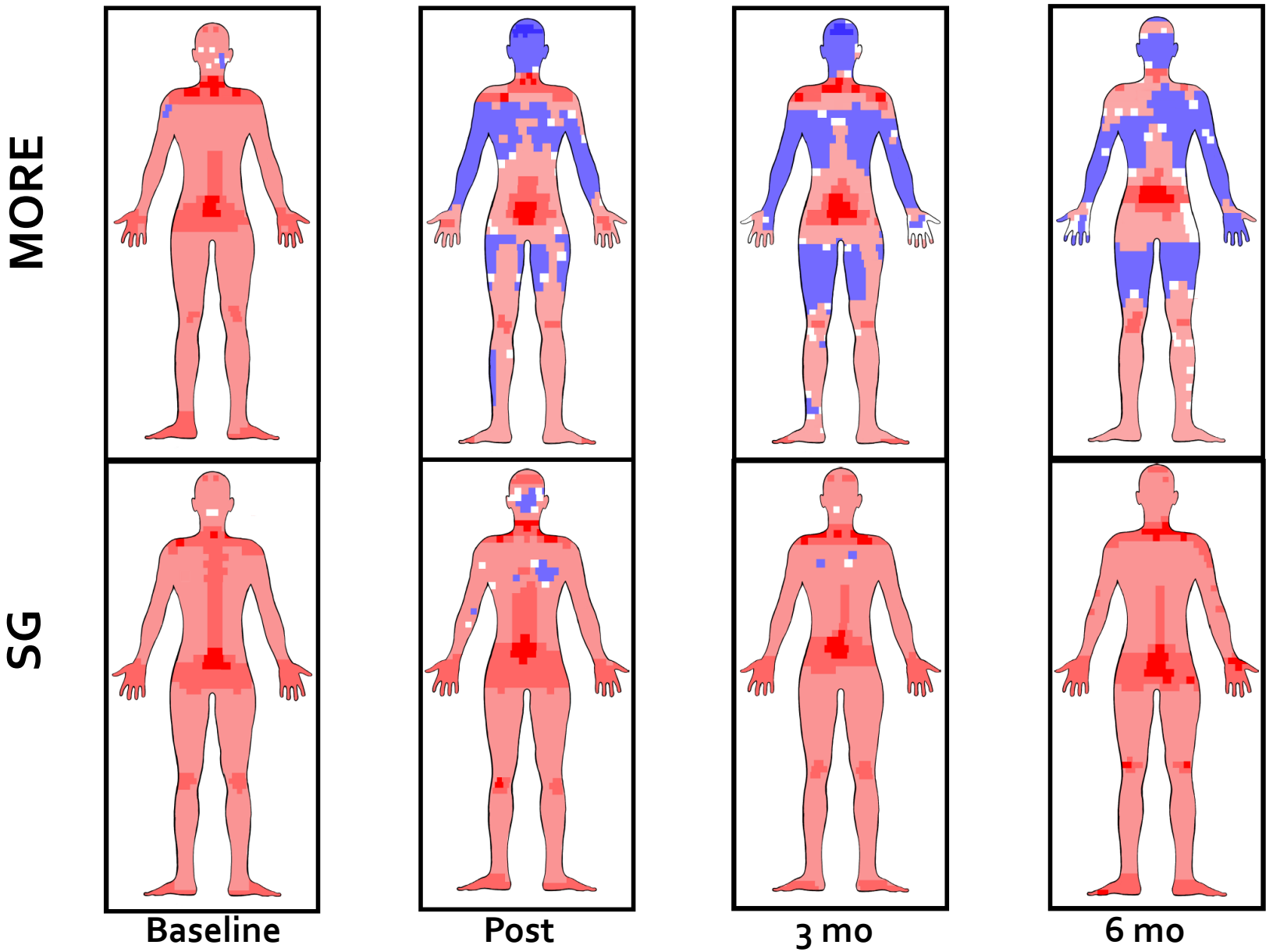
↓dose MORE: 20.7% (18.8 mg); SG: 3.9% (3.2 mg)

