

# Mindfulness: Assessment, Treatment, and Mechanisms of Change



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# Outline



- **Outcomes**
  - How effective are mindfulness-based treatments?
- **Assessment of mindfulness**
  - Why it's important, current methods
- **Mechanisms of change**
  - How do these treatments work?

# Part 1



## How effective are mindfulness-based treatments?

A brief review of recent reviews

# Treatments recently reviewed



- **Mindfulness-based stress reduction (MBSR)**
  - 8 week group intervention for stress, pain, etc
    - ✦ Intensive mindfulness practices
- **Mindfulness-based cognitive therapy (MBCT)**
  - 8 week group for prevention of relapse in depression
    - ✦ Integrates MBSR with elements of cognitive therapy

# Treatments recently reviewed



- **Dialectical behavior therapy (DBT)**
  - 1 year intervention for borderline personality disorder
    - ✦ Group and individual sessions
    - ✦ Integrates mindfulness with cognitive behavioral methods
- **Acceptance and commitment therapy (ACT)**
  - Applicable to many problems, disorders, populations
  - Individual or group therapy
  - Integrates:
    - ✦ mindfulness & acceptance of thoughts & emotions
    - ✦ behavior change consistent with values & goals

# Review of MBSR

Keng et al, 2011



- Randomized controlled trials (RCTs) only
  - 18 studies
    - ✦ 12 nonclinical samples
      - Students, community adults, health care professionals
    - ✦ 5 medical samples
      - Cancer, fibromyalgia, multiple sclerosis
    - ✦ 1 social anxiety disorder
  - Significant decreases
    - ✦ negative affect, stress, rumination, medical symptoms
  - Significant increases
    - ✦ positive affect, self-compassion, quality of life

# Review of MBSR

Keng et al 2011 (continued)



- **Control groups**
  - Wait list or no treatment (15 comparisons)
    - ✦ MBSR superior for most variables
      - Except 1 study of attentional tasks (MBSR = wait list)
  - Usual care or minimal care (2)
    - ✦ MBSR superior
  - Alternative treatment (3)
    - ✦ Cognitive-behavioral therapy (CBT)
    - ✦ Relaxation
    - ✦ Concentration-based meditation
      - MBSR equivalent on most variables
        - MBSR less effective than CBT for social anxiety

# MBSR for cancer patients

Ledesma & Kumano, 2009



- **10 studies**
  - 4 RCTs, 6 uncontrolled
  - Mostly women with breast cancer
  - Moderate effects on mental health variables
    - ✦ anxiety, depression, stress
  - Small effects on physical health variables

# MBSR for chronic medical conditions

Bohlmeier et al, 2010



- 8 studies (all RCTs)
  - cancer, pain, fibromyalgia, rheumatoid arthritis, chronic fatigue
  - small to moderate effects on mental health variables
    - ✦ depression, anxiety, general distress
  - possible floor effects
    - ✦ low distress at baseline

# MBSR for health care professionals

Irving et al, 2009



- 10 studies
  - Medical and mental health professionals or students
    - ✦ Work-related stress an important issue
  - Significant decreases:
    - ✦ stress, negative affect, exhaustion, burnout, rumination
  - Significant increases:
    - ✦ positive affect, self-compassion, empathy, life satisfaction

# MBSR or MBCT for anxiety or depression

Hofmann et al, 2010



- **39 studies**
  - all measured anxiety or depression
  - psychiatric and medical samples
    - ✦ cancer, pain, anxiety, depression, etc
  - moderate to large effects for anxiety and depression

# Review of MBCT

Piet & Hougaard, 2011



- 6 RCTs
  - Adults with recurrent major depression, in remission
  - Relapse within 14-18 months after treatment:
    - ✦ MBCT: 37%
    - ✦ control: 58%
  - Conclusions
    - ✦ MBCT helps those with 3 or more previous episodes
    - ✦ MBCT superior to usual treatment and placebo (pill)
      - equivalent to continuing antidepressant medication

