La Meditazione Orientata alla Mindfulness - MOM

Franco Fabbro

Università di Udine

Consapevolezza dei livelli coinvolti

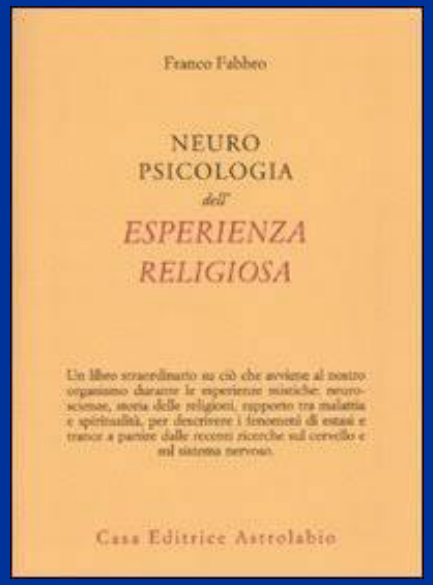
Livello psicologico

Livello neurologico

Livello antropologico

Livello storico-critico

Livello spirituale-religioso



Mindfulness = Sati

Siddharta Gotama il Buddha (566-486 aC)

Si riferisce alla pedagogia della liberazione insegnata dal Buddha, che si articola:

Quattro nobili verità:

I) Esistenza del malessere (*dukka*)

II) Origine del malessere

III) Cessazione del malessere

IV) Ottuplice sentiero per la liberazione

Ottuplice sentiero:

1) *Samma ditti* (retta comprensione)

2) *Samma sankappo* (retta intenzione)

3) *Samma vacco* (retta parola)

4) *Samma kammanto* (retta azione)

5) *Samma ajivo* (retti mezzi di sussistenza)

6) *Samma vayano* (retto sforzo)

7) ***Samma sati*** (retta consapevolezza)

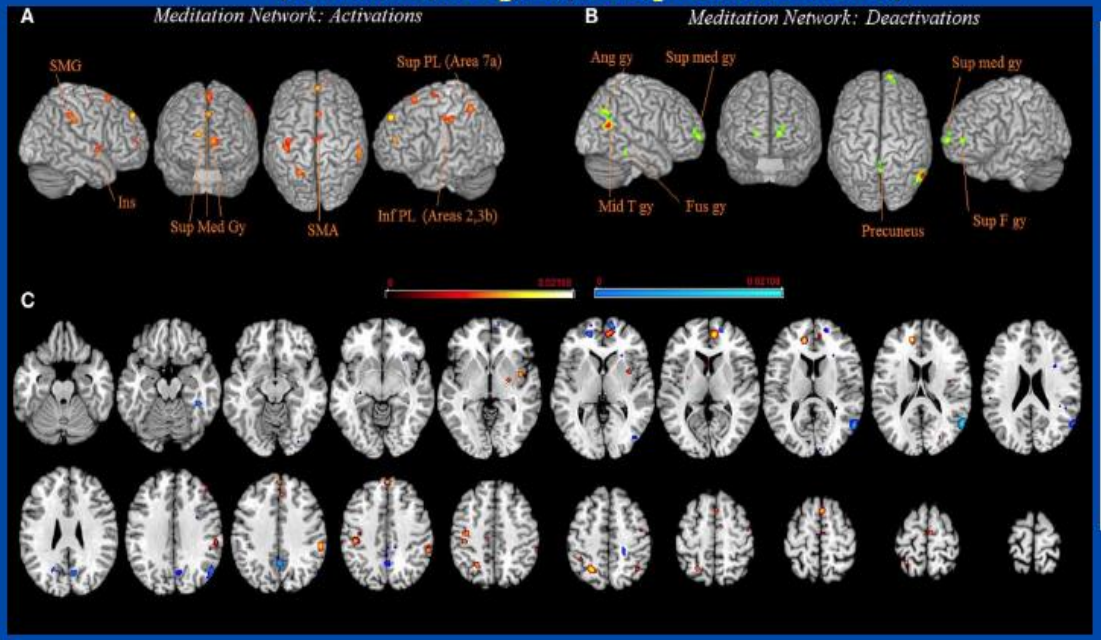
8) *Samma samadhi* (retto assorbimento)

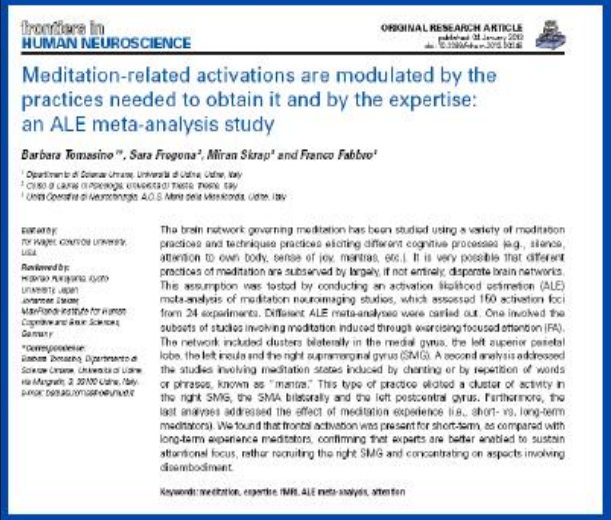
Sati: mindfulness: consapevolezza

- Ricordare di essere se stessi (ricordo di sé)
- Essere consapevoli (coscienza fenomenica)
- Essere attenti
- Essere presenti nel ‘qui e ora’ (presenza mentale)
- Sentire le sensazioni

Meta-analisi sulla meditazione 29 studi, 303 soggetti

(Tomasino, Fregona, Skrap e Fabbro 2013)





frontiers in HUMAN NEUROSCIENCE

ORIGINAL RESEARCH ARTICLE

Meditation-related activations are modulated by the practices needed to obtain it and by the expertise: an ALE meta-analysis study

Barbara Tomasino[1], Sara Fregona[2], Miran Skrap[3] and Franco Fabbro[1]*

The brain network governing meditation has been studied using a variety of meditation practices and techniques practiced eliciting different cognitive processes (e.g., silence, attention to own body, sense of joy, mantras, etc.). It is very possible that different practices of meditation are subserved by largely, if not entirely, disparate brain networks. This assumption was tested by conducting an activation likelihood estimation (ALE) meta-analysis of meditation neuroimaging studies, which assessed 160 activation foci from 24 experiments. Different ALE meta-analyses were carried out. One involved the subsets of studies involving meditation induced through exercising focused attention (FA). The network included clusters bilaterally in the medial gyrus, the left superior parietal lobe, the left insula and the right supramarginal gyrus (SMG). A second analysis addressed the studies involving meditation states induced by chanting or by repetition of words or phrases, known as "mantra." This type of practice elicited a cluster of activity in the right SMG, the SMA bilaterally and the left postcentral gyrus. Furthermore, the last analyses addressed the effect of meditation experience (i.e., short- vs. long-term meditators). We found that frontal activation was present for short-term, as compared with long-term experience meditators, confirming that experts are better enabled to sustain attentional focus, rather recruiting the right SMG and concentrating on aspects involving disembodiment.

Keywords: meditation, expertise, fMRI, ALE meta-analysis, attention

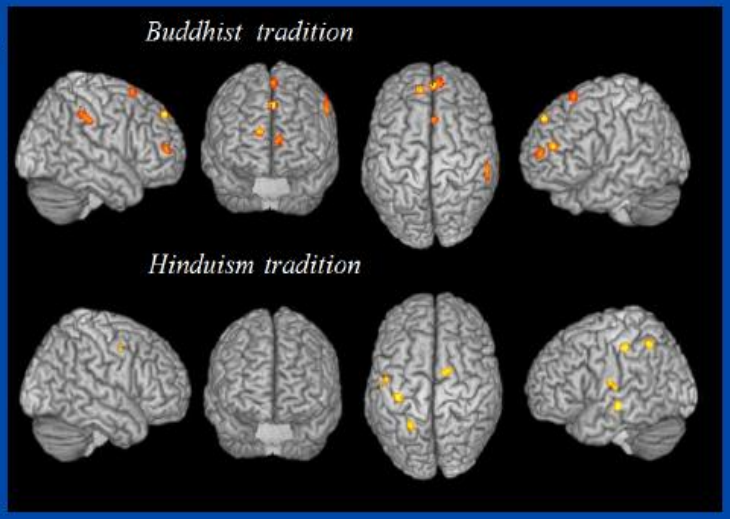
Attivazioni nelle meditazioni induiste versus buddhiste

(Tomasino, Chiesa e Fabbro 2014)

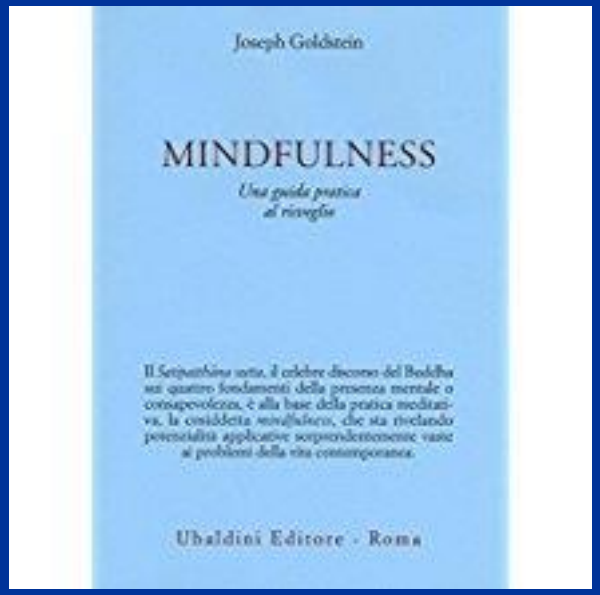
Brain and Cognition

Disentangling the neural mechanisms involved in Hinduism- and Buddhism-related meditations

Barbara Tomasino, Alberto Chiesa, Franco Fabbro



La meditazione MOM dipende unicamente dal:



Satipaṭṭhāna Sutta:

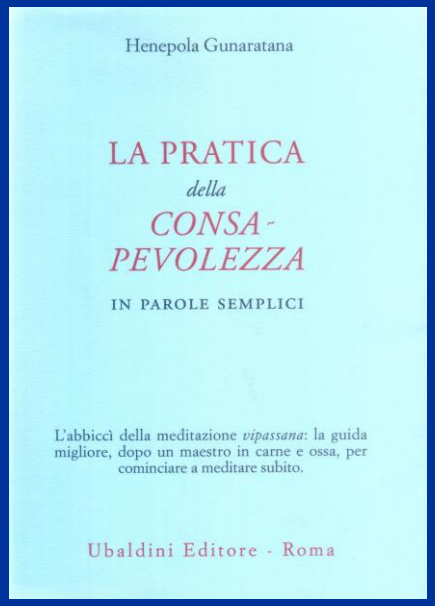
1. consapevolezza del respiro *ānāpānasati*
2. Consapevolezza del corpo
3. Consapevolezza degli stati mentale *vipassanā*
4. Consapevolezza degli insegnamenti

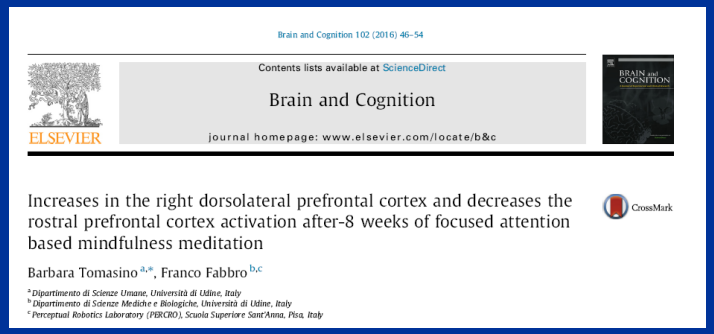
Mindfulness Oriented Meditation (MOM) (di Fabbro 2010)

H. Gunaratana 1927

- 8 settimane di training
- un incontro alla settimana;
- incontri: ½ h teoria; ½ pratica; 1 h discussione;
- ½ h di meditazione a casa per 2 mesi (anche frazionata in tre o piu' momenti);
- a casa a giorni alterni meditazione guidata (file audio) e meditazione "autoguidata" a giorni alterni;
- Struttura della meditazione:

  - *anapanasati* (focalizzazione dell'attenzione sul respiro)
  - contemplazione del corpo (*body scan*)
  - *vipassana* (osservazione del fluire dei processi mentali)




Brain and Cognition 102 (2016) 46–54

Contents lists available at ScienceDirect

Brain and Cognition

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Increases in the right dorsolateral prefrontal cortex and decreases the rostral prefrontal cortex activation after-8 weeks of focused attention based mindfulness meditation