MORE also improved:

- anhedonia (p<.001)
- pain catastrophizing (p<.001)
- positive affect (p=.029)
- opioid craving (p=.01)



MORE Durably Alters Embodied Self-Representation



MORE vs SG on Ratio of Pleasant-to-Unpleasant Sensations

$F=10.79$, $p=.001$

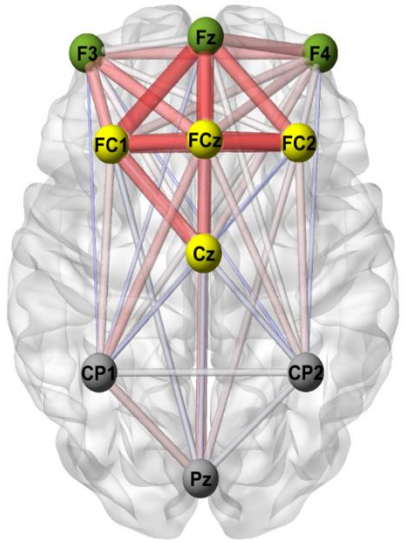
From 1:4 before MORE

To 2:1 by 6 months after MORE

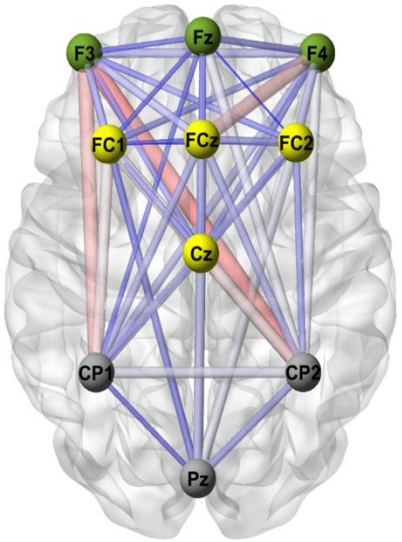
MORE Decreases Opioid Use via Endogenous Theta Stimulation of the Prefrontal Cortex

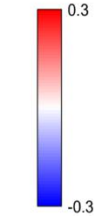
Hudak et al. (2020). *Neuropsychopharmacology*

