Efficacy and effectiveness of mindfulness-based interventions

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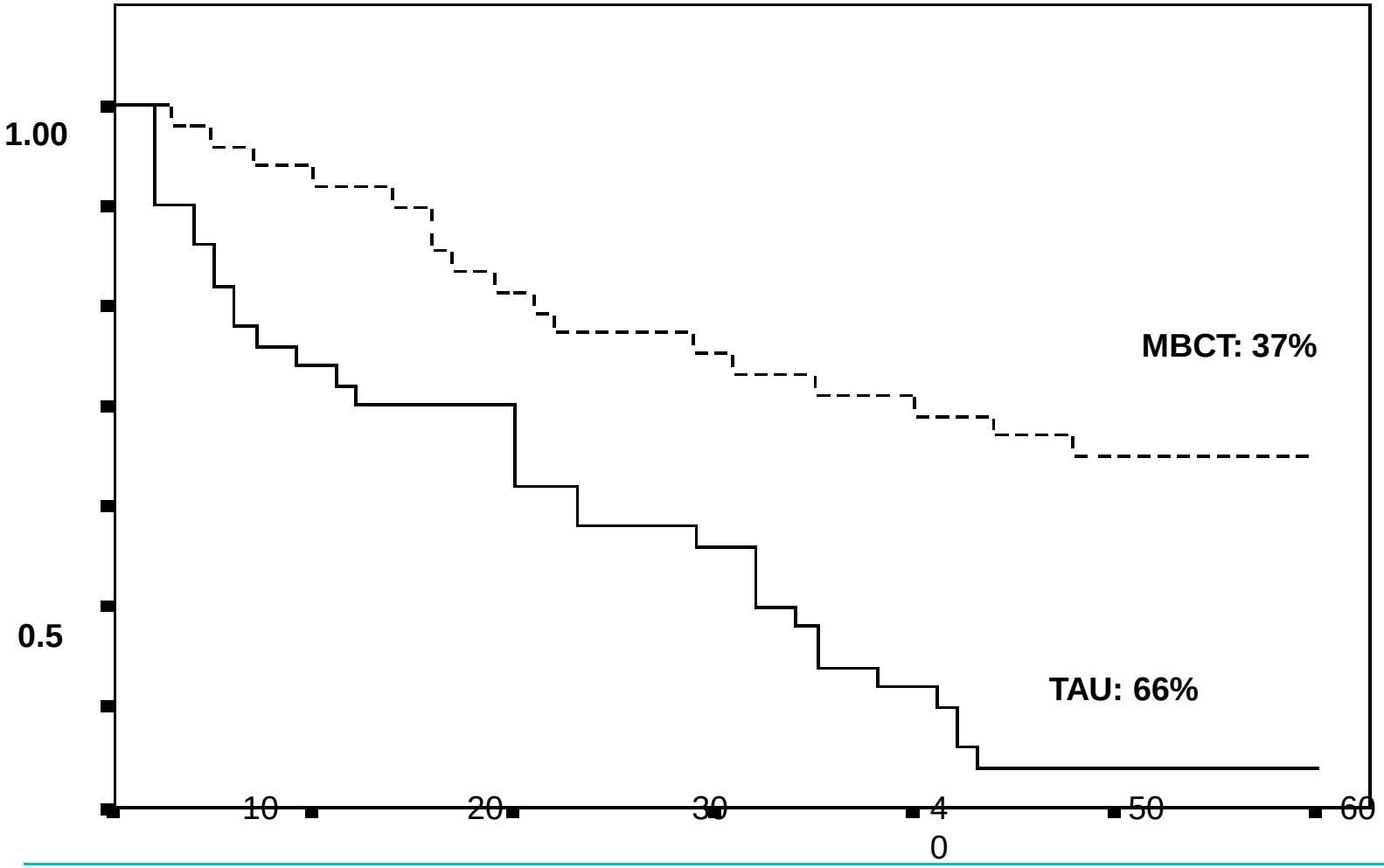
MBCT for recurrent depression