# Review of MBCT

Keng et al, 2011



- 14 RCTs
  - Samples
    - ✦ depression in remission (9)
    - ✦ current depression or bipolar disorder (3)
    - ✦ other (2)
  - MBCT better than usual treatment or wait list:
    - ✦ preventing depressive relapse
    - ✦ reducing current symptoms of depression
    - ✦ improving other aspects of functioning
      - autobiographical memory, metacognitive awareness, thought suppression
      - negative affect, quality of life

# Review of DBT

Keng et al, 2011



- **11 RCTs**
  - Samples:
    - ✦ 6 borderline personality disorder (BPD)
    - ✦ 5 other (substance use, eating disorder, depression)
  - Outcomes
    - ✦ DBT superior to usual treatment, expert treatment, wait list
      - Self-harm, hospitalization
      - Social adjustment
      - Negative affect
      - Substance use, binge eating

# Review of ACT

Powers et al, 2009



- 18 RCTs
  - Medical and psychiatric samples
    - ✦ anxiety, depression, stress, psychosis
    - ✦ substance abuse, smoking cessation
    - ✦ epilepsy, pain
  - Outcomes
    - ✦ Superior to wait list, placebo, usual treatment
      - Moderate to large effect sizes
    - ✦ Equivalent to established treatment (CBT)

# Other promising treatments



- Mindfulness-based eating awareness training
  - MB-EAT (Kristeller)
- Mindfulness-based relapse prevention
  - MBRP (Bowen, Chawla, & Marlatt)
- Acceptance-based behavior therapy for GAD
  - ABBT (Roemer & Orsillo)
- Mindfulness-based childbirth & parenting
  - MBCP (Duncan & Bardacke)
- Mindfulness-based elder care
  - MBEC (McBee)
- Mindfulness-based mind fitness training
  - MFIT (Stanley, Jha)

# Summary: treatment outcome research



- **MBSR**

- Strongest support:

- ✦ stress in nonclinical populations
- ✦ stress in medical patients

- **MBCT**

- Strongest support:

- ✦ Prevention of depressive relapse (3 or more episodes)
  - as good as continuing antidepressant medication

- Other support:

- ✦ acute or residual depression
- ✦ other disorders (anxiety, bipolar)

# Summary: treatment outcome research



- **DBT**
  - Strongest support
    - ✦ borderline personality disorder
  - Other support
    - ✦ eating disorders, substance abuse, older adults
- **ACT**
  - Strong support for wide range of disorders
- **All**
  - Better than wait list, usual treatment, placebo
  - Generally equivalent to other established treatment

# Important issues in treatment research



- If mindfulness-based treatments are equally good as other established treatments...
  - What are their advantages?
    - ✦ Cost effectiveness
    - ✦ Absence of unwanted side effects (medication)
    - ✦ Transdiagnostic applications
    - ✦ Less stigma
      - Class vs therapy
  - Disadvantages?
    - ✦ Therapist training, availability
    - ✦ Less empirical support so far

# Important issues in treatment research



- How much treatment is necessary?
  - Standard MBSR: 8 weekly sessions
  - shorter versions have been studied
    - ✦ Carmody & Baer (2009):
      - no relationship between contact hours and effect sizes for psychological variables
  - What about home practice?
    - ✦ Inconsistent findings

# Important issues in treatment research



- Moderators of treatment effects
  - Better results for some people than for others?
    - ✦ No clear findings so far
- What are the active ingredients?
  - Treatments include many components
    - ✦ Is mindfulness training essential?

# Part 2



## Assessment of mindfulness

# Assessment of mindfulness



- **Why is it important to assess mindfulness?**
  - 1. To study mechanisms of change in mindfulness-based treatment
    - ✦ Do participants in mindfulness training learn to be more mindful of the experiences of daily life?
    - ✦ Is this why mindfulness-based treatments are beneficial?