Mindfulness-Oriented Recovery Enhancement



Supportive Psychotherapy

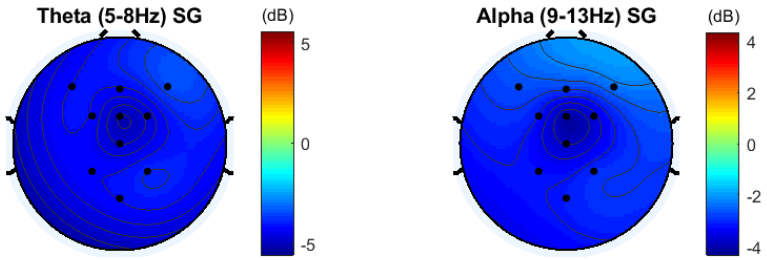


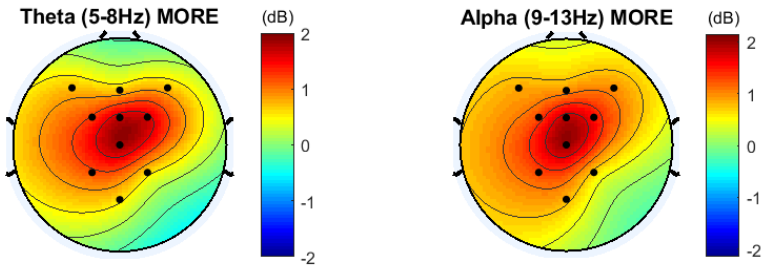


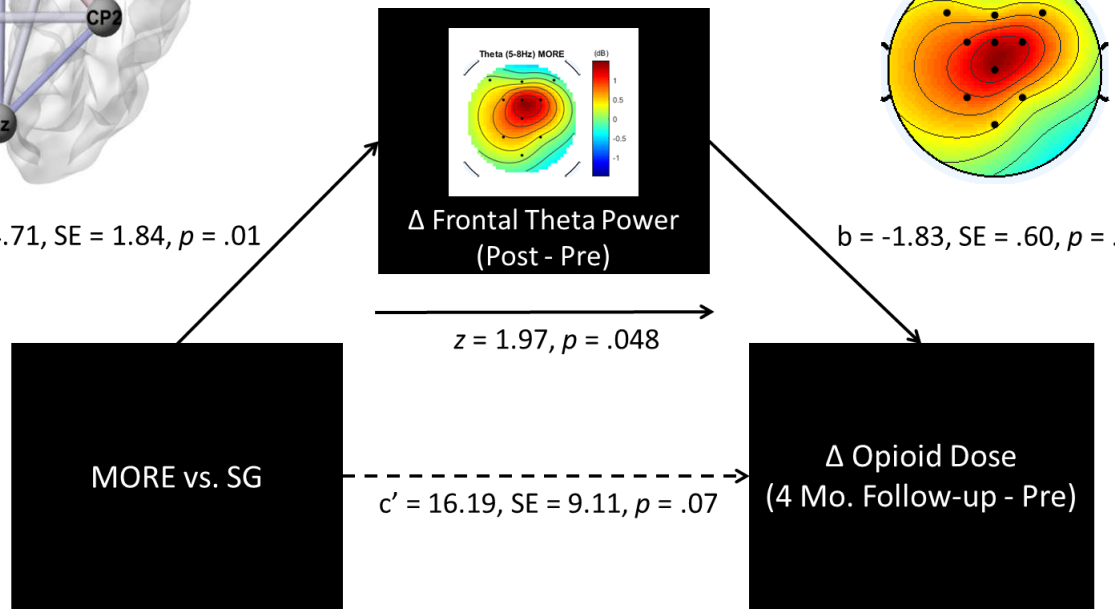
Theta coherence treatment x time interaction, F(5,60)=3.69, p=.003

Increased theta was correlated with increased *self-transcendence*, B=.25,p =.038