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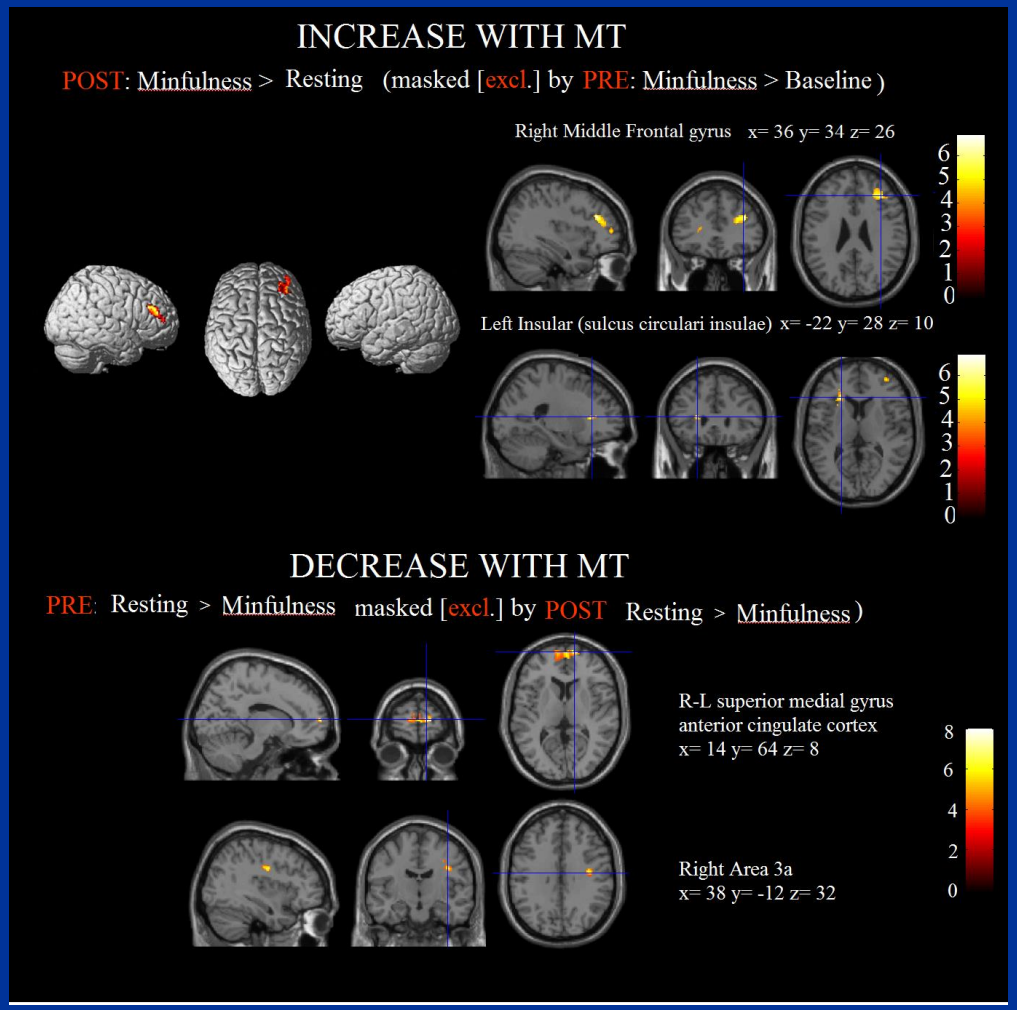
MOM e MBSR



<u>increased activation</u>:
- right dorsolateral PFC
- left caudate/anterior insula

<u>decreased activation</u>
- in the rostral PFC
- right parietal area 3b.

Obiettivi neuropsicologici della MOM

1. Attenzione volontaria (funzioni esecutive)
2. Consapevolezza del corpo (emozioni)
3. Metacognizione (osservazione degli stati mentali)
4. Rieducare l'abitudine alla 'reazione' negative:
   a) atteggiamento equanime
   b) atteggiamento gentile (metta)
   c) abbandonare il controllo (l'asciar andare)

Promozione del benessere in età evolutiva: le applicazioni della mindfulness

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Mindfulness significa prestare attenzione in un modo particolare: a) con intenzione, b) al momento presente, c) in modo non giudicante

It's Hot!

“mindfulness” in “PubMed”

- Meditation 4790
- Mindfulness meditation 1602
- Mindfulness meditation brain 279
- Mindfulness meditation pain 197
- Mindfulness based stress reduction 805

Mind the Hype: A Critical Evaluation and Prescriptive Agenda for Research on Mindfulness and Meditation

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Perspectives on Psychological Science
1–26

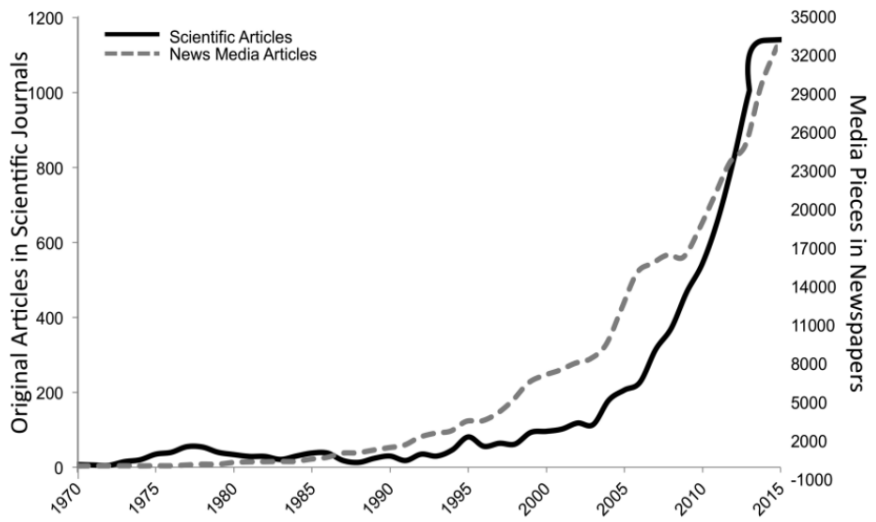
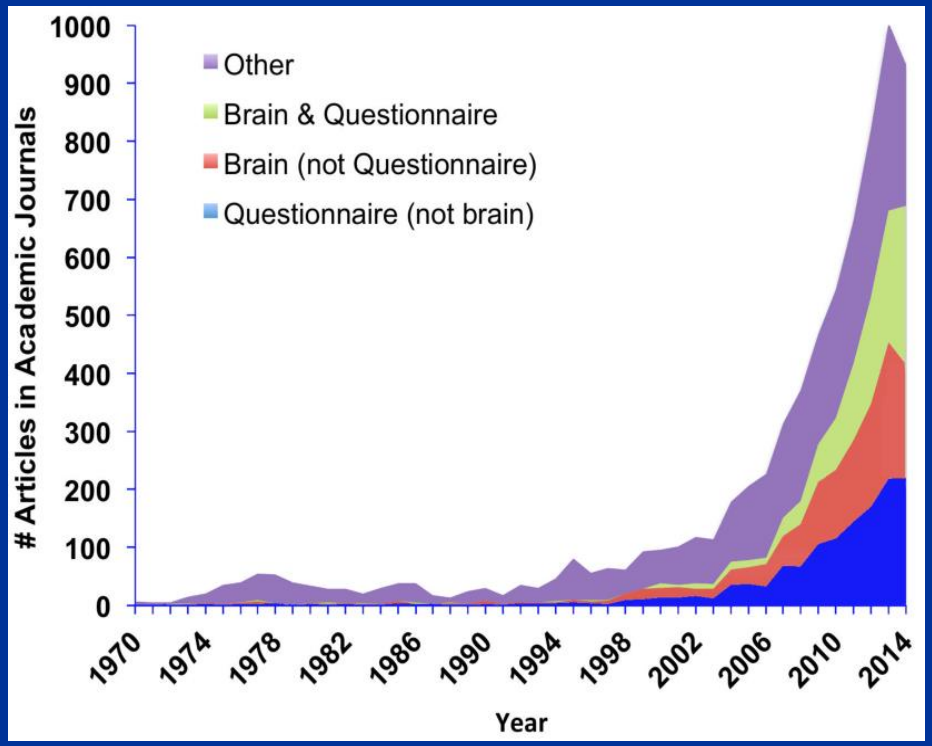
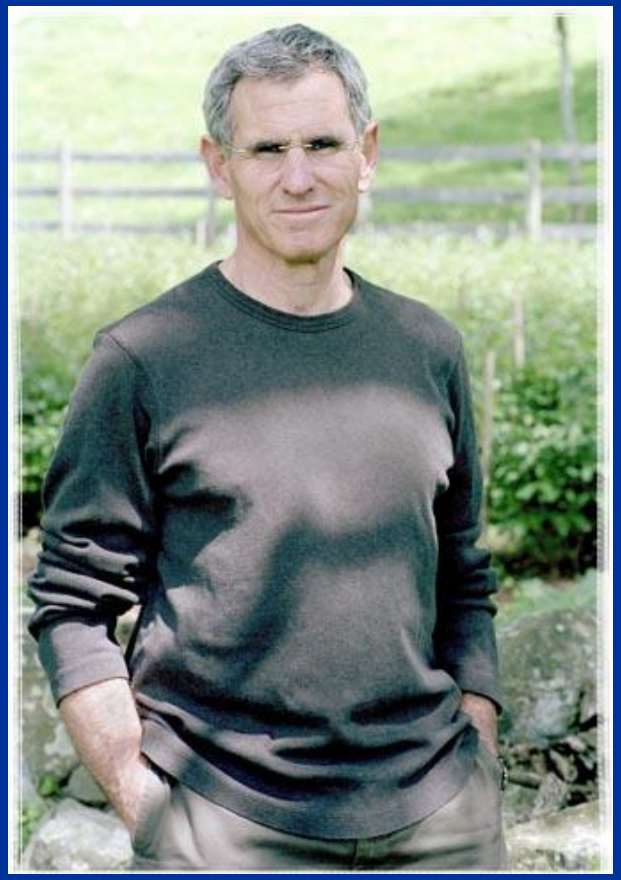


Fig. 1. Scientific and news media articles on mindfulness and/or meditation by year from 1970 to 2015. Empirical scientific articles (black line) with the term *mindfulness* or *meditation* in the abstract, title, or keywords, published between 1970 and 2015 were searched using Scopus. Media pieces (dashed gray line) with the term *mindfulness* or *meditation*, published in newspapers, using a similarity filter to minimize double-counting, published between 1970 and 2015 were searched using LexisNexis.



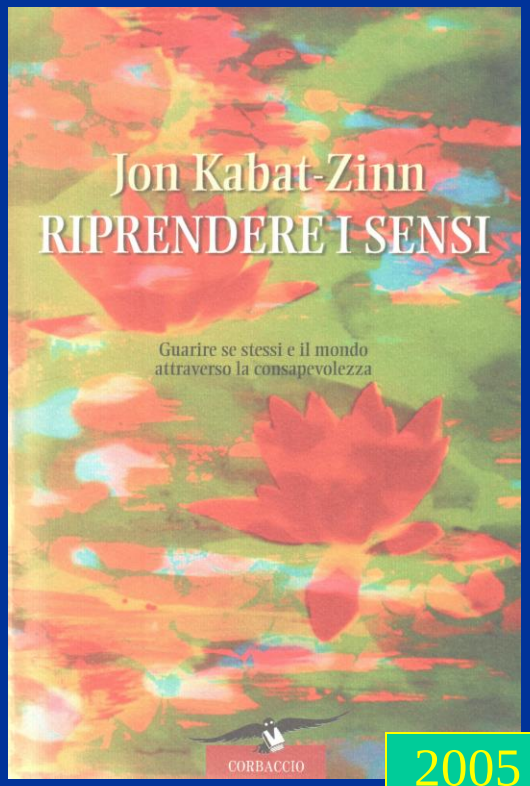
Mindfulness Based Stress Reduction: MBSR



1944

La MBSR è stata ideata nel 1979 dal Kabat Zinn (Massachussetts Medical School)

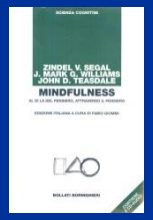
Egli ha integrato la meditazion buddista di consapevolezza (*mindfulness*) con la clinica psicologica contemporanea



2004 e 2016

2005

Protocolli Terapeutici basati sulla mindfulness



Mindfulness Based Cognitive Therapy: MBCT

- Mindfulness-Based Stress Reduction (Kabat-Zinn, 1990)
- Mindfulness-Based Cognitive Therapy (Segal, Williams, Teasdale, 2001)
- Dialectical Behavior Therapy - DBT (Linehan,1993)
- Acceptance and Commitment Therapy - ACT (Hayes, 1994)
- Compassion Focused Therapy (Gilbert, 2009)
- Mindfulness Based Relapse Prevention (substance abuse) – MBRP (Marlatt & Gordon, 1985)
- Mindfulness-Based CBT for OCD and Anxiety (Hershfield & Corboy, 2013; Didonna, 2014)
- Minfulness Oriented Meditation (MOM; Fabbro e Muratori, 2012; Fabbro e Crescentini, 2014; Crescentini et al., 2014, 2015, 2016, 2017)