# Assessment of mindfulness



- Why is it important to assess mindfulness?
  - 2. To study relationships between dispositional mindfulness and psychological functioning
    - ✦ Do people vary in their natural tendencies to respond mindfully to daily life experiences?
      - even without mindfulness training
    - ✦ Does this contribute to their psychological health?

# A dialectical view of mindfulness



- **Dialectics:**
  - Balance, synthesis, or integration of opposing ideas
    - ✦ Acceptance and change
      - Interesting paradoxes

# A dialectical view of mindfulness

## • Mindfulness is:

- Ineffable
  - ✦ "very difficult to describe in words"\*
- Paradoxical
- Mysterious
- Embedded in ancient Eastern spiritual tradition

\*Gunaratana (2002) *Mindfulness in Plain English*

## • Mindfulness is:

- Commonsensical\*
- Ordinary\*
- Evidence based\*
- Operationalized as skills for modern non-Buddhist Westerners\*
  
- Assessment requires focus on this side
  - ✦ while not forgetting the other side

\*Kabat-Zinn (2011)

# Assessment of mindfulness

(in psychology)



- **Usually self-report methods**
  - Well suited to assessing internal experiences
    - ✦ observable primarily by the person experiencing them
  - Can be reliable and valid
    - ✦ if well constructed for intended populations
  - Much work has been done with questionnaires
    - ✦ Less on other methods for assessing mindfulness
- **Disadvantages of self-report**
  - Response biases
  - Potential lack of self-awareness of mindfulness in untrained respondents

# Characteristics of questionnaires

(in psychological research)



- **Based on clear definitions and descriptions**
  - necessity of using words
- **Usable by ordinary people**
  - Simple, clear language
  - Describe common recognizable experiences
  - Test-taker needs no knowledge of variable being measured
- **Comparing descriptions with questionnaire items...**

# Descriptions vs questionnaire items



- **Example: description of depression**

- “Depression is the flaw in love. To be creatures who love, we must be creatures who can despair at what we lose, and depression is the mechanism of that despair..it is the aloneness within us made manifest, and it destroys not only connection to others but also the ability to be peacefully alone with oneself...In depression, the meaninglessness of every enterprise and every emotion, the meaninglessness of life itself, become self-evident. The only feeling left in this loveless state is insignificance.”

Solomon (2001) *The Noonday Demon*

# Descriptions vs questionnaire items



- **Items from popular depression questionnaire**
  - I was bothered by things that don't usually bother me.
  - I did not feel like eating.
  - I could not shake off the blues.
  - I felt I was just as good as other people. (r)
  - I felt lonely.
  - I felt hopeless about the future.
  - I felt my life had been a failure.
  - I was happy. (r)
  - I enjoyed life. (r)
  - I had crying spells.

# Measuring things that are hard to describe



- Many phenomena of interest to psychological science have ineffable qualities.
  - *Depression is a condition that is almost unimaginable to anyone who has not known it. A sequence of metaphors ["falling into the abyss"] is the only way to talk about the experience.*
- Psychological research requires description and measurement.

Solomon, 2001

# The dialectic again



- **Mindfulness is:**

- Ineffable
- Paradoxical
- Mysterious
- Eastern
- Spiritual

- **From this perspective:**

- mindfulness questionnaires may cause concern
  - ✦ inconsistent with Buddhist conceptions

- **Mindfulness is:**

- Commonsensical
- Ordinary
- Skills based
- Western
- Studied scientifically

- **From this perspective:**

- mindfulness questionnaires are useful and necessary
  - ✦ complete consistency with Buddhism not expected

# Mindfulness questionnaires



- **Most commonly used:**
  - Mindful Attention Awareness Scale (MAAS)
  - Kentucky Inventory of Mindfulness Skills (KIMS)
  - Five Facet Mindfulness Questionnaire (FFMQ)
- **Others:**
  - Freiberg Mindfulness Inventory
  - Philadelphia Mindfulness Scale
  - Cognitive Affective Mindfulness Scale
  - Southampton Mindfulness Questionnaire
  - Toronto Mindfulness Scale