Group X Time on opioid dose, F(1,110.27)=5.50, p = .02



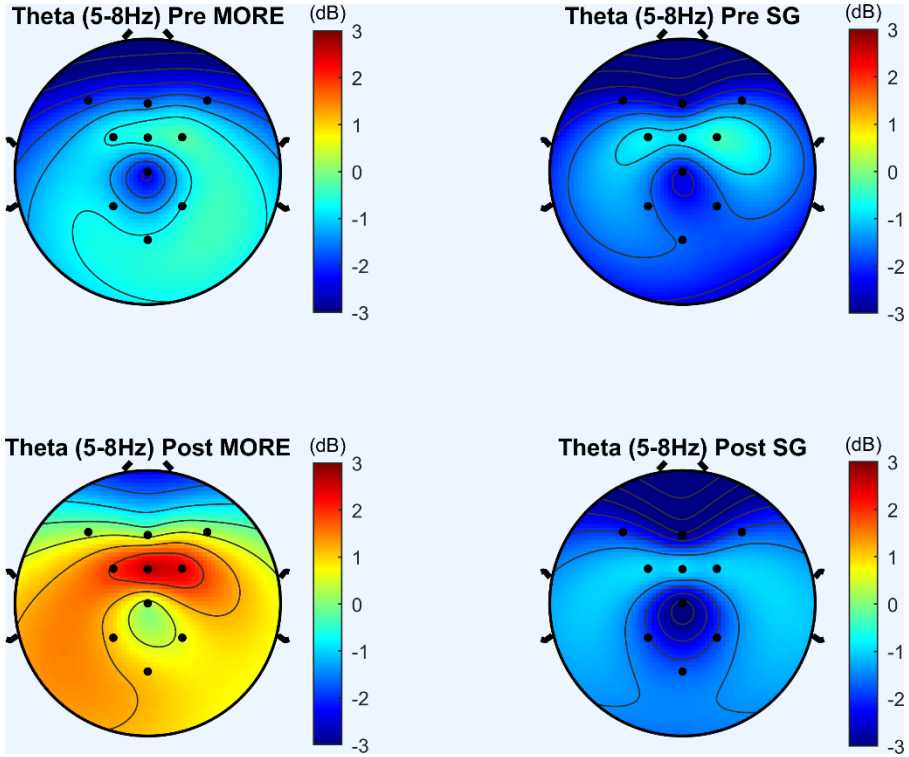


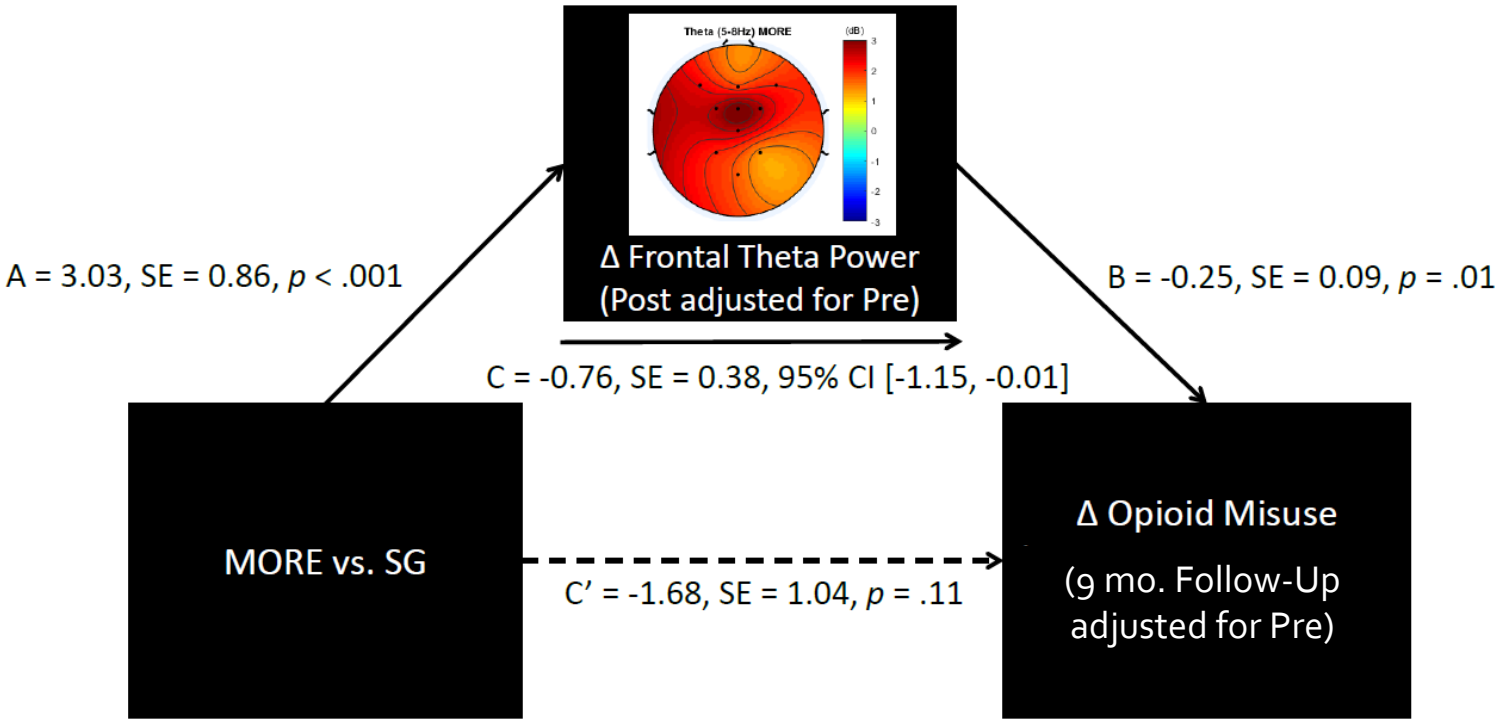


Theta power treatment x time interaction, F(1,60)=6.26, p=.02

A Replication and Extension in the Largest Neuroscientific Study of Mindfulness as a Treatment for Addiction