Teasdale et al., J Clin Cons Psychol 2000

Open access, freely available online

Essay

Why Most Published Research Findings Are False

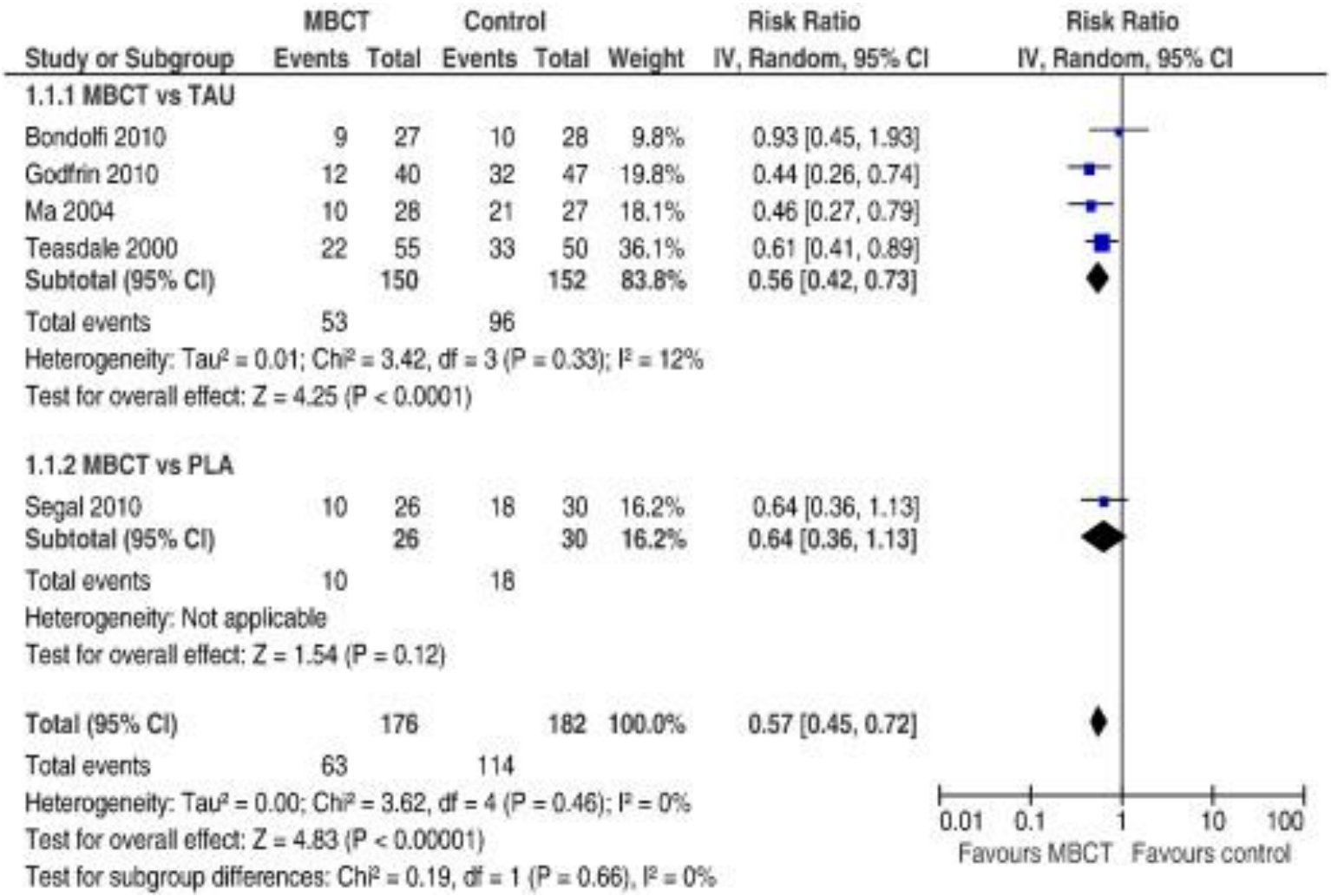
John P. A. Ioannidis

PLoS Medicine 2005; 2: e124

Why most published research findings are false

- Small study size
-
- Small effect sizes
- Great number and little selection of tested relationships
- Flexibility in designs, definitions, outcomes and analytical modes
- Financial and other interests and prejudices
- Hot scientific field (more scientific teams involved)