# FFMQ: Five elements of mindfulness



- 1. Observing
  - noticing or attending to internal and external stimuli
    - ✦ *I notice the smells and aromas of things.*
    - ✦ *When I'm walking, I notice the sensations of my body moving.*
- 2. Describing
  - labeling observed stimuli with words
    - ✦ *I'm good at finding words to describe my feelings.*
- 3. Acting with awareness
  - attending to current activity (not *automatic pilot*)
    - ✦ *I find myself doing things without paying attention (R)*

# FFMQ: Five elements of mindfulness



- 4. Nonjudging of inner experience
  - Without evaluation
    - ✦ *I tell myself I shouldn't be feeling the way I'm feeling. (R)*
- 5. Nonreactivity to inner experience
  - Allowing inner experience to be as is it, not getting absorbed or carried away
    - *I perceive my feelings and emotions without having to react to them.*

# Mindfulness questionnaires



- Promising validity evidence so far:
  - Moderate correlations with each other
  - Correlations with numerous other variables
    - ✦ Theoretically consistent
  - Higher scores in meditators than non-meditators
  - Change with participation in mindfulness-based treatment
  - Mediation of effects of treatment
    - ✦ Support for improved mindfulness as a mechanism of change

# Additional work needed



- **Lack of consensus on facets of mindfulness**
  - Awareness
  - Acceptance
  - Nonjudging
  - Nonreactivity
  - Self-compassion
  - etc

# Additional work needed



- Alternatives to self-report methods
  - Measure of Awareness and Coping in Autobiographical Memory (MACAM; Moore, Hayhurst, & Teasdale, 1996)
    - ✦ Interview
      - Imagine self in distressing situations
        - describe responses
      - Coded for decentering
        - Awareness of thoughts and feelings as separate from self
    - ✦ Shown to improve with mindfulness training
      - Hargus et al., 2010

# Part 3

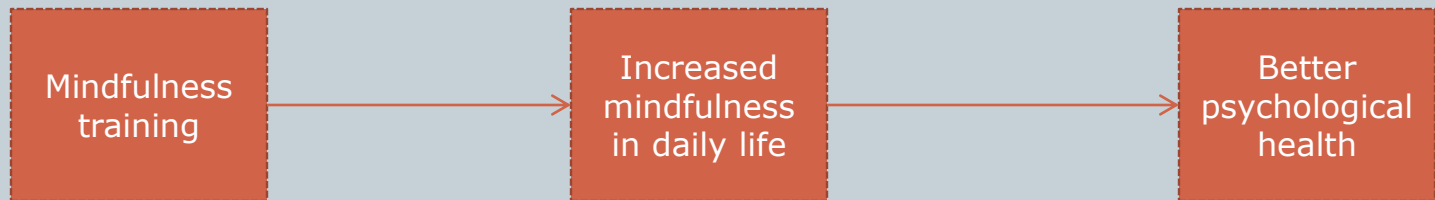


## Mechanisms of change in mindfulness-based treatment

# Mechanisms of change



- How does mindfulness training help?
  - Common assumption
    - ✦ Increased mindfulness in daily life is a mediator of change