N=165 Chronic Opioid Users





FMΘ power during the laboratory-based mindfulness mediation practice was a significant predictor of transcendence (B = 0.39, SE = .16, p = 0.01)

ScienceAdvances
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Garland et al., 2022, Science Advances

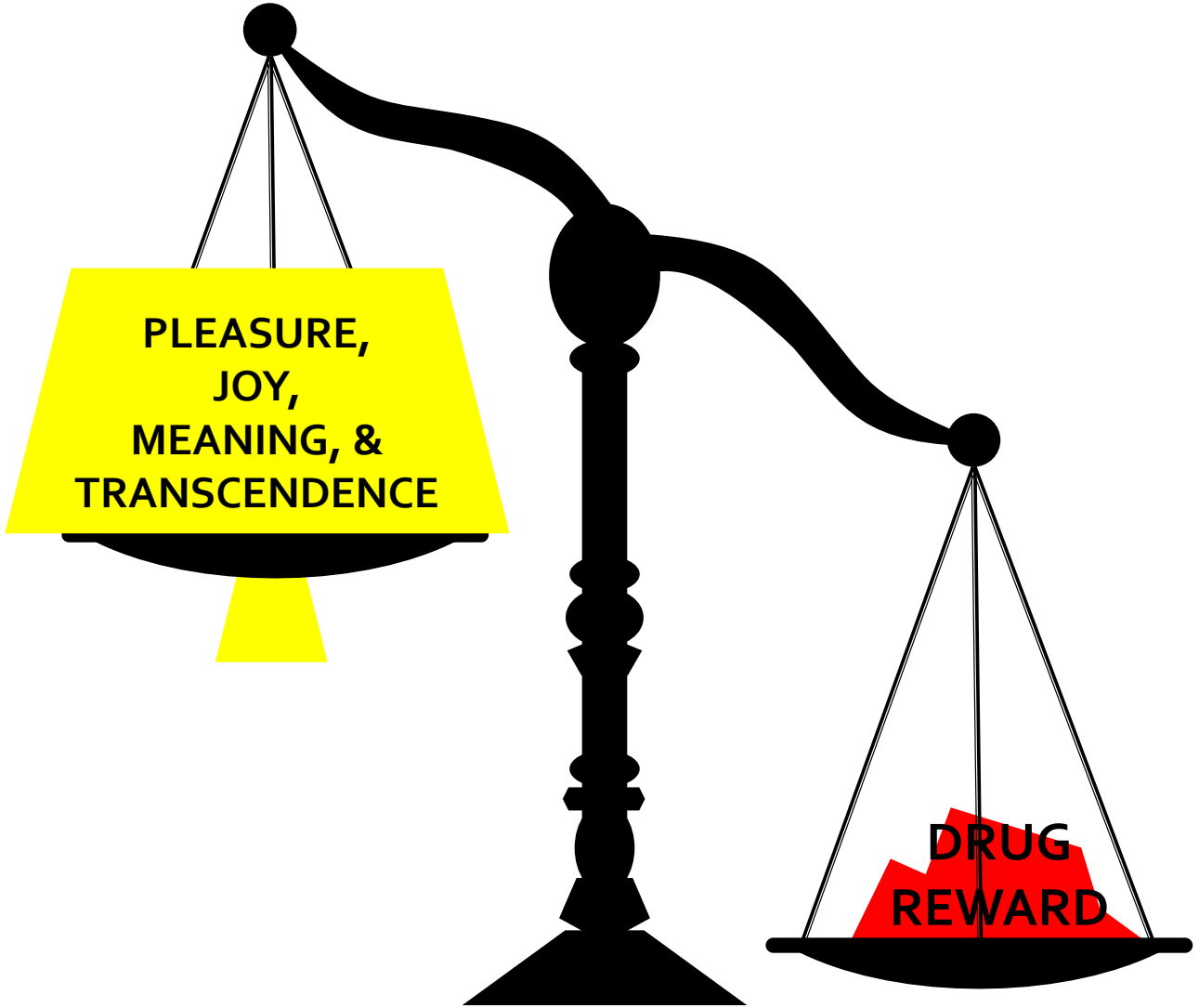
MORE decreases addictive behavior and craving