MBCT for recurrent depression



Study or Subgroup	MBCT Events	MBCT Total	Control Events	Control Total	Weight	Risk Ratio IV, Random, 95% CI
1.1.1 MBCT vs TAU						
Bondolfi 2010	9	27	10	28	9.8%	0.93 [0.45, 1.93]
Godfrin 2010	12	40	32	47	19.8%	0.44 [0.26, 0.74]
Ma 2004	10	26	21	27	18.1%	0.46 [0.27, 0.79]
Teasdale 2000	22	55	33	50	36.1%	0.61 [0.41, 0.89]
Subtotal (95% CI)		150		152	83.8%	0.56 [0.42, 0.73]
Total events	53		96			
Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 3.42$, df = 3 (P = 0.33); $I^2 = 12\%$						
Test for overall effect: Z = 4.25 (P < 0.0001)						
1.1.2 MBCT vs PLA						
Segal 2010	10	26	18	30	16.2%	0.64 [0.36, 1.13]
Subtotal (95% CI)		26		30	16.2%	0.64 [0.36, 1.13]
Total events	10		18			
Heterogeneity: Not applicable						
Test for overall effect: Z = 1.54 (P = 0.12)						
Total (95% CI)		176		182	100.0%	0.57 [0.45, 0.72]
Total events	63		114			
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 3.62$, df = 4 (P = 0.46); $I^2 = 0\%$						
Test for overall effect: Z = 4.83 (P < 0.00001)						
Test for subgroup differences: $Chi^2 = 0.19$, df = 1 (P = 0.66), $I^2 = 0\%$						

Piet & Hougaard, J Cons Clin Psychol 2011

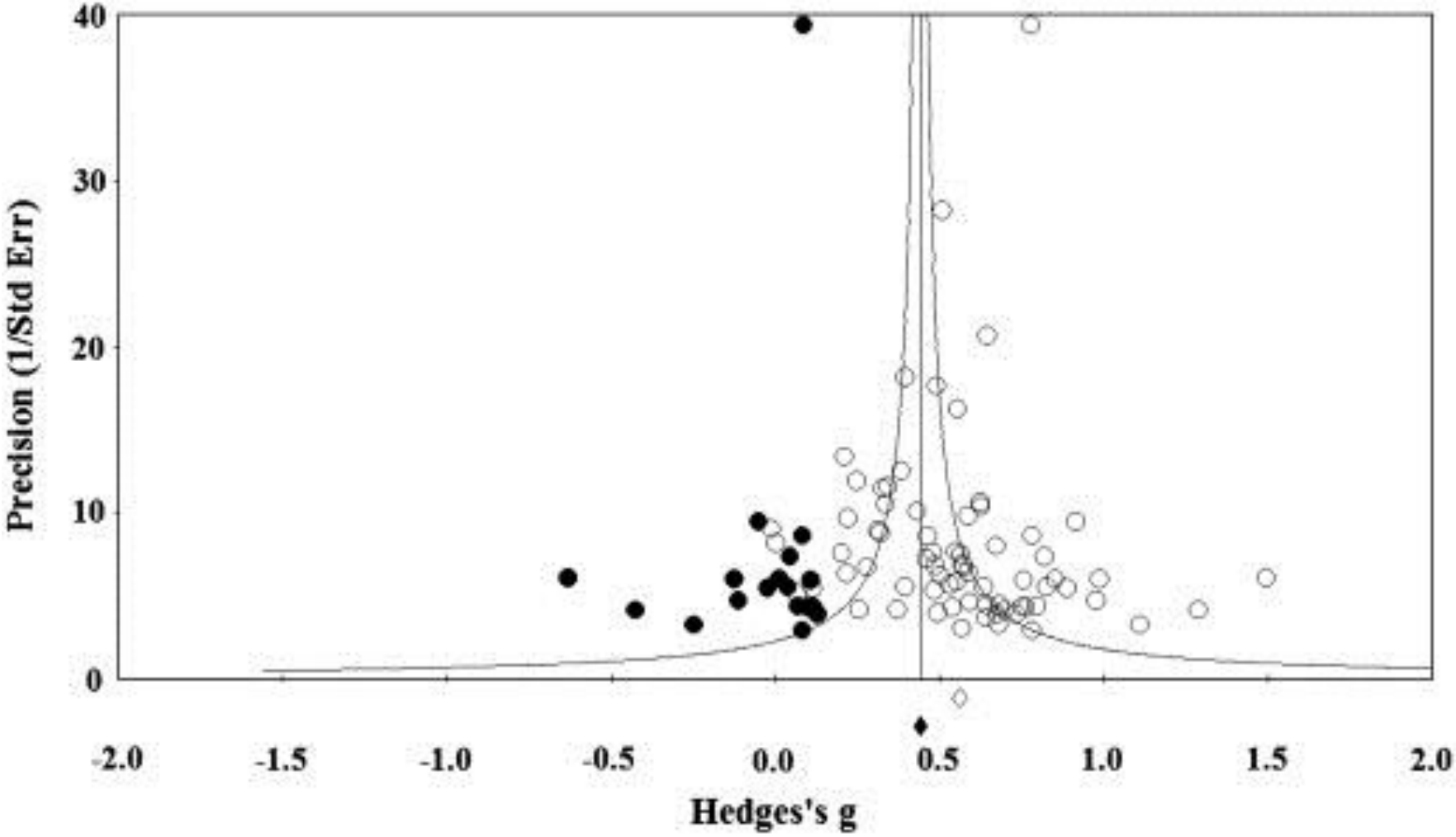
Mindfulness-based therapy: a comprehensive meta-analysis