Applicazioni cliniche dei protocolli mindfulness

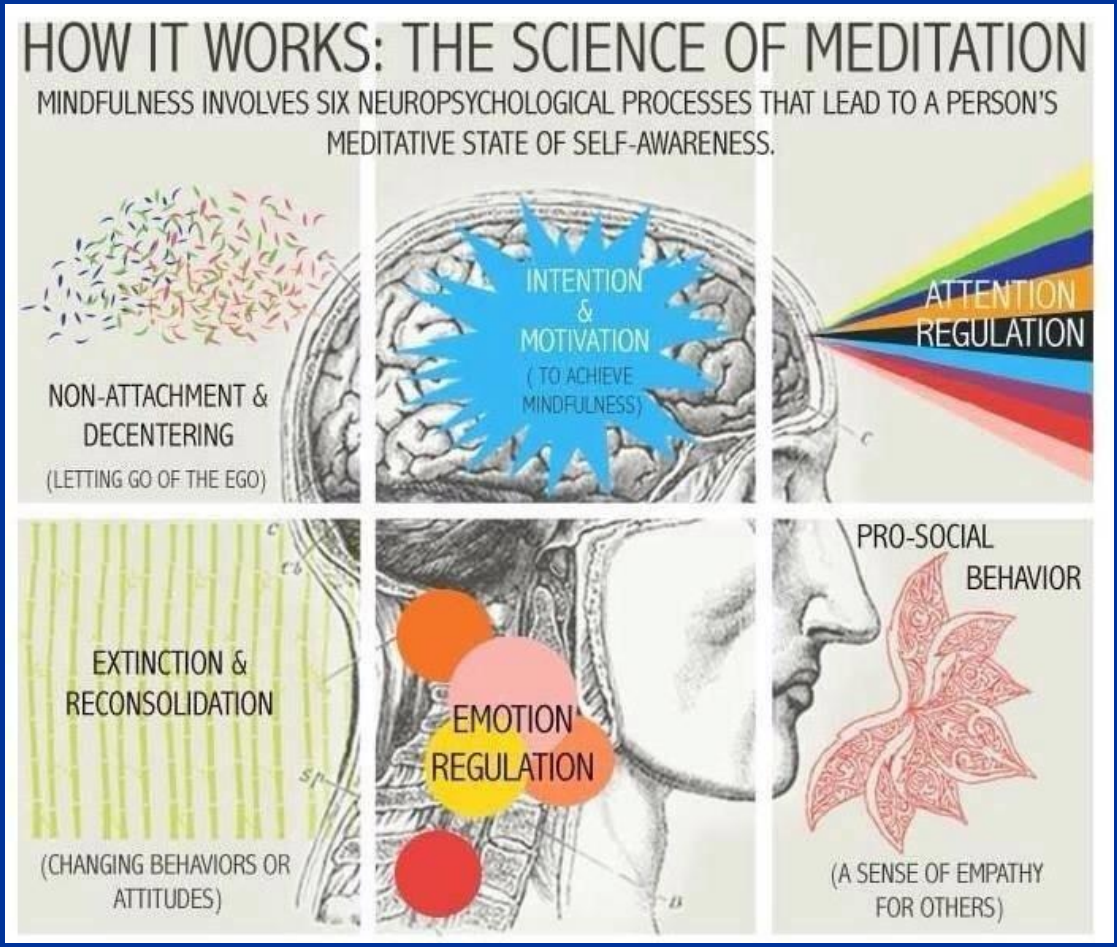
- **Depressione Maggiore** (Teasdale, Williams, Segal, 1995)
- **Disturbi d'Ansia (GAD, Panico, Fobia Sociale)** (Kabat-Zinn, 1992; Borkovec e Sharpless, 2004; Miller et al., 1995; Roemer & Orsillo, 2002)
- **Disturbo da Stress Post-traumatico e Trauma** (Follette et al., 2008; Foa et al. 2000)
- **Disturbo Borderline di Personalità** (Linehan, 1993)
- **Disturbi Alimentari** (Baer et al., 2007; Kristeller et al., 1999; Telch, Agras, & Linehan, 2001; Quillian-Wolever, 2008)
- **Disturbo da Deficit di Attenzione con Iperattività** (Smalley et. al., 2007; Zilowska et al., 2008)
- **Disturbo Ossessivo-Compulsivo** (Schwartz,1997; Gorbis, 2004; Didonna, 2008)
- **Abuso di Sostanze- Dipendenze** (Marlatt et al., 2004, Breslin et al., 2002; Bien, 2008)
- **Psicosi** (Chadwick, 2005, Pinto, 2008)
- **Terapia di coppia** (Christensen et al., 2004; Jacobson et al., 2000)
- **Dolore Cronico** (Kabat-Zinn et al., 1982, 1986, 1987; Randolph et al., 1999)
- **Cancro** (Carlson et al., 2008; Speca et al., 2000)
- **Fibromialgia** (Kaplan et al., 1993; Goldemberg et al., 1994)
- **Psoriasi** (Kabat-Zinn et al., 1998)
- **Riduzione dello Stress** (Carceri, Ospedali, personale infermieristico, etc)

La pratica della consapevolezza ci aiuta a modificare quei comportamenti automatici, reattivi e distruttivi che spesso vengono adottati nella vita quotidiana, con scelte consapevoli e maggiormente appropriate al contesto.
Ciò si realizza attraverso tre abilità:

Apprendere ad ancorarsi al momento presente, invece di essere coinvolti dalle emozioni catastrofiche. L'attenzione al momento presente è una componente fondamentale dei protocolli basati sulla mindfulness adottati a fini terapeutici (e.g., Kabat-Zinn, 1990).

Apprendere a riconoscere i pensieri in quanto tali, e a non considerarli dati di fatto. Con la pratica della mindfulness si cerca di perseguire il "decentramento" o "defusione" o "de-identificazione" dai propri pensieri (Kabat-Zinn, 1999; Segal et al., 2005; Hayes, 1999)

Superare la tendenza all'evitamento esperenziale, caratterizzato da atteggiamenti di fuga e di rifiuto nei confronti dei propri pensieri, emozioni e sensazioni fisiche. Questo obiettivo è correlato alla consapevolezza di poter scegliere le proprie azioni.



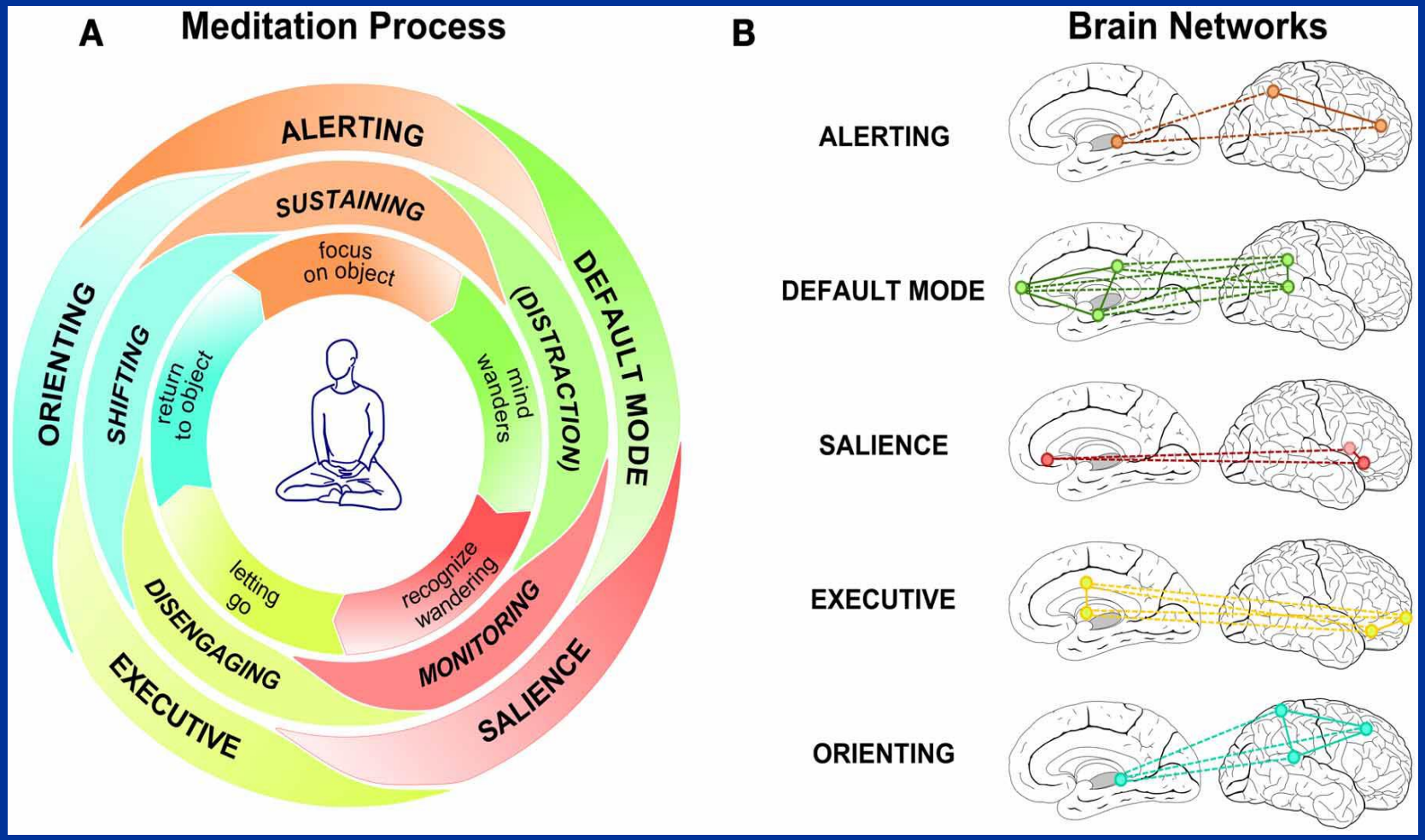
La scienza della meditazione di consapevolezza mindfulness mostra che il cervello cambia in maniera positiva con la pratica!

La pratica della mindfulness lavora:

Table 2. Components Proposed to Describe the Mechanisms Through Which Mindfulness Works

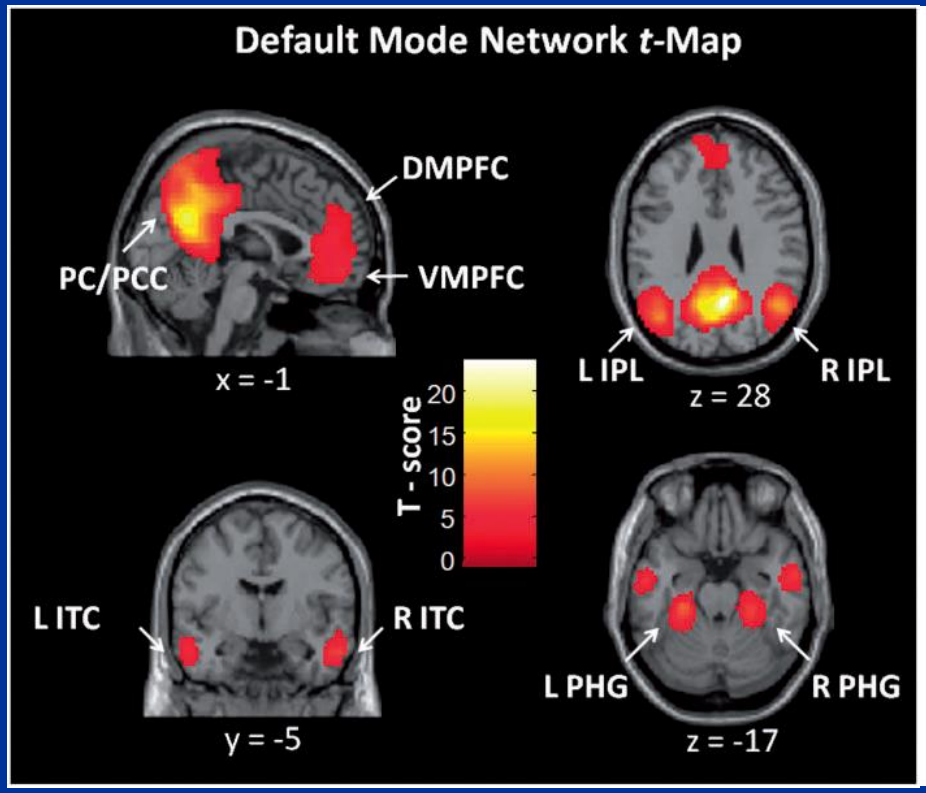
Mechanism	Exemplary instructions	Self-reported and experimental behavioral findings	Associated brain areas
1. Attention regulation	Sustaining attention on the chosen object; whenever distracted, returning attention to the object	Enhanced performance: executive attention (Attention Network Test and Stroop interference), orienting, alerting, diminished attentional blink effect	Anterior cingulate cortex
2. Body awareness	Focus is usually an object of internal experience: sensory experiences of breathing, emotions, or other body sensations	Increased scores on the Observe subscale of the Five Facet Mindfulness Questionnaire; narrative self-reports of enhanced body awareness	Insula, temporo-parietal junction
3.1 Emotion regulation: reappraisal	Approaching ongoing emotional reactions in a different way (nonjudgmentally, with acceptance)	Increases in positive reappraisal (Cognitive Emotion Regulation Questionnaire)	(Dorsal) prefrontal cortex (PFC)
3.2 Emotion regulation: exposure, extinction, and reconsolidation	Exposing oneself to whatever is present in the field of awareness; letting oneself be affected by it; refraining from internal reactivity	Increases in nonreactivity to inner experiences (Five Facet Mindfulness Questionnaire)	Ventro-medial PFC, hippocampus, amygdala
4. Change in perspective on the self	Detachment from identification with a static sense of self	Self-reported changes in self-concept (Tennessee Self-Concept Scale, Temperament and Character Inventory)	Medial PFC, posterior cingulate cortex, insula, temporo-parietal junction

Hölzel et al., 2011



Malinowski 2013

La mindfulness è una pratica per "fermare" il sistema default (dialogo interno) e l'abitudine di "viaggiare" nel tempo per tornare nel "qui e ora"



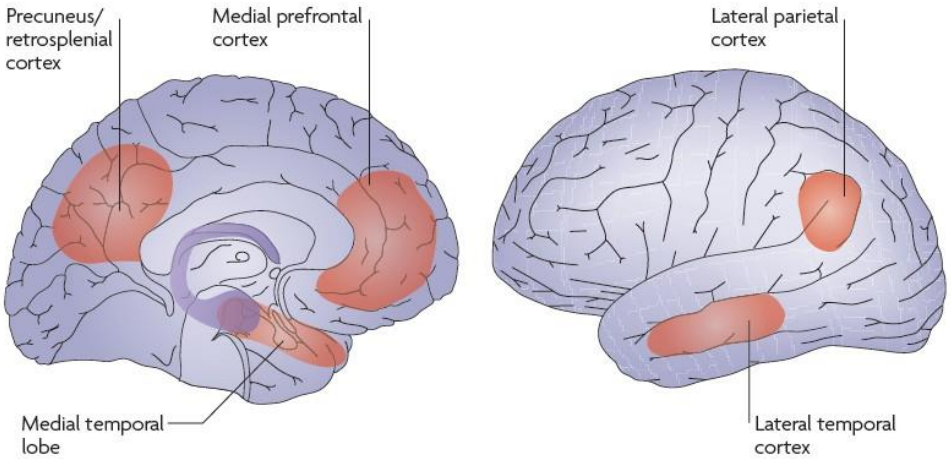


Figure 1 | **The core brain system that mediates past and future thinking.** The core brain system that is consistently activated while remembering the past[30,31,33], envisioning the future[26–28] and during related forms of mental simulation[32] is illustrated schematically. Prominent components of this network include medial prefrontal regions, posterior regions in the medial and lateral parietal cortex (extending into the precuneus and the retrosplenial cortex), the lateral temporal cortex and the medial temporal lobe. Moreover, regions within this core brain system are functionally correlated with each other and, prominently, with the hippocampal formation[34,35]. We suggest that this core brain system functions adaptively to integrate information about relationships and associations from past experiences, in order to construct mental simulations about possible future events.