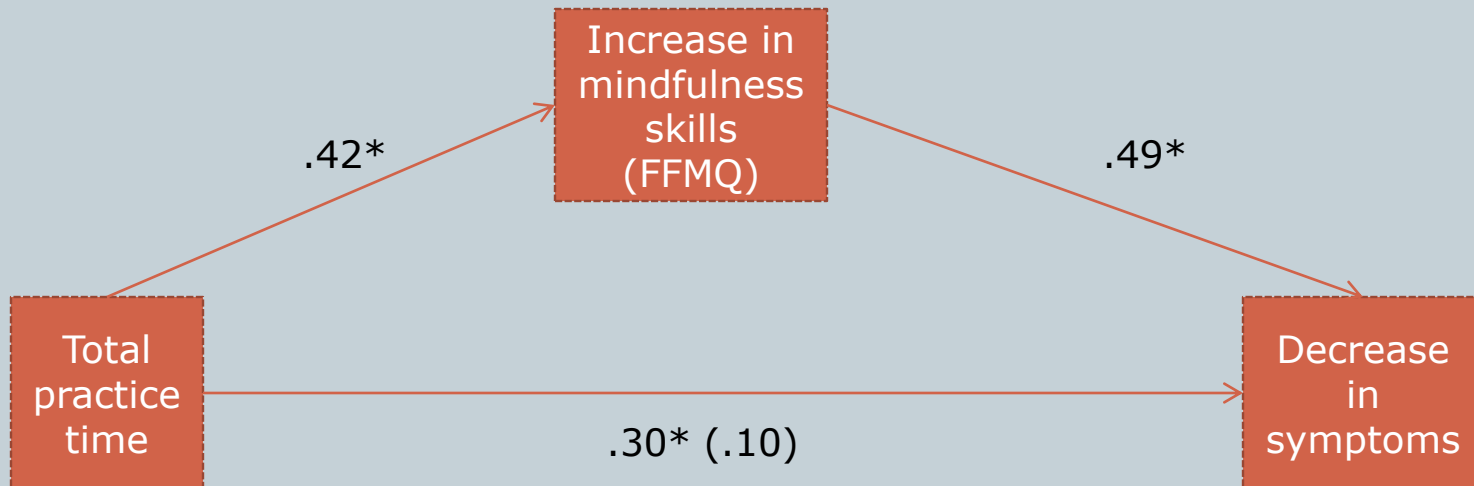
# Evidence for mindfulness as mediator

Carmody & Baer, 2008



- MBSR participants

- Increases in mindfulness skills (FFMQ) mediated relationship between:
  - home practice (total minutes) of mindfulness exercises
  - decrease in psychological symptoms



# Evidence for mindfulness as mediator

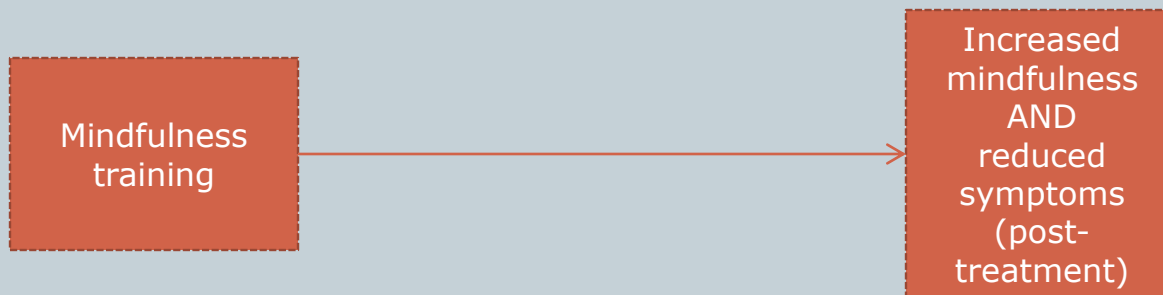


- **Other studies:**
  - MBSR for distress in community adults
    - ✦ Nyklicek & Kuijpers, 2008
  - MBSR for stress and rumination in students
    - ✦ Shapiro et al, 2008
  - MBCT for depression
    - ✦ Shahar et al., (2010)
  - MBSR for stress in cancer patients
    - ✦ Bränström et al., (2010)

# A common problem with these studies



- Mindfulness and symptoms measured at the same time:



- Which changes first?
  - Treatment → increased mindfulness → reduced symptoms
  - Treatment → reduced symptoms → increased mindfulness