- Pre-post or controlled studies of MBT
- May 2013
- Physical and psychological disorders and non-clinical populations
- Mindfulness based interventions
- N=209 studies with 12.145 participants

Effect size estimates

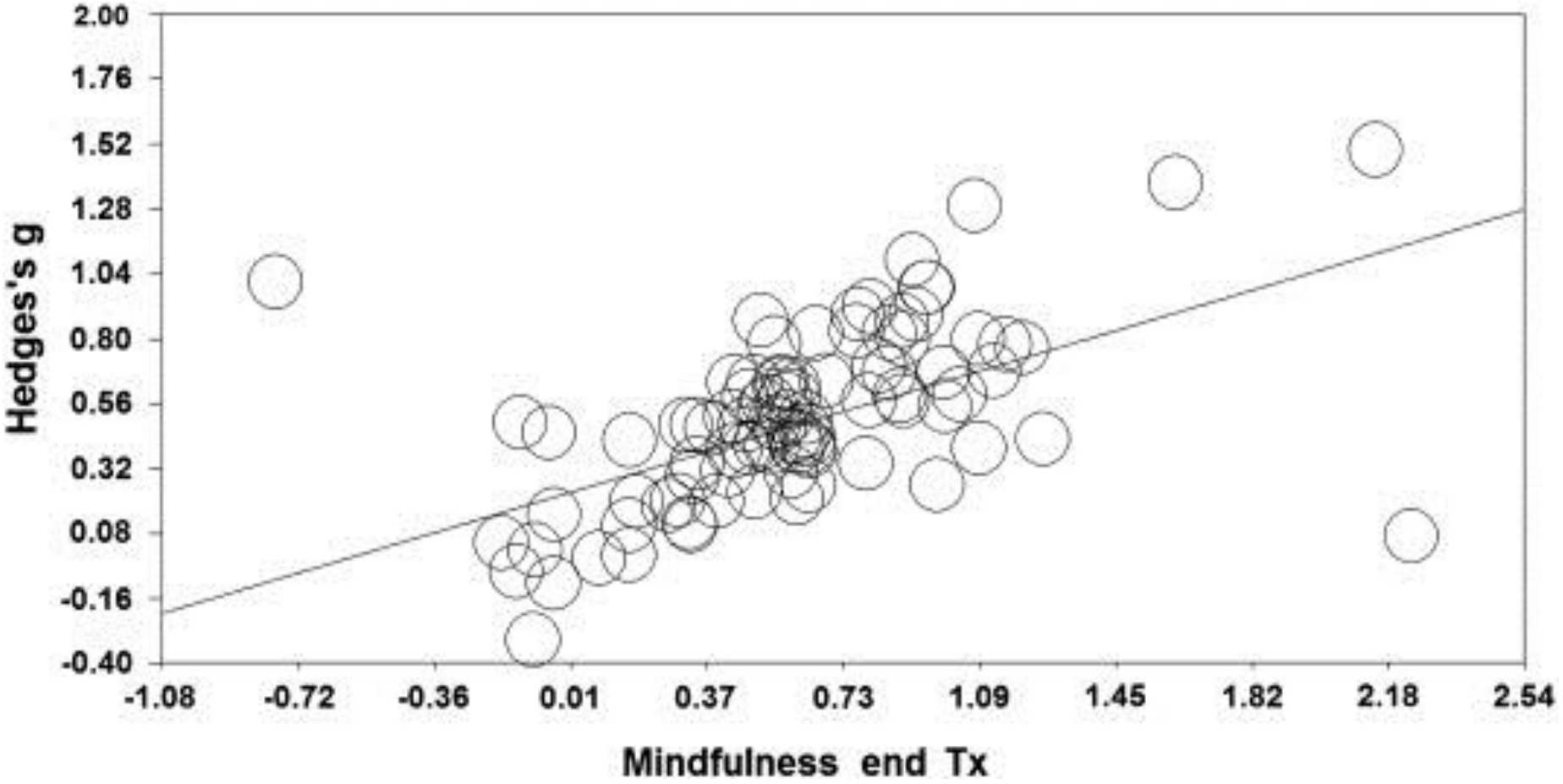
Design	Number of studies	Hedge's g
Pre-post comparisons	72	0.55
Wait-list controls	67	0.53
Other active treatments	68	0.33
Psychological treatments	35	0.22
CBT/behavioural therapy	9	-0.07
Pharmacological therapy	3	0.13