MORE decreases physical and emotional pain

MORE increases positive emotions, reward, and meaning in life

MORE increases self-regulation and self-transcendence

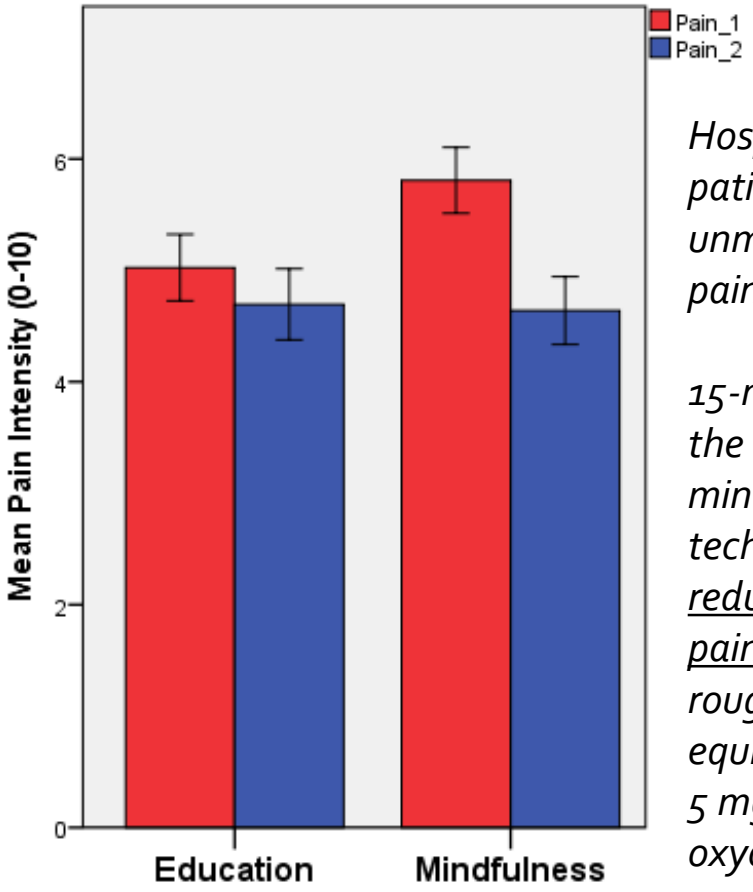
MORE Restructures Reward Processing



Implementing MORE in Medicine

- MORE is being implemented in multiple healthcare settings, including addictions treatment, community mental health, oncology, pain management, and primary care
- Primary care is an especially promising venue for implementation
- MORE simultaneously addresses substance use disorders, psychiatric disorders, and chronic pain conditions – *high utilizers*
- Can be delivered as an **insurance-reimbursable group medical visit** by physicians, nurse practitioners, PAs, social workers, or psychologists
- **Brief, scalable techniques from MORE** can be also deployed in clinical settings (e.g., orthopedic surgery, inpatient) and embedded into standard medical care pathways