Attivazione delle strutture MEDIALI (blu) e LATERALI (rosso) durante la Condizione default (sé narrativo) e durante la condizione di meditazione (sé esperienziale) (Farb et al. 2007).

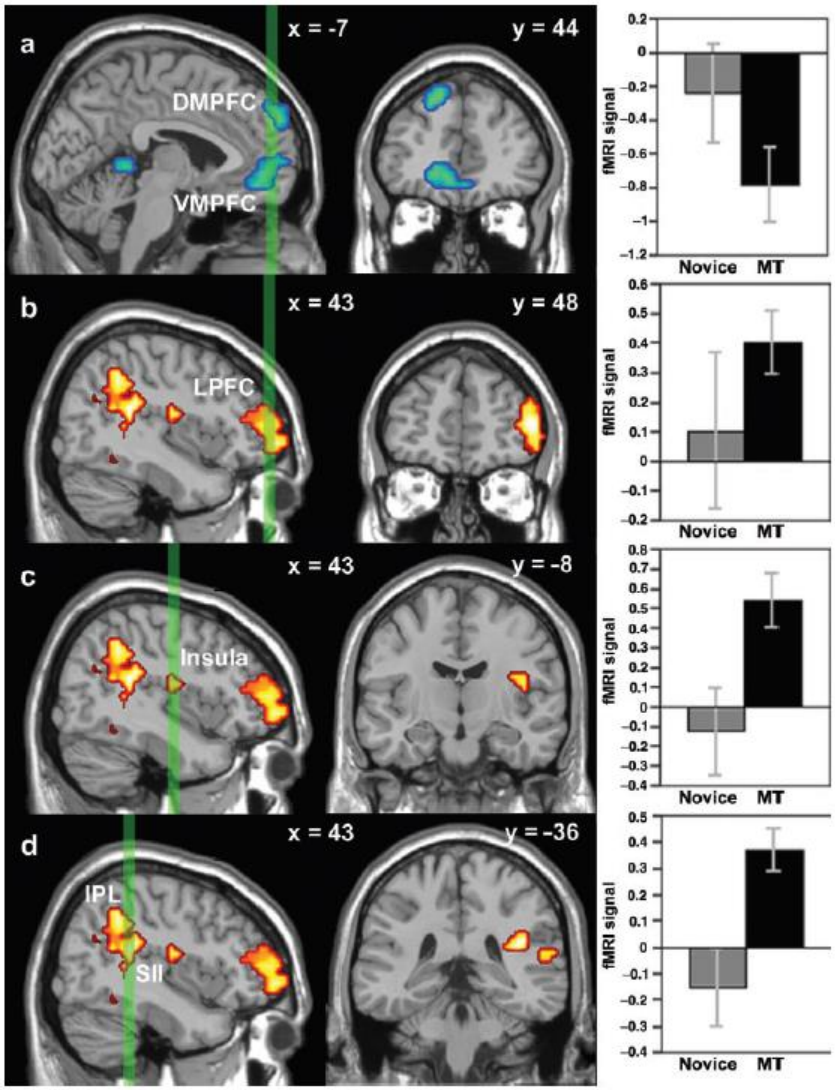


Fig. 3 Experiential *vs* Narrative focus conditions following 8 weeks of MT. Areas of activation showing a greater association with the experiential condition (Experiential > Narrative focus) are in red, and narrative-associated areas (Narrative > Experiential) are in blue: (A) ventral and dorsal MPFC, (B) right LPFC, (C) right Insula and (D) right SII cortex. Bar graphs indicate region of interest analyses of the magnitude of activation associated with the Narrative *vs* Experiential contrast in the MT and novice groups. Left panel green region represents *y* coordinate of each ROI. novice, pre MT group; MT, post MT group; VMPFC, ventromedial prefrontal cortex; DMPFC, dorsomedial prefrontal cortex; LPFC, lateral prefrontal cortex; Insula, insula; IPL, inferior parietal lobule; SII, secondary somatosensory area.

Regioni cerebrali attivate durante mind wandering con e senza consapevolezza (Christoff et al., 2009)

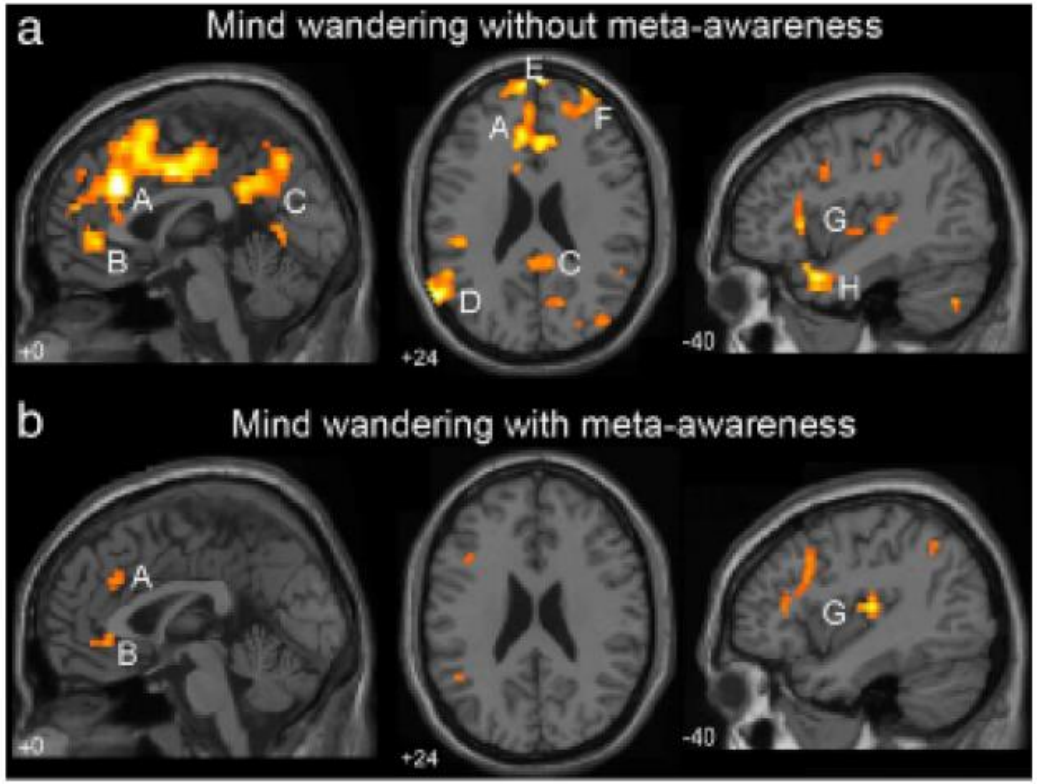


Fig. 4. Mindwandering in the absence (*a*) and presence (*b*) of meta-awareness. (*a*) Regions of activation associated with mind wandering in the absence of awareness (intervals prior to off-task unaware vs. on-task probes) included: (A) Dorsal ACC (BA 32), (B) Ventral ACC (BA 32), (C) Precuneus (BA 7), (D) Temporoparietal Junction (BA 39), (E) Dorsal Rostromedial PFC (BA 10), (F) Right Rostrolateral PFC (BA 10), (G) Posterior and Anterior Insula, and (H) Bilateral Temporopolar Cortex. (*b*) Similar regions were activated during mind wandering with awareness (intervals prior to off-task aware vs. on-task probes), but to a lesser degree, including: (A) Dorsal ACC (BA 32), (B) Ventral ACC (BA 24/32), and (G) Posterior and Anterior insula. Height threshold $P < 0.005$, extent threshold $k > 5$ voxels.

Computers in Human Behavior 59 (2016) 304–316

Contents lists available at ScienceDirect

Computers in Human Behavior

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Full length article

Psychological and physiological responses to stressful situations in immersive virtual reality: Differences between users who practice mindfulness meditation and controls

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Consciousness and Cognition 30 (2014) 266–280

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Consciousness and Cognition

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Effects of an 8-week meditation program on the implicit and explicit attitudes toward religious/spiritual self-representations

Cristiano Crescentini [a,b,*], Cosimo Urgesi [a], Fabio Campanella [c], Roberto Eleopra [d], Franco Fabbro [a,e]

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Routledge
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IMPROVING PERSONALITY/CHARACTER TRAITS IN INDIVIDUALS WITH ALCOHOL DEPENDENCE: THE INFLUENCE OF MINDFULNESS-ORIENTED MEDITATION

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frontiers in PSYCHOLOGY

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Mindfulness meditation and explicit and implicit indicators of personality and self-concept changes

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frontiers in Psychology

ORIGINAL RESEARCH
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Mindfulness-Oriented Meditation for Primary School Children: Effects on Attention and Psychological Well-Being

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COMPREHENSIVE PSYCHIATRY

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Mindfulness-oriented meditation improves self-related character scales in healthy individuals

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Mindfulness-oriented meditation improves self-related character scales in healthy individuals

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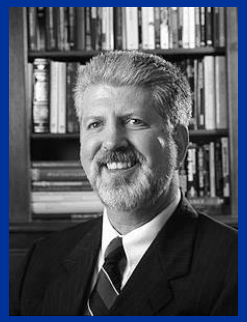
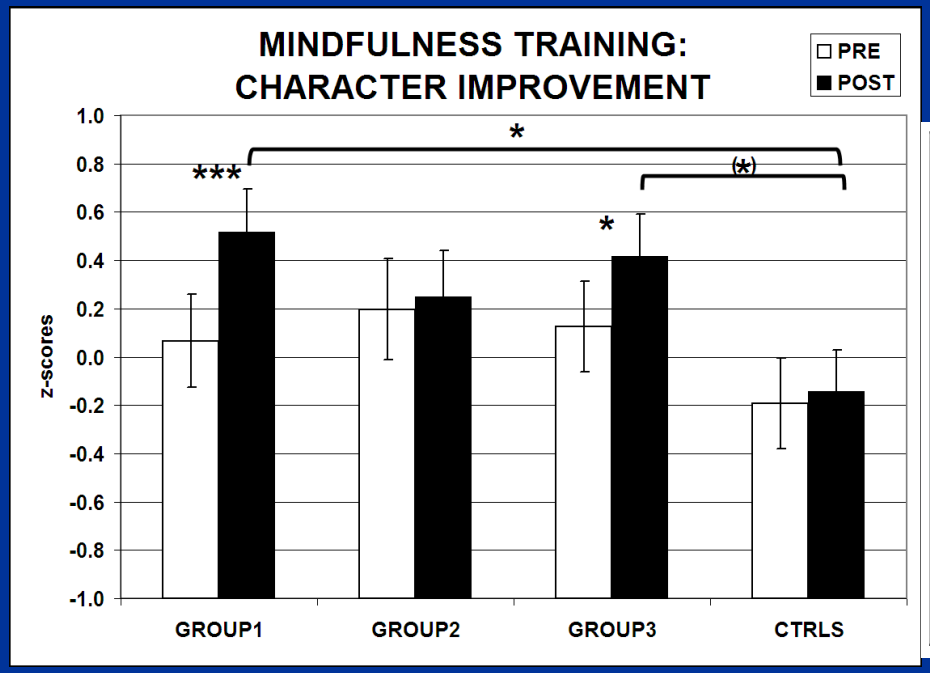
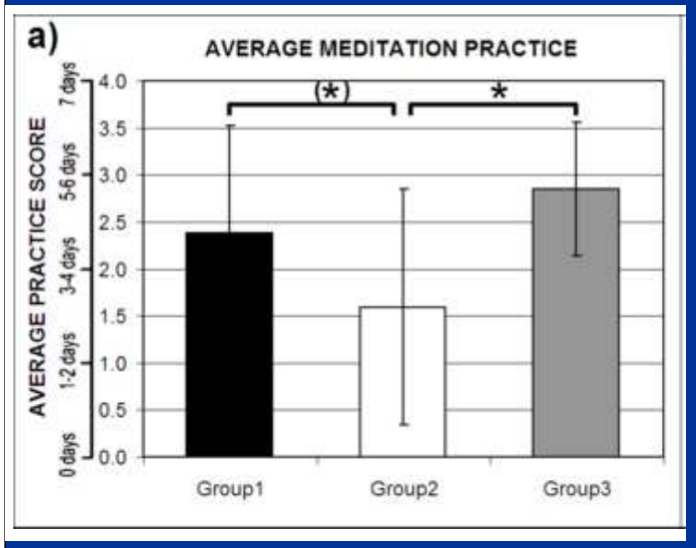