Hedge's g of pre-post studies



Khoury et al., Clin Psychol Rev 2013

Mindfulness and clinical effect size



Khoury et al., Clin Psychol Review 2013

MBIs for current anxiety or depression

- Randomized clinical trials
- July 2013
- Adults meeting full diagnostic criteria for anxiety or depressive disorder
- Mindfulness with practice in each session and homework
- Valid outcome measure of depression or anxiety
- N=12 trials with 578 participants

Standardized mean differences

Design	Number of studies	Mean difference (95% CI)
Depressive disorder	4	-0.73 (-1.36 to -0.09)
Anxiety disorder	8	-0.55 (-1.18 to 0.09)
Active control group	5	0.03 (-0.48 to 0.54)
Inactive control group	7	-1.03 (-1.66 to -0.40)
MBCT	6	-0.39 (-0.63 to -0.15)
MBSR	5	-0.75 (-1.81 to 0.31)

MBIs in healthcare: an overview of systematic reviews and meta-analyses of RCTs

- Systematic reviews of RCTs
- Standardized MBSR or MBCT programs
- Any health outcome measure
- N=23 reviews
  N=115 unique RCTs
- N=8683 participants: N=3830 somatic conditions
  N=4276 psychological problems
  N=577 general population

Gotink et al. PLoS ONE 2015.