Garland et al., 2017, *Journal of General Internal Medicine*



Hospitalized patients with unmanageable pain

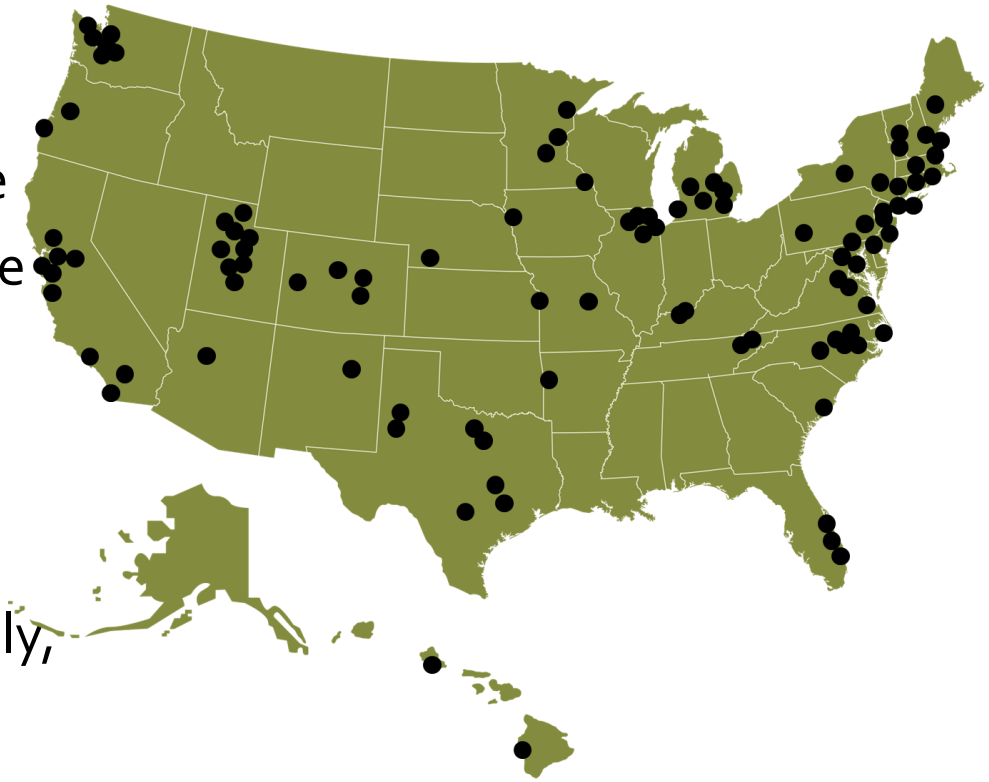
15-minutes of the MORE mindfulness technique reduced acute pain by 25%, roughly equivalent to 5 mg oxycodone

ANCOVA between-groups $p < .001$, $\eta^2_{partial} = .07$

Conclusions

- MORE is an efficacious treatment for addiction, stress, and pain – demonstrated by 9 RCTs (total ***N=1046***) and >$50 million in research funding
- MORE mechanisms of action include drug cue-reactivity, natural reward processing, meaning in life, & transcendence
- >700 clinicians from around the U.S. and internationally have been trained in MORE – primary care is a particularly promising setting for implementation
- Teaching people to "take in the good" and mindfully savor natural, healthy pleasure may provide the learning signal needed to restore adaptive hedonic regulation and ultimately, reverse addiction

U.S. Cities with MORE Providers



THE UNIVERSITY OF UTAH
Center on Mindfulness and Integrative Health Intervention Development

QUESTIONS?

THE UNIVERSITY OF UTAH
College of Social Work

NCCIH R01AT011772 (MPI: Garland)
NIDA R01DA048094 (MPI: Garland)
NIDA R01DA042033 (PI: Garland)
DOD W81XWH-15-PRMRP (PI: Garland)
NCCIH R21AT010109 (PI: Cooperman)
NCCIH R61AT009296 (PI: Garland)
NIDA R34DA037005 (PI: Garland)
NIDA R03DA032517 (PI: Garland)

Adam Hanley
Yoshi Nakamura
Gary Donaldson
Brett Froeliger
Justin Hudak
Ed Bernat
Nina Cooperman

& the C-MIIND Team

Next MORE Training July 6-7, 2023 via Zoom

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PCSS Mentoring Program

- PCSS Mentor Program is designed to offer general information to clinicians about evidence-based clinical practices in prescribing medications for opioid use disorder.
- PCSS Mentors are a national network of providers with expertise in **addictions, pain, evidence-based treatment including medications for opioid use disorder (MOUD)**.
- 3-tiered approach allows every mentor/mentee relationship to be unique and catered to the specific needs of the mentee.
- No cost.