Temperament and Character Inventory (TCI)
Cloninger et al., 1994





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IMPROVING PERSONALITY/CHARACTER TRAITS IN INDIVIDUALS WITH ALCOHOL DEPENDENCE: THE INFLUENCE OF MINDFULNESS-ORIENTED MEDITATION

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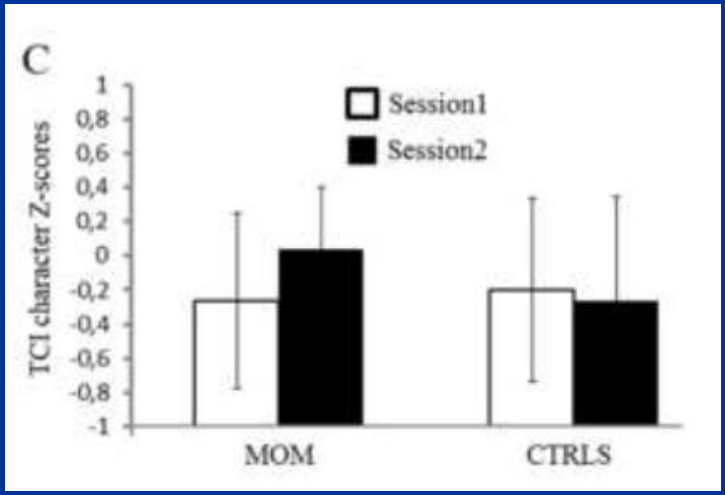
The study of personality is critical to enhance current knowledge of the psychological characteristics of alcohol dependence. Recent evidence shows that mindfulness-oriented meditation positively influences healthy individuals' character. Here, it was assessed whether 8-week mindfulness-oriented meditation promotes similar changes in a group of alcohol-dependent individuals. A control group with alcohol dependence was also tested. Mindfulness-oriented meditation participants showed an increase in the character scores of the temperament and character inventory together with reduced risks of relapse. These longitudinal data highlight the importance of assessing personality in alcohol-dependent individuals and support the utility of therapeutic interventions for alcohol dependence aimed at enhancing individuals' character.



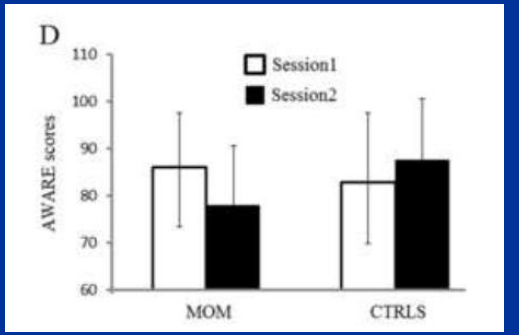


TABLE 1:

		n=	SESSION 1 Mean Z-score	SESSION 1 Std. Dev.	SESSION 2 Mean Z-score	SESSION 2 Std. Dev.
CONTROL GROUP	Novelty Seeking	13	0.137	0.861	0.172	0.736
	Harm Avoidance	13	0.300	1.124	0.379	1.110
	Reward Dependency	13	0.194	0.787	0.104	0.596
	Persistence	13	0.046	0.679	-0.011	0.700
	Self-Directness	13	-0.762	1.158	-0.572	1.255
	Cooperativeness	13	-0.319	1.118	-0.375	1.281
	Self-Transcendence	13	0.481	0.941	0.145	1.142
MOM GROUP	Novelty Seeking	13	0.502	0.925	0.164	0.928
	Harm Avoidance	13	0.538	1.149	0.060	1.069
	Reward Dependency	13	0.450	0.939	0.440	0.930
	Persistence	13	-0.693	1.084	-0.222	0.887
	Self-Directness	13	-1.269	1.162	-0.652	0.647
	Cooperativeness	13	-0.190	1.135	0.396	0.875
	Self-Transcendence	13	0.661	0.771	0.376	0.646

Consciousness and Cognition 30 (2014) 266–280

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Effects of an 8-week meditation program on the implicit and explicit attitudes toward religious/spiritual self-representations

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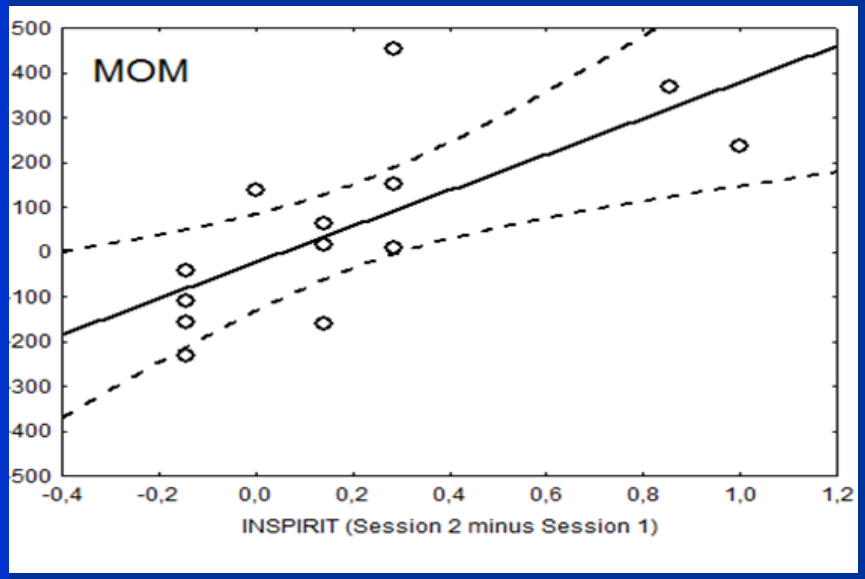
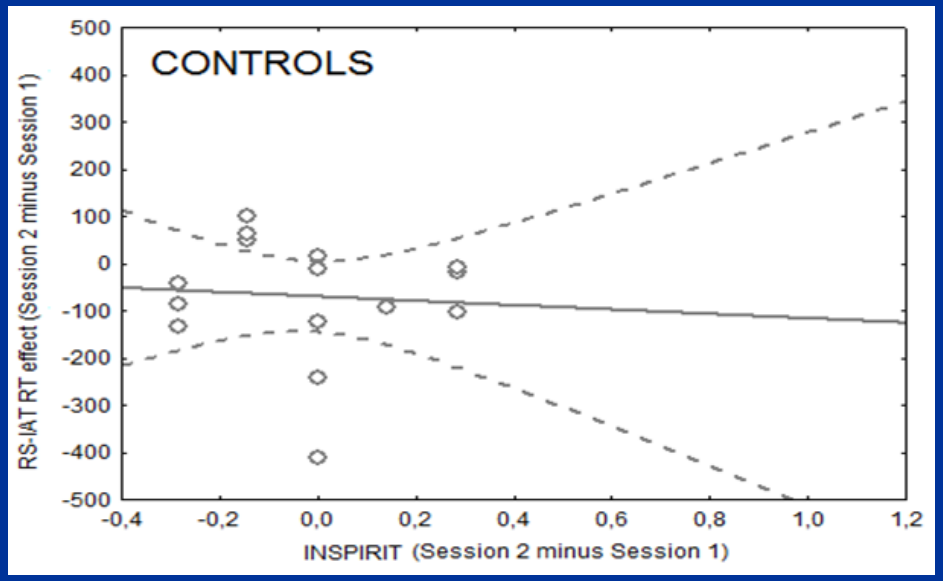
Implicit Spirituality (POST - PRE)





Explicit Spirituality (POST - PRE)

Mindfulness
https://doi.org/10.1007/s12671-017-0865-0

ORIGINAL PAPER

Single vs. Group Mindfulness Meditation: Effects on Personality, Religiousness/Spirituality, and Mindfulness Skills

Alessio Matiz[1] · Franco Fabbro[1,2] · Cristiano Crescentini[3]

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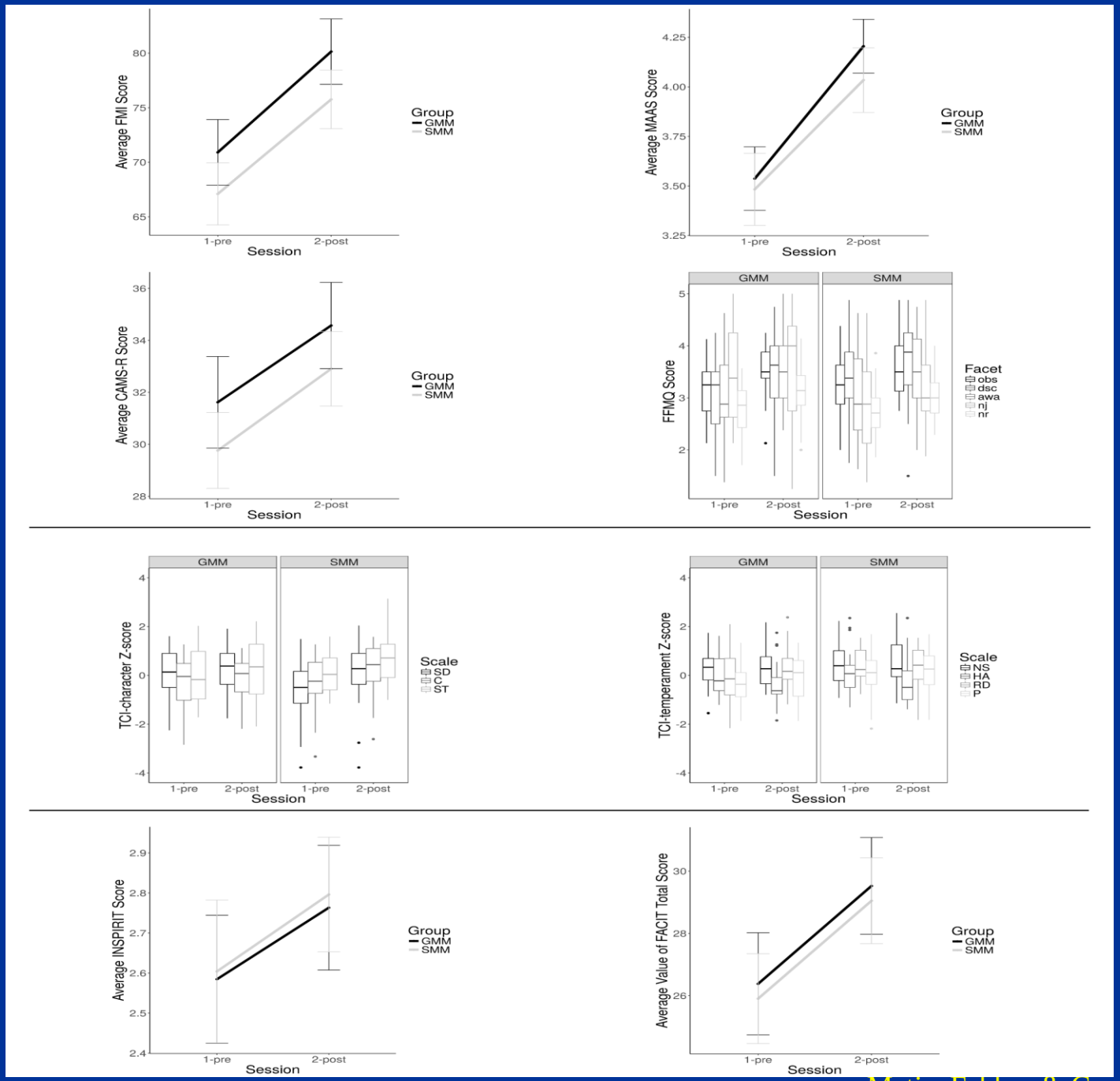
Abstract
Multiple lines of evidence show that mindfulness meditation (MM) improves practitioners' mental health. To date, most studies have tested the effects of mindfulness-based interventions (MBI), which typically combine the practice of mindfulness with in-class psychoeducation and discussions between teacher and practitioners. However, much less is known about the effects of MM practiced in individual settings. The present research investigated the impact of MM in individual (i.e., single) and group settings by testing mindfulness skills, personality profiles, religious/spiritual self-representation, and adherence to the training program, in relation to two groups of healthy adult practitioners. Findings showed that both groups of participants improved in all outcome measures (mindfulness skills, character maturity, and religiousness/spirituality) with no between-group differences, except for a more pronounced effect on the character maturity of those in an individual MM setting, during the 8-week individual and group MM trainings. Moreover, participants to individual and group MM settings meditated at home for a comparable amount of time and dropped out from their training at similar rates. The results suggest that MBI may have potential benefits both when performed in group settings and in individual settings, emphasizing the importance of mindfulness practice for personal growth and healing.