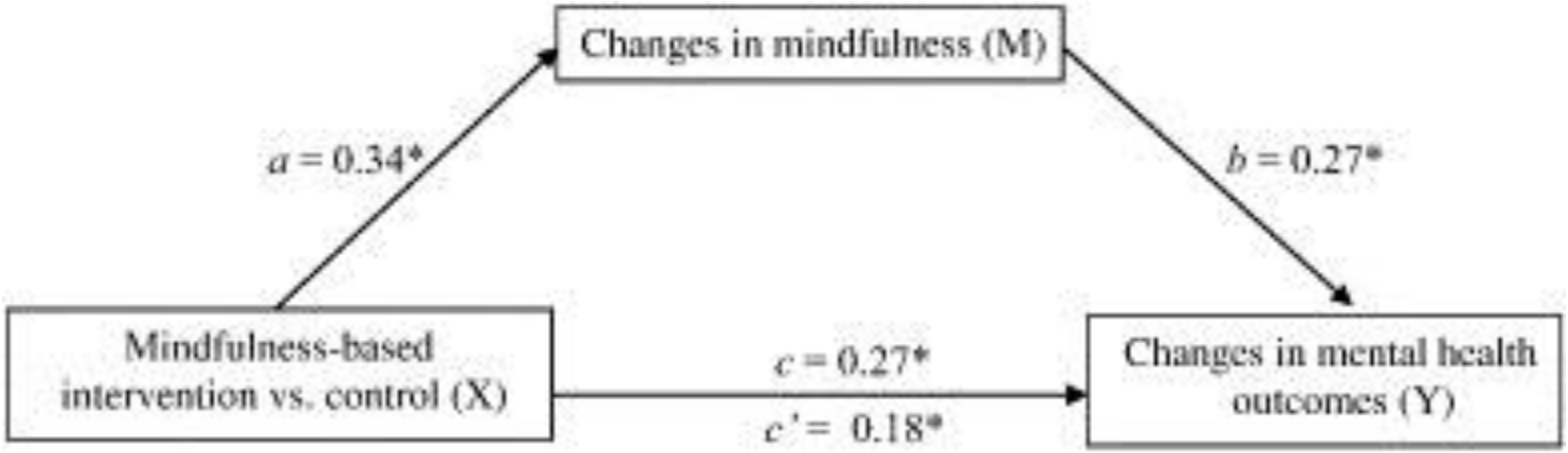
Standardized mean differences

Outcome	Number of reviews	Mean difference (95% CI)
Depression	5	-0.37 (-0.48 to -0.28)
Anxiety	7	-0.48 (-0.56 to -0.40)
Stress	2	-0.51 (-0.67 to -0.36)
Quality of life	2	-0.39 (-0.70 to -0.08)
Physical functioning	3	-0.27 (-0.42 to -0.12)

How do MBs improve mental health?

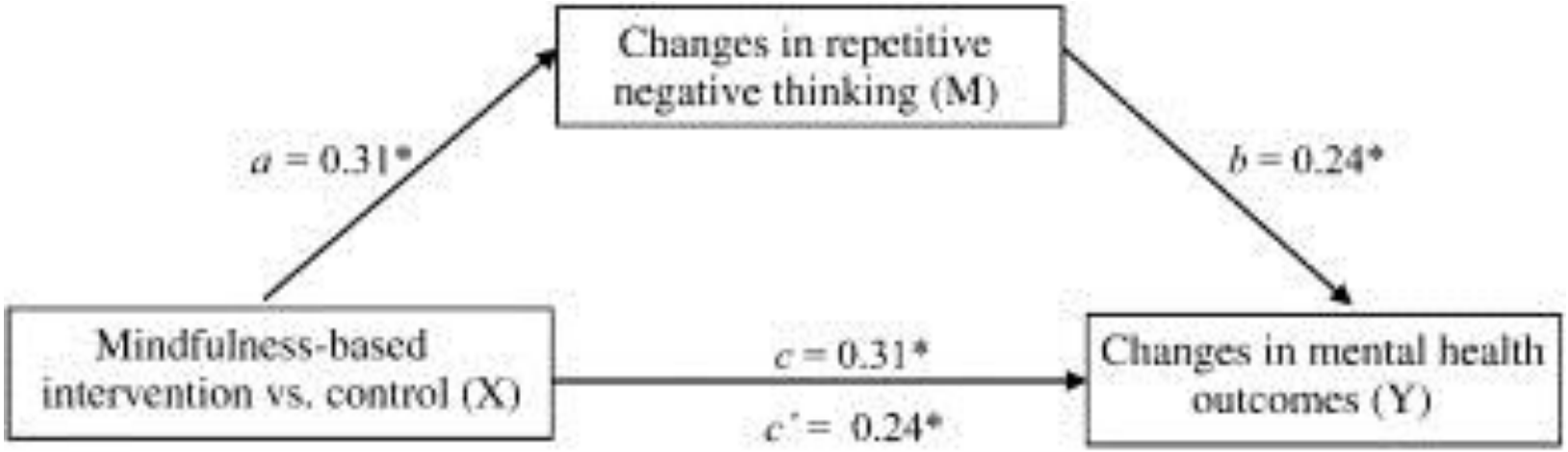
- Randomized clinical trials
- January 2014
- Mediation analysis with group as independent variable
- MBSR/MBCT in mediation analysis
- Quantitative assessment of mental health and hypothesized mediator
- N=20 studies
  - N=12 included for quantitative synthesis for mindfulness
  - N=6 included for quantitative synthesis for negative thinking