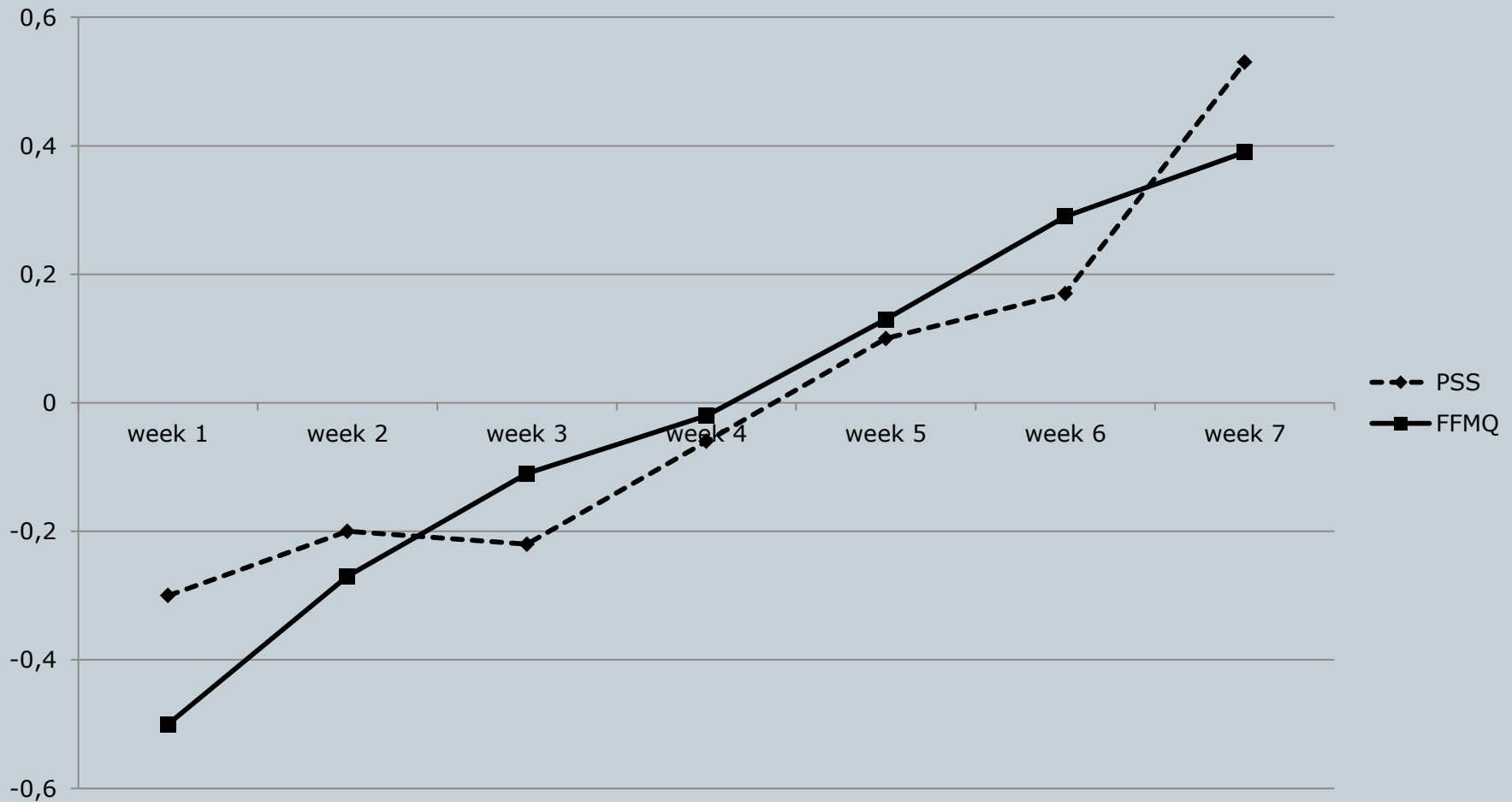
# A study of weekly change: mindfulness & stress in MBSR\*