Keywords Single mindfulness meditation · Group mindfulness meditation · Personality · Temperament and Character Inventory · Religiousness/spirituality



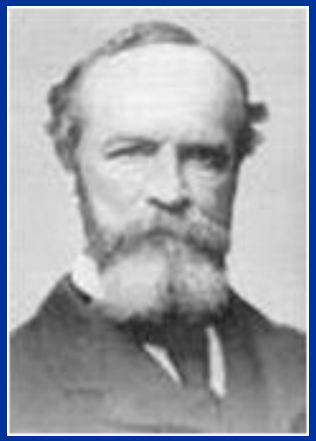
Matiz, Fabbro & Crescentini (2018)

Applicazioni della meditazione di consapevolezza in età evolutiva

Mindfulness nel contesto educativo

- Prime ricerche sugli effetti della mindfulness nel contesto educativo cominciano a partire dal 2000 (Biegel et al. 2009; Broderick and Metz 2009; Napoli et al. 2005)
- La letteratura è numericamente ristretta
- In primis si concentra principalmente su campioni ristretti, clinici (ADHD, depressione, disturbi d'ansia) e sulla riduzione di sintomi di ansia, stress o disordini della condotta
- Solo di recente ci si sta focalizzando anche su attenzione, funzioni cognitive e performance scolastica
- Gli effetti positivi si riscontrano in generale anche nell'ambiente scolastico: si coltiva l'accettazione delle emozioni, un atteggiamento gentile e non giudicante, la compassione.
- Tutto questo, applicato a se stessi e agli altri aiuta nella relazione con l'altro ed è una base solida per contrastare e prevenire disturbi della condotta e comportamenti oppositivi-sfidanti.

"The faculty of voluntarily bringing back a wandering attention, over and over again, is the very root of judgment, character, and will... An education which should improve this faculty would be the education par excellence"
-William James 1890



La facoltà di riportare costantemente indietro l'attenzione vagante, è la vera radice della saggezza, del carattere, della volontà.....Un'educazione che favorisse lo sviluppo di questa facoltà sarebbe l'educazione per eccellenza. Ma è più facile definire questo ideale che fornire delle istruzioni pratiche per crearla

-William James,
Principi di psicologia (1890)

Burke, 2010

J Child Fam Stud
DOI 10.1007/s10826-009-9282-x

ORIGINAL PAPER

Mindfulness-Based Approaches with Children and Adolescents: A Preliminary Review of Current Research in an Emergent Field

Christine A. Burke

Table 2 Mindfulness-based interventions with elementary school children

Study	N	Participant type	Age/grade	Intervention location	Research design	Treatment group	Control group	Random assignment	Dependent variables	Effect size/ data reported
Ott (2002)	1	Clinical, outpatient, gastroesophageal reflux	9 years	Outpatient clinic	Single case study	Mindfulness meditation intervention	No	No	Reflux symptoms, medication, sleep quality	No data reported
Semple et al. (2005)	5	Clinical, anxiety symptoms	7–8 years	School	Within participant pre-post	MBCT-C, 6 wks, wkly	No	No	Anxiety, internalizing and externalizing behavior	Trends in results, clinical observation
Singh, et al. (2009)	2	Clinical, ADHD	10–12 years	Not stated	Multiple baseline across participants	Mindfulness training, 12 wks parent, 12 wks chd	No	No	Children's compliance	Percentage data reported
Napoli, et al. (2005)	228	Non-clinical school students	Grades 1–3	School	RCT between groups pre-post	AAP fortnightly 24 wks	Yes quiet activities/ reading	Yes	Attention; social skills; behavior	Cohen's $d = .39–.60$
Saltzman and Goldin (2008)	74 (39 chn, 35 parents	Non-clinical self referred	Grades 4–6	Community setting	Between groups pre-post, wait list control	Modified MBSR, 8 wks, wkly	Yes, waitlist	Not stated	Attention, self compassion, depression, anxiety, mindfulness	Data analysis incomplete
Lee et al. (2008)	25	Non-clinical reading class	9–12 years	Community based reading clinic	Pre-post intent to treat, 2 phase open trial	MBTC-C, 8 wks, wkly	No	No	Internalizing, externalizing behavior, anxiety, depression	Cohen's $d = .11–.40$

MBSR Mindfulness-based stress reduction, *MBCT-C* Mindfulness-based cognitive therapy-children, *AAP* Attention academy program, *ADHD* Attention deficit hyperactivity disorder, *chd* Child, *chn* Children, *wkly* Weekly, *wks* Weeks, *develop. disabilities* Developmental disabilities

Burke, 2010 (2)

Table 3 Mindfulness-based interventions with high school adolescents

Study	*N*	Participant type	Age/grade	Intervention location	Research design	Treatment group	Control group	Random assignment	Dependent variables	Effect size/data reported
Bootzin and Stevens (2005)	55	Clinical, adolescents substance use, sleep disorders	13–19 years	Clinic	Pre-post within participant	MBSR, 5/6 wks, 6 wk cog th, light th, educ., stimulus control inst.	No	No	Sleep data, substance use, mental health, worry	$p < .05$ for some sleep indices, $p > .05$ all other measures
Zylowska et al. (2007)	32; 8 adol, 24 adults	Clinical, ADHD or probable ADHD	Adol mean 15.6 years; adult mean 48.5 years	Not stated	Pre-post within participant	MAPs, 8 wks, wkly	No	No	Attention, anxiety, depression	Pooled results, $p < .01$ some attn meas., all others non-signif
Singh, et al. (2007)	3	Clinical, conduct disorder	13–14 years	Not stated	Multiple base line across participants	Mindfulness meditation, 4 wks, 3 × wkly, 25 wk mindfulness practice	No	No	Aggressive and non-compliant incidents	Percentage data reported
Singh et al. (2008)	1	Clinical, Prader-Willi syndrome	17 years	Home-based	Within participant multiple baseline-changing criterion design	Multiple components: mindfulness meditation × 24 months, exercise, food awareness program	No	No	Body weight	Weight change in lbs, BMI reported
Bogels et al. (2008)	14 adol and parents	Clinical, externalizing disorders, mixed	11–18 years	Community mental health clinic	Within participant pre-post, intent to treat, f/up	MBCT, 8 wks, wkly	Non-random waitlist	Not stated	Goals, behavior, happiness, mindfulness	Cohen's $d = -0.1$–1.4; f/up: $d = -.02$–1.5, (at 8 wks)
Biegel et al. (2009)	102	Clinical, psychiatric disorders, mixed	14–18 years	Outpatient psychiatric clinic	RCT, pre-post, f/up within group	MBSR, 8 wks, wkly and TAU	Yes, TAU, waitlist	Yes	Mental health, GAF, stress, psych symp, self-esteem	Cohen's $d = .14$–1.11 (d = pre-test–f/up)
Wall (2005)	Not reported	Non-clinical school students	11–13 years	School	Nil	Elements of MBSR and Tai Chi	No	No	Nil	Informal observation, comments
Beauchemin et al. (2008)	34	Non-clinical volunteers	13–18 years	School	Pre-post within participant	Mindfulness meditation	No	No	Anxiety, social skills, academic performance	All $ps < .05$

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24 (2003) 158–169
Research in Developmental Disabilities

Soles of the Feet: a mindfulness-based self-control intervention for aggression by an individual with mild mental retardation and mental illness

Nirbhay N. Singh[a,*], Robert G. Wahler[b], Angela D. Adkins[c], Rachel E. Myers[d]

The Mindfulness Research Group[1]

2.1. Participant

James was a 27-year-old man who, because of uncontrolled aggression, had been institutionalized several times in a facility for developmental disabilities beginning at the age of 7. At the age of 15 years, he was placed in foster care but was admitted a year later to an adolescent psychiatric hospital to control his aggression. He was given an Axis I diagnosis of Conduct Disorder and an Axis II diagnosis of mild mental retardation. He was discharged after 4 months on a combined behavioral and psychopharmacological treatment. During the next 10 years, he was admitted and discharged several times from adolescent and later adult inpatient psychiatric hospitals. By this time he had experienced several group home placements and had developed a reputation among community providers as being "difficult" to deal with. All community providers had mandated that they would not accept him back into a group home or assisted living until he was free of aggression for 6 months in an inpatient psychiatric hospital.

His last admission prior to involvement with the current treatment was at the age of 26 when he seriously hurt one of his peers in a group home. He was admitted with an Axis I diagnosis of Psychotic Disorder, NOS and an Axis II diagnosis of mild mental retardation and treated with psychotropic medications (Seroquel and Zyprexa) and behavior therapy. His behavior treatment plan was developed initially on a trial-and-error basis until, after 4 months of implementation, it was found to be ineffective. A new behavior plan was developed based on a functional analysis and was implemented in the fifth month. His psychotropic medication was rationalized and by the eighth month he was on monotherapy of Risperdal. After 12 months as an inpatient without achieving much control of his verbal and physical aggression, James, at his request, was referred for alternative treatment because he was highly motivated to live in the community.

Table 1
Soles of the Feet training

Skill

Controlling the urge to be physically or verbally aggressive

Rationale

When an incident occurs or a situation arises that typically makes you angry and you feel like either verbally threatening or hitting someone, it is important to control these feelings. We try not to threaten or hurt people when we disagree with them. There is a simple way of quickly calming yourself

Steps of the Skill

1. If you are standing, stand in a natural rather than an aggressive posture, with the soles of your feet flat on the floor
2. If you are sitting, sit comfortably with the soles of your feet flat on the floor
3. Breathe naturally, and do nothing
4. Cast your mind back to an incident that made you very angry. Stay with the anger
5. You are feeling angry, and angry thoughts are flowing through your mind. Let them flow naturally, without restriction. Stay with the anger. Your body may show signs of anger (e.g., rapid breathing)
6. Now, shift all your attention to the soles of your feet
7. Slowly, move your toes, feel your shoes covering your feet, feel the texture of your socks or hose, the curve of your arch, and the heels of your feet against the back of your shoes. If you do not have shoes on, feel the floor or carpet with the soles of your feet
8. Keep breathing naturally and focus on the soles of your feet until you feel calm
9. Practice this mindfulness exercise until you can use it wherever you are and whenever an incident occurs that may lead to you being verbally or physically aggressive
10. Remember that once you are calm, you can walk away from the incident or situation with a smile on your face because you controlled your anger. Alternatively, if you need to, you can respond to the incident or situation with a calm and clear mind without verbal threats or physical aggression

Scenes to use in role-plays

1. Responding to someone who is saying something that offends you
2. Responding to a peer who threatens to hit you
3. Responding to a staff member or co-worker who is not nice to you
4. Responding to someone who pushes you around

Special considerations when teaching this Skill

1. Angry thoughts occur to all of us but not all of us act on all of them. In addition, anger can be justifiable and necessary depending on the context. Therefore, we do not want to eliminate anger entirely
2. Anger is a strength because it provides us with information about the situation we are in, and alerts us to do something positive to change the situation
3. Do not ask the individual to actively stop angry thoughts. The thoughts stop by themselves when the focus of attention shifts fully to the soles of the feet
4. Remind the individual to breathe naturally. It is not necessary to take deep breaths
5. This type of meditation can be done while standing, sitting, or walking slowly. Of course, with some modifications, it can be done while lying down but may not be convenient in the rush of daily activities

Table 2
Mean number of occurrences of target variables across phases

	History	Baseline	Intervention	Follow-up
Staff-reported behaviors				
Incidents		25.4	9.5	4.5
Self-control		0.0	5.4	4.5
Physical aggression	18.8	15.4	2.0	0.0
Verbal aggression	16.2	10.0	2.1	0.0
PRN medication	14.2	12.2	0.8	0.0
Physical restraints	11.8	10.4	0.0	0.0
Staff injuries	9.7	9.2	0.0	0.0
Resident injuries	9.1	8.6	0.6	0.0
Socially integrated activities	3.2	3.6	44.0	100+
Physically integrated activities	0.0	0.0	43.0	100+
Self-reported behaviors				
Incidents		30.8	11.5	6.3
Self-control		5.4	7.4	6.3

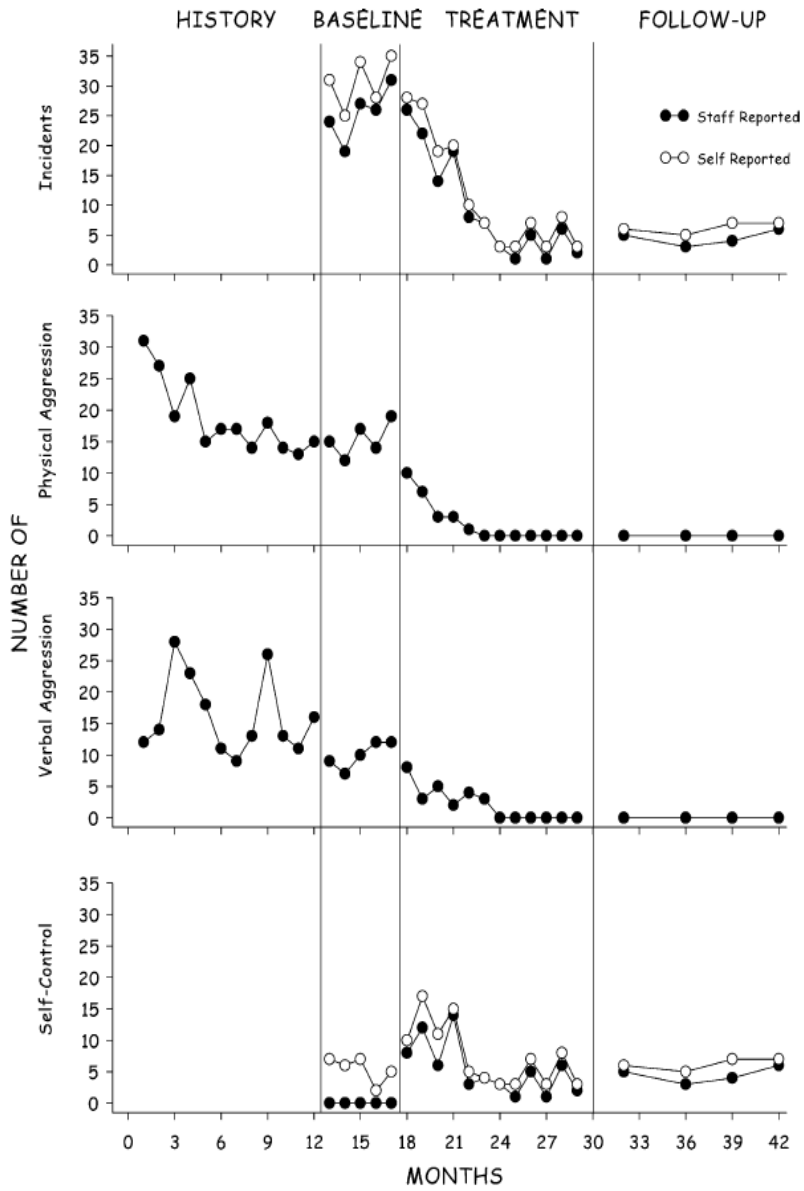

Fig. 1. Number of staff- and self-reported incidents and self-control responses, physical aggression and verbal aggression across phases.