Changes in mindfulness as mediator



Ju et al., Clin Psychol Rev 2015

Changes in repetitive negative thinking as mediator



Ju et al., Clin Psychol Rev 2015

Population

- Setting:
  - Primary care
  - Secondary care
  - Tertiary care
- Comorbidity

- Staging
  - Primary prevention
  - Treatment of current symptoms
  - Treatment of residual symptoms
  - Prevention of recurrence

- Schools
- Criminal justice system
- Workplace

Design

- Active control groups
- Effective treatments
- Combine treatments
- Longer follow-ups
- Predictive factors

Intervention

- Standardisation
- Tailoring:
  - Setting
  - Population
- Delivery
  - Face to face
  - Individualised
  - Online
    - Therapist assisted
    - Chatrooms
    - Stand alone

Outcome measures

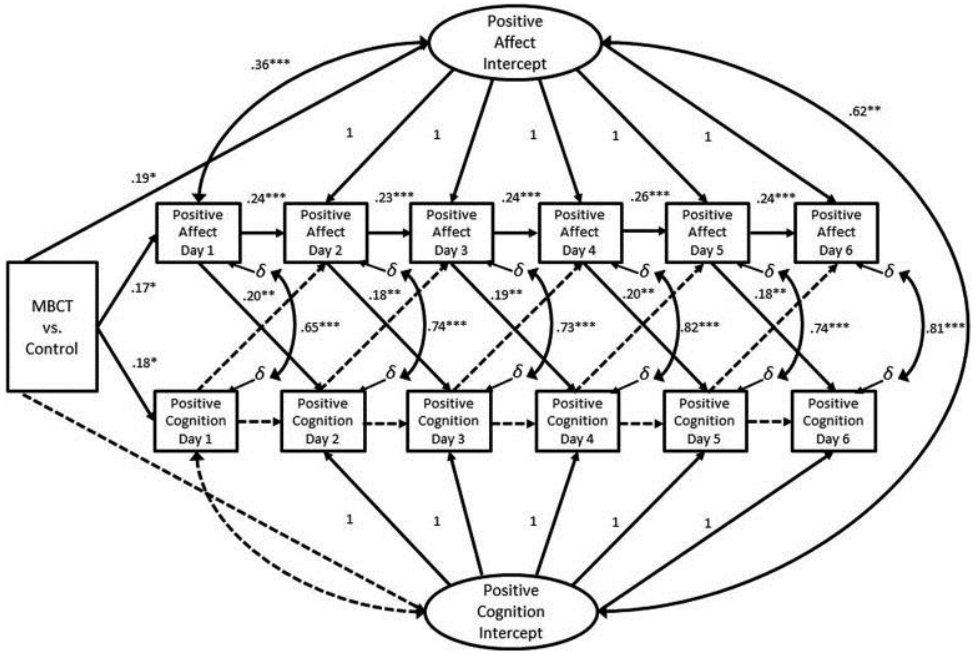
- Primary vs secondary
- Specific vs generic
- Experience sampling
- Observer-rated
- Cost-effectiveness
- Qualitative methods

Process

- Working mechanism
  - Mediation
  - Experience sampling

  - Experimental
  - Neuroimaging

- Implementation
  - Teacher training
  - Compliance
  - Booster sessions
  - Follow-up trainings



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PLOS MEDICINE

Essay

How to Make More Published Research True

John P. A. Ioannidis

PLoS Medicine 2014; 11: e1001747

How to make more published research true

- Larger-scale collaborative research
- Adoption of replication culture
- Registration of studies, protocols, datasets and results
- Sharing of data, protocols, materials, software
- Containment of conflicted sponsors and authors
- Standardization of definitions and analyses
- Better training of scientific workforce in methods and statistical literacy

Interventions to make science less wasteful and more effective could be hugely beneficial to our health, our comfort, and our grasp of truth and could help scientific research more successfully pursue its noble goals.

John P.A. Ioannidis