- 75 MBSR participants
- Weekly assessment
  - Mindfulness
    - ✦ Short form of FFMQ (15 items)
  - Stress
    - ✦ Short form of Perceived Stress Scale (PSS; 4 items)

\*Baer, Carmody, & Hunsinger (under review)

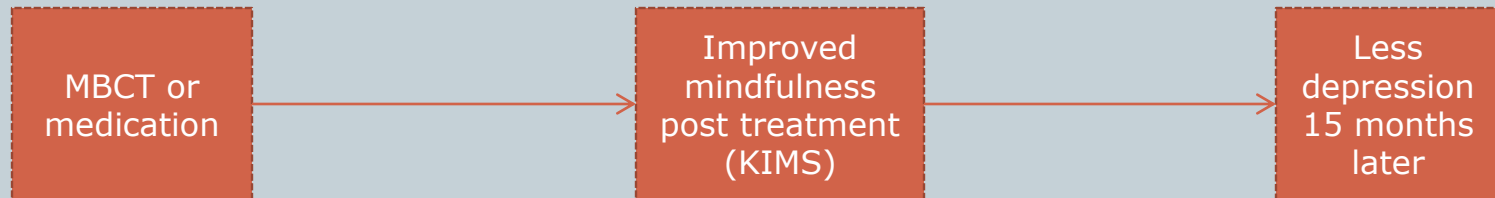
# Weekly improvement: mindfulness & stress



# One more study: Mindfulness as mediator



- Kuyken et al (2010)
  - Improved mindfulness at post-treatment mediated effects of MBCT on depression 15 months later



# Other possible mediators



- Mindfulness influences many processes
  - Decentering
  - Psychological flexibility (ACT)
    - ✦ Mindful awareness of thoughts and feelings
    - ✦ Values-consistent behavior
  - Self-compassion
  - Emotion regulation
  - Attentional processes
  - Other cognitive processes
    - ✦ rumination, thought suppression, memory processes

# A closer look at self-compassion



- **3 elements of self-compassion** (Neff, 2003)
  - Self-kindness
    - ✦ Treating oneself kindly and without harsh judgment
  - Common humanity
    - ✦ Recognizing that suffering is universal human experience
  - Mindfulness
    - ✦ balanced awareness of painful thoughts and feelings
      - rather than avoidance, suppression, over-identification

# Self-compassion and mindfulness training



- **Increased self-compassion in MBSR**
  - health-care professionals (Shapiro et al, 2005)
  - therapists in training (Shapiro et al, 2007)
- **Self-compassion in long-term meditators**
  - Higher than similar nonmeditators
  - Correlated with duration of meditation experience (Lykins & Baer, 2009)
- **Self-compassion mediated effects of MBCT**
  - Kuyken et al (2010)

# Mindfulness and self-compassion



- Very strongly correlated
    - FFMQ and Self Compassion Scale
  - Is self-compassion an element of mindfulness?
    - "...mindfulness includes an affectionate, compassionate quality within the attending, a sense of openhearted friendly presence and interest"
- Kabat-Zinn, 2003
- Or is mindfulness an element of self-compassion? (Neff)

# How mindfulness improves mental health:

A general model (Roemer & Orsillo, 2009)



- **3 related effects of mindfulness practice**
  - 1. changes relationship with internal experience
    - ✦ Aware, observant
    - ✦ Nonjudgmental, nonreactive, compassionate
    - ✦ Decentered, defused
  - 2. reduces maladaptive avoidance of inner experience
    - ✦ Suppression of thoughts, emotions
    - ✦ Rumination, worry
    - ✦ Selective attention & memory
  - 3. improves behavioral engagement
    - ✦ Doing valued activities with awareness

# General conclusions



- Mindfulness-based treatments are helpful for many psychological difficulties
  - in clinical and nonclinical samples
- Participants appear to learn mindfulness skills
  - according to self-report instruments
- Learning mindfulness skills is related to:
  - changes in many psychological processes
  - improved psychological health

# Thank you!