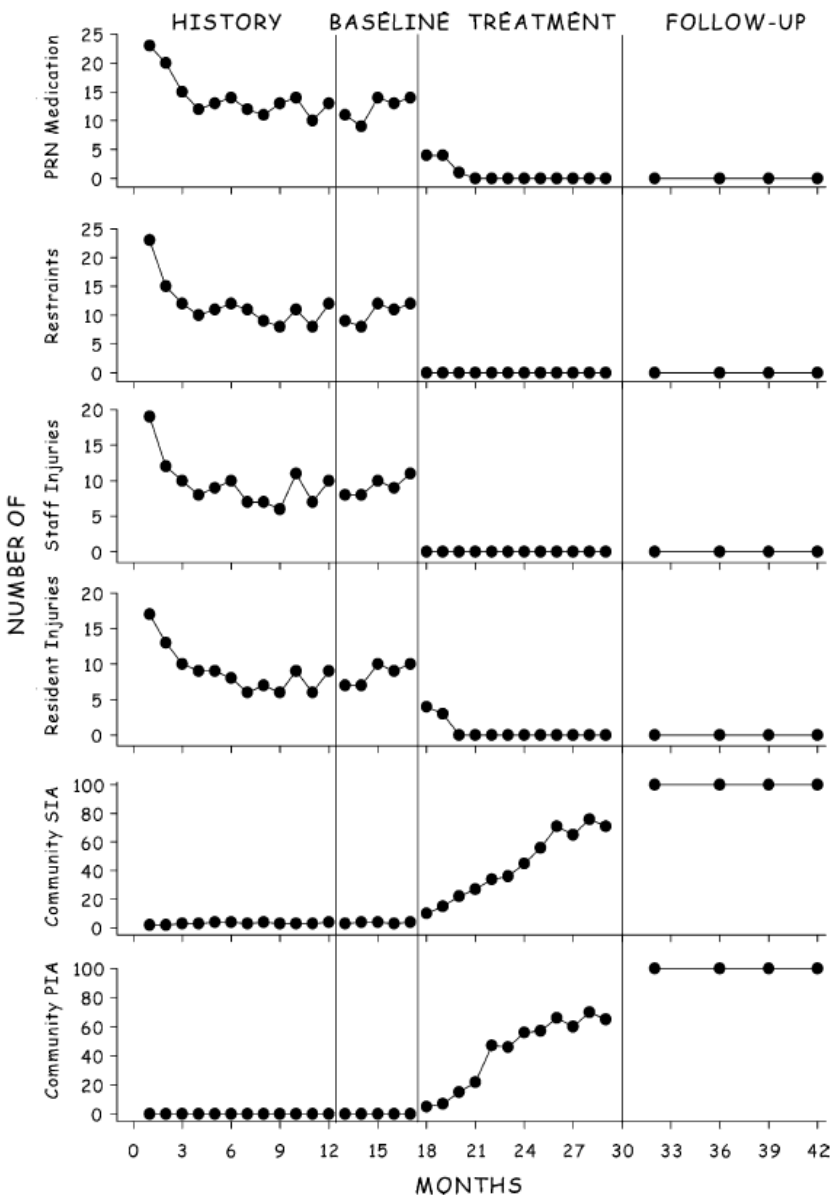

Fig. 2. Number of PRN medications, physical restraints, staff and resident injuries, and socially and physically integrated activities in the community.

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Mindfulness Meditation May Lessen Anxiety, Promote Social Skills, and Improve Academic Performance Among Adolescents With Learning Disabilities

James Beauchemin, MSW, Tiffany L. Hutchins, PhD, and Fiona Patterson, DSW

Students with learning disabilities (LD; defined by compromised academic performance) often have higher levels of anxiety, school-related stress, and less optimal social skills compared with their typically developing peers. Previous health research indicates that meditation and relaxation training may be effective in reducing anxiety and promoting social skills. This pilot study used a pre–post no-control design to examine feasibility of, attitudes toward, and outcomes of a 5-week mindfulness meditation intervention administered to 34 adolescents diagnosed with LD. Postintervention survey responses overwhelmingly expressed positive attitudes toward the program. All outcome measures showed significant improvement, with participants who completed the program demonstrating decreased state and trait anxiety, enhanced social skills, and improved academic performance. Although not directly assessed, the outcomes are consistent with a cognitive-interference model of learning disability and suggest that mindfulness meditation decreases anxiety and detrimental self-focus of attention, which, in turn, promotes social skills and academic outcomes.

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JACM

REVIEW ARTICLE

Autism and Mind–Body Therapies: A Systematic Review

Sarah Hourston, ND, MS,[1,2] and Rachel Atchley, PhD[1]

Abstract

Background: Mind–body therapies are often used by people with autism spectrum disorders (ASD). However, there has been little examination into which types of mind–body therapies have been investigated for people with ASD and for what purposes. A systematic review was conducted to evaluate the existing evidence for mind–body therapies for people with ASD, particularly to determine the types of mind–body therapies used and the outcomes that are targeted.

Methods: PubMed, PsychInfo, and Scopus were searched using terms for ASD and mind–body therapies. Sixteen studies were selected for review; these studies tested interventions using mindfulness, meditation, yoga, Nei Yang Gong, and acceptance commitment therapy. Most study outcomes targeted behavior, psychological symptoms, and quality of life for children and adults with ASD as well as their parents.

Results: There was little overlap between studies on the types of mind–body therapies used and associated outcomes, and only three of the studies were randomized controlled trials. Most studies were small and uncontrolled. Some studies modified the mind–body therapies to increase accessibility for people with ASD.

Conclusion: The evidence for mind–body therapies for people with ASD is limited and would benefit from larger randomized controlled trials.

Keywords: autism, Asperger syndrome, mind-body, yoga, mindfulness

Article

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The Effectiveness of Mindfulness-Based Therapies for ADHD: A Meta-Analytic Review

Molly Cairncross[1] and Carlin J. Miller[1]

Abstract

Objective: Mindfulness-based therapies (MBTs) have been shown to be efficacious in treating internally focused psychological disorders (e.g., depression); however, it is still unclear whether MBTs provide improved functioning and symptom relief for individuals with externalizing disorders, including ADHD. To clarify the literature on the effectiveness of MBTs in treating ADHD and to guide future research, an effect-size analysis was conducted. **Method:** A systematic review of studies published in PsycINFO, PubMed, and Google Scholar was completed from the earliest available date until December 2014. **Results:** A total of 10 studies were included in the analysis of inattention and the overall effect size was $d = -.66$. A total of nine studies were included in the analysis of hyperactivity/impulsivity and the overall effect was calculated at $d = -.53$. **Conclusion:** Results of this study highlight the possible benefits of MBTs in reducing symptoms of ADHD. *(J. of Att. Dis. XXXX; XX(X) XX-XX)*

Zoogman et al., 2014

Mindfulness
DOI 10.1007/s12671-013-0260-4

ORIGINAL RESEARCH

Mindfulness Interventions with Youth: A Meta-Analysis

Table 1 Effect sizes aggregated across all dependent variable types and study characteristics for included studies

Study	Outcome types	*del*	CI	*N*	Design type	Sample origin	Outside practice	Instructor experience	Tx length (wks)	Intervention type
Barnes et al. (2004)	Obj, Psych	0.20	[−0.17, 0.56]	73	RCT	Non-clinical	Yes	Trained	12	Part of MBSR
Barnes et al. (2008)	Obj	0.13	[−0.47, 0.72]	66	RCT	Non-clinical	Yes	Trained	12	Part of MBSR
Beauchemin et al. (2008)	Psych	0.62	[0.08, 1.16]	34	Tx only	Clinical	No	Trained	5	Other
Biegel et al. (2009)	Psych	0.56	[0.23, 0.89]	102	RCT	Clinical	Yes	Experienced	8	MBSR
Bogels et al. (2008)	Obj, Psych, Mind	0.24	[−0.57, 1.06]	14	Tx only	Clinical	Yes	Experienced	8	MBCT
Broderick and Metz (2009)	Psych	0.28	[−0.01, 0.56]	120	OCT	Non-clinical	No	Experienced	5	Other
Flook et al. (2010)	Mind	0.11	[−0.29, 0.51]	64	RCT	Non-clinical	No	Experienced	8	Other
Gregoski et al. (2010)	Obj	0.23	[−0.01, 0.47]	166	RCT	Non-clinical	Yes	Trained	12	Part of MBSR
Huppert and Johnson (2010)	Mind	0.00	[−0.29, 0.29]	155	RCT	Non-clinical	Yes	Experienced	4	MBSR
Joyce et al. (2010)	Psych	0.11	[−0.18, 0.41]	175	Tx only	Non-clinical	No	Trained	10	Other
Lee et al. (2008)	Psych	0.21	[−0.56, 0.99]	25	Tx only	Non-clinical	Yes	Experienced	12	MBCT
Liehr and Diaz (2010)	Psych	1.14	[0.20, 2.09]	18	RCT	Non-clinical	No	Experienced	2	Other
Mendelson et al. (2010)	Psych	0.22	[−0.13, 0.56]	97	RCT	Non-clinical	No	Experienced	12	Other
Napoli et al. (2005)	Obj, Psych, Mind	0.28	[0.05, 0.51]	228	RCT	Non-clinical	No	Experienced	24	Other
Schonert-Reichl et al. (2010)	Psych, Mind	0.21	[0.01, 0.41]	246	RCT	Non-clinical	Yes	Trained	10	Other
Semple et al. (2005)	Psych	0.16	[−0.58, 0.91]	4	Tx only	Clinical	Yes	Trained	6	Other
Semple et al. (2010)[a]	Psych, Mind	0.16	[−0.50, 0.81]	25	RCT	Non-clinical	Yes	Experienced	12	MBCT
Sibinga et al. (2011)	Psych	0.23	[−0.57, 1.03]	26	Tx only	Non-clinical	Yes	Experienced	9	MBSR
White (2011)[a]	Mind	0.01	[−0.39, 0.40]	155	RCT	Non-clinical	Yes	Experienced	8	Part of MBSR
Wright et al. (2011)	Obj, Psych	0.26	[−0.04, 0.56]	121	RCT	Non-clinical	Yes	Trained	12	Part of MBSR

Note: *Obj* = objective measures, *Psych* = measures of psychological symptoms, *Mind* = mindfulness-related measures (e.g., attention), *RCT* = randomized controlled trial, *OCT* = open-controlled trial (no randomization), *Tx* = treatment, *Tx only* = treatment only design, *del* = effect size (Becker 1988), *CI*=95 % confidence interval, *N* = study sample size, *MBSR* = mindfulness-based stress reduction, *MBCT* = mindfulness-based cognitive therapy, *Tx length (wks)* = length of treatment in weeks; [a] = Included non-active control group, imputed control group *g* used in effect size computations

Kallapiran et al., 2015

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Table 1. Study characteristics

Study ID	Sample characteristics	*N*	Age	Intervention	Control	Outcome measures	Quality	Between groups *ES* pre-post Hedges *g* (95% CI)	Between groups *ES* pre-FU Hedges *g* (95% CI)
Biegel, Brown, Shapiro, and Schubert (2009)	Clinical 49% depression 30.4% anxiety	102	14–17 73% female	MBSR 8 120 min Plus TAU	TAU Individual/group Therapy/ medicines	GAF PSS SCL-90 – anxiety SCL-90 – depression	Medium	8 weeks Stress 0.54 (0.25, 0.84) Anxiety 0.30 (0.02, 0.58) Depression 0.64 (0.36, 0.93) QOL 0.94 (0.65, 1.24)	3 months Stress 0.80 (0.51, 1.09) Anxiety 0.55 (0.27, 0.84) Depression 0.71 (0.42, 1.0) QOL 1.4 (1.16, 1.79)
Salamon , Hainsworth, Ladwig, Davies, and Weisman (2013)	Clinical Chronic pain	6	12–18 75% female	MBSR 6 90 min+ parent	Psycho-education	NA	Low	6 weeks	
White (2012)	Nonclinical School setting	155	8–11 100% female	MBSR (yoga) 8 60 min + HW	Waitlist	FBS	Medium	8 weeks Stress 0.29 (0.02, 0.62)	
Potek (2012)	Nonclinical School setting	30	14–17 48.4% female	MBSR 6 45 min + HW	Waitlist	MASC PSS	Low	6 weeks Stress 0.44 (0.25, 1.14) Anxiety 1.19 (0.44, 1.94)	
Sibinga et al. (2013)	Nonclinical School setting	41	12.5 (m) All boys	MBSR 6 45 min	Health Topics	PSS MASC SCL-90 Depression	Medium	12 weeks Stress 0.23 (0.37, 0.84) Anxiety 0.29 (0.32, 0.91) Depression 0.36 (0.25, 0.97)	3 months Anxiety 0.23 (0.38, 0.85)
Semple, Lee, Rosa and Miller (2010)	Nonclinical Reading difficulty	25	9–13 60% female	MBCT-C 12 90 min + HW	Waitlist	MASC CBCL	Medium	12 weeks Anxiety 0.89 (0.07, 1.7)	
Raes, Griffith, Van der Gucht, and Williams (2014)	Nonclinical School setting	408	13–20 64% female	MBSR and MBCT 8 100 min	No treatment control	DASS	High	8 weeks Depression 0.42 (0.22, 0.64)	
Hayes, Boyd and Sewell (2011)	Clinical Depression	38	12–18 71% female	ACT	TAU (CBT/family)	RADS	Medium	Variable Depression 1.05 (0.36, 1.74)	3 months Depression 6.64 (4.99, 8.3)
Swain et al. (2013)	Clinical Anxiety	193	7–17 58% female	ACT + parent 10 90 min	CBT + parent and waitlist	CHQ MASC CDI	High	vs. waitlist 10 weeks Anxiety 0.73 (0.37, 1.09) Depression 0.19 (0.16, 0.54) QOL 1.16 (0.77, 1.52) vs CBT 10 weeks Anxiety 0.02 (0.32, 0.36) Depression 0.17 (0.17, 0.52) QOL 0.26 (0.08, 0.61)	3 months vs. CBT Anxiety 0.23 (0.11, 0.58) Depression 0.20 (0.14, 0.55) QOL 0.30 (0.04, 0.65)

Zenner et al., 2014

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Mindfulness-based interventions in schools—a systematic review and meta-analysis

*Charlotte Zenner, Solveig Herrmleben-Kurz and Harald Walach **

Table 1 | Empirical studies on MBI's in a school-setting.