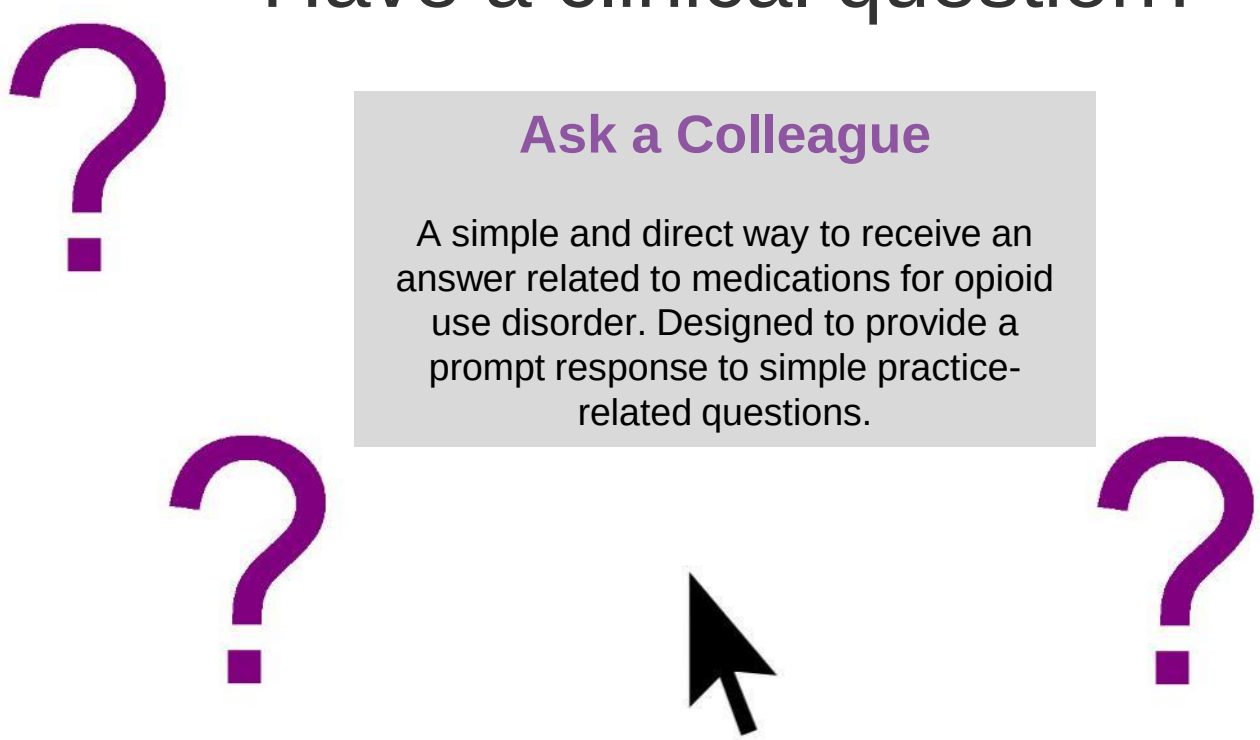
For more information visit:

https://pcssNOW.org/mentoring/

PCSS Providers Clinical Support System

PCSS Discussion Forum

Have a clinical question?



Ask a Colleague

A simple and direct way to receive an answer related to medications for opioid use disorder. Designed to provide a prompt response to simple practice-related questions.

http://pcss.invisionzone.com/register

PCSS Providers Clinical Support System

PCSS Providers Clinical Support System

PCSS is a collaborative effort led by the American Academy of Addiction Psychiatry (AAAP) in partnership with:

Addiction Technology Transfer Center	American Society of Addiction Medicine
American Academy of Family Physicians	American Society for Pain Management Nursing
American Academy of Pain Medicine	Association for Multidisciplinary Education and Research in Substance use and Addiction
American Academy of Pediatrics	Council on Social Work Education
American Pharmacists Association	International Nurses Society on Addictions
American College of Emergency Physicians	National Association for Community Health Centers
American Dental Association	National Association of Social Workers
American Medical Association	National Council for Mental Wellbeing
American Osteopathic Academy of Addiction Medicine	The National Judicial College
American Psychiatric Association	Physician Assistant Education Association
American Psychiatric Nurses Association	Society for Academic Emergency Medicine

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