Study	*N*	Age range, mean (*SD*), grade and gender	School/ participant description (country)	Study design	Measures and domain		g_{Hedges} Baseline equivalence	g_{Hedges} Within-group	g_{Hedge} Differences in change scores	Reported findings according to authors
RANDOMIZED CONTROLLED TRIALS										
1. Desmond and Hanich, 2010	40	11–12, 6th grade 41% female	Urban, public middle school, low income (USA)	M-group ($n = 15$) vs. C ($n = 25$)	BRIEF (teacher)	T	0.26	0.04	0.31	MANOVAs: No sig. time by group interaction (all *ps* > 0.05). Multiple regression analysis: Sig. interaction between pre-test score and group membership for predicting differences in one of eight subscales, indicating that M-group showed greater improvement in ability to shift ($p < 0.05$). In general, M-group maintained or improved executive function skills, while C shows a decline.
2. Flook et al., 2010	64	7–9 8.23 (0.66) 2nd + 3rd grade 55% female	On-campus university elementary school, diverse ethical backgrounds (USA)	M-group ($n = 32$) vs. C ($n = 32$)	BRIEF (teacher) BRIEF (parent)	T T	0.31 0.27	0.20 0.39	0.08 0.12	MANCOVAs with post-test scores as outcome variables: No sig. group main effect, indicating no group differences for pre- to post-test ($p < 0.05$). Sig. interaction between baseline levels and group in teacher report ($p = 0.005$) as well as in parent report ($p = 0.020$). In M-group, children with poorer initial executive function showed greater improvement at Time 2 compared to C.
3. Franco Justo, 2009	60	15–18 17.3 1st + 2nd year high school 72% female	3 public secondary schools (Spain)	M-group ($n = 30$) vs. waitlist c ($n = 30$), follow-up after 3 months	TTCT (verbal) -Fluency -Flexibility -Originality	C	 −0.11 0.05 −0.05	 1.50 1.53 1.61	 1.48 1.87 1.67	Independent and dependent *t*-Tests: Sig. improvement from pre- to post-test in M-group in all subscales (Fluency, Flexibility, Originality; all *ps* < 0.01) and no improvement in C (all *ps* > 0.05). At post-test M-group shows significantly higher scores in all subscales compared to C (all *ps* < 0.01). Effects sustained at follow up compared to pre-test (all *ps* = 0.001), but not compared to post-test (all *ps* > 0.05).
4. Franco Justo et al., 2011a	61	16–18 16.75 (0.83) 1st year high school 48% female	3 compulsory secondary schools, public (Spain)	M-group ($n = 31$) vs. waitlist c ($n = 30$) Schools were allocated at random	Grades Self-concept STAI	C R E	−0.27 0.59 0.35	1.52 1.55 0.62	1.43 1.84 0.11	Dependent and independent *t*-Tests: Sig. improvement from pre- to post-test in M-group in all measures (all *ps* = 0.001) and no improvement in C (all *ps* > 0.05). Sig. difference between groups in post-tests (all *ps* > 0.01). Detailed analysis: students with middle range academic performance show the most improvement in Grades (Cohen's $d = 3.05$), Students with low self-concept show most improvement in self-concept ($d = 5.12$), students with high state anxiety benefited the most on state anxiety ($d = 1.95$) and students with medium trait anxiety benefited the most on trait anxiety ($d = 1.44$).

(Continued)

Felver et al., 2016

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ORIGINAL PAPER

A Systematic Review of Mindfulness-Based Interventions for Youth in School Settings

Table 2 Summary of the research on mindfulness-based interventions in school settings

Category	Description of major findings
Research designs	Many studies used large sample sizes
	Only a third of the research used experimental design
	Few studies used an active control condition
	Most studies implemented interventions within the normal classroom setting
	Most studies use student self-report as the primary dependent variable
Subject characteristics	Studies conducted across a balanced range of ages and grade levels
	Lack of reporting of student demographic characteristics, particularly disability and socio-economic status
	Many studies include students with diverse ethnic-racial backgrounds
Intervention characteristics	Varied types of studies in terms of mindfulness practices and "dosage" (i.e., minutes, sessions, and duration of intervention)
	Many studies included elements of Mindfulness-Based Stress Reduction
	Studies used both teacher or an outside facilitators to deliver intervention
	Majority of studies used a group intervention format conducted in a classroom during the school day
Outcomes	Most studies included a single informant, typically students
	No school-collected data (e.g., grades) included in analyses
	Few studies collected post-intervention follow-up data
	Few studies used multi-method, multi-informant approach to data collection

Table 3 Recommendations for future research on mindfulness-based interventions in school settings

Category	Recommendations
Research designs	Use experimental randomized control trial designs
	Use active control condition that includes both didactic and experiential components
	Account statistically for effect of students being nested within classrooms and schools
Subject characteristics	Report full subject details, including individual and school characteristics
	Explore implementation with students with identified disabilities and/or learning disabilities
Intervention characteristics	Replicate existing interventions as oppose to testing new approaches
	Need to conduct component analyses including testing for dosage effects
	Scientifically evaluate the amount of preparation needed to effectively deliver MBI
	Meta-analyses of existing intervention outcomes
Outcomes	Include multi-method multi-informant outcomes
	Include data collected by school districts, including academic achievement and behavioral outcomes
	Collect follow-up data

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Mindfulness-Oriented Meditation for Primary School Children: Effects on Attention and Psychological Well-Being

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Mindfulness-based interventions are increasingly being used as methods to promote psychological well-being of clinical and non-clinical adult populations. Much less is known, however, on the feasibility of these forms of mental training on healthy primary school students. Here, we tested the effects of a mindfulness-meditation training on a group of 16 healthy children within 7–8 years of age from an Italian primary school. An active control condition focused on emotion awareness was employed on a group of 15 age-matched healthy children from the same school. Both programs were delivered by the same instructors three times per week, for 8 total weeks. The same main teacher of the two classes did not participate in the trainings but she completed questionnaires aimed at giving comprehensive pre-post training evaluations of behavior, social, emotion, and attention regulation skills in the children. A children's self-report measure of mood and depressive symptoms was also used. From the teacher's reports we found a specific positive effect of the mindfulness-meditation training in reducing attention problems and also positive effects of both trainings in reducing children's internalizing problems. However, subjectively, no child in either group reported less depressive symptoms after the trainings. The findings were interpreted as suggestive of a positive effect of mindfulness-meditation on several children's psychological well-being dimensions and were also discussed in light of the discrepancy between teacher and children's reports. More generally, the results were held to speak in favor of the effectiveness of mindfulness-based interventions for healthy primary school children.

Keywords: primary school children, mindfulness-meditation, teachers' report, attention, psychological well-being

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TABLE 3 | Mean *T*-scores and standard deviations (in parentheses) obtained by children in the MOM and control groups in the two testing sessions (i.e., before and after the trainings).

CTRS – R	Pre-training MOM group *M T*-score *(SD)*	Post-training MOM group *M T*-score *(SD)*	Pre-training control group *M T*-score *(SD)*	Post-training control group *M T*-score *(SD)*
Oppositional	49 (6.76)	48.81 (7.12)	49.46 (5.99)	48.8 (5.11)
Cognitive Problems/Inattention*	49.81 (8.63)	47.75 (5.49)	45.73 (3.01)	45.6 (2.84)
Hyperactivity	48.37 (6.84)	47.87 (6.39)	47.2 (5.33)	47.13 (5.71)
Anxious-Shy	48.56 (9.23)	47.12 (8.13)	44.06 (4.23)	43.26 (3.89)
Perfectionism	45.81 (7.79)	45.12 (7.01)	44.26 (5.67)	43.46 (4.47)
Social Problems	53.12 (9.72)	52 (8.54)	51.06 (5.75)	50 (6.30)
ADHD Index*	48.06 (6.60)	46.37 (4.93)	46.33 (5.15)	46.46 (5.22)
DSM-IV: Inattention**	50.68 (10.16)	48.75 (6.64)	46.73 (5.02)	46.53 (5.04)
DSM-IV: Hyperactivity	47.50 (4.85)	47.31 (4.46)	46.93 (5.25)	47 (5.81)
CGI: Restless-Impulsive*	48.25 (6.90)	46.62 (6.14)	45.86 (5.26)	45.73 (5.11)
CGI: Emotional Lability	49.87 (7.75)	48.06 (6.58)	46.13 (5.19)	46 (5.19)
CGI: Total	48.5 (7.08)	46.81 (6.36)	45.66 (5.17)	45.46 (4.88)

*CTRS-R stands for Conners Teacher Rating Scale-Revised; ADHD stands for Attention deficit/hyperactivity disorder; CGI stands for Conners Global Index; DSM-IV stands for Diagnostic and Statistical Manual of Mental Disorders 4th Edition. * Indicates the scales for which significant effects were found in the MANOVA analysis after the application of a Bonferroni correction for multiple comparisons; ** Indicates the scales for which marginally significant effects were found in the MANOVA analysis after the application of the Bonferroni correction (see main text for further details). The anxious-shy, perfectionism, social problems, CGI: Emotional Lability, and CGI: Total scores were not individually analyzed but the data are still reported in the table.*

MOM vs CNT

1° week	2° week	3° week	4° week	5° week	6° week	7° week	8° week

MOM

3 DAYS	3 DAYS	3 DAYS	3 DAYS	3 DAYS	3 DAYS	3 DAYS	3 DAYS
3’ breath	4’ breath	5’ breath	6’ breath	7’ breath	8’ breath	9’ breath	10’ breath
3’ body	4’ body	5’ body	6’ body	7’ body	8’ body	9’ body	10’ body
3’ thoughts	4’ thoughts	5’ thoughts	6’ thoughts	7’ thoughts	8’ thoughts	9’ thoughts	10’ thoughts

CNT

3 DAYS	3 DAYS	3 DAYS	3 DAYS	3 DAYS	3 DAYS	3 DAYS	3 DAYS
4’ reading	6’ reading	7’ reading	9’ reading	10’ reading	12’ reading	13’ reading	14’ reading
5’comments	6’comments	8’comments	9’comments	11’comments	12’comments	14’comments	16’comments

30 min 45 min 1 h 1 h e 30 min

Aspetti del training MOM

Componenti chiave:

1. Calmare la mente e focalizzare l’attenzione sul respiro
2. Essere presenti alle sensazioni provenienti dal corpo
3. Osservazione dei pensieri e emozioni
4. Gentilezza verso se stessi e gli altri

TABLE 1 | Overview of the activities included in the MOM and active control training conditions.

Week	Timing per day (min)	Timing per week (min)	Mindfulness-oriented meditation (MOM)	Active control condition
1	9	27	• Feeling the abdomen moving while breathing. • Listening to the sounds of the body after a run. • Observing thoughts as they were clouds in the sky.	Chapter 1–2 Following the protagonist's story, try to listen to the heart and try to feel the emotions laying inside.
2	12	36	• Feeling the hand on the abdomen while breathing. • Slowly walking in the class feeling every single part of the leg moving. • Trying to see the main thought – the main cloud - in the mind and writing it down on paper.	Chapter 3–4–5 Try to associate the feelings with the pixies described in the book.
3	15	45	• Feeling a mate's breath putting the hands on his/her abdomen. • Taking a mate's hand and feeling the contact. • Trying to feel the emotions related to the main thought of the moment.	Chapter 6–7 Try to find the pixies that lay in our heart in the different situations.
4	18	54	• Trying to feel the breath in the nose, without controlling it. • Touching the different parts of the face. • Trying to see the path of a thought: where it comes from and how it disappears.	Chapter 8–9 Express the feelings related to the emotions laying in the heart.
5	21	63	• Trying to think the word "in" when air enters the nose, "out" when air comes out from the nose. • Imaging an object and drawing it. Then observing the chosen object in details and drawing it again. • Drawing a mate or a relative and mentally addressing some friendly wishes to the mate (peace, happiness, health).	Chapter 10–11–12 Try to draw the emotions of the moment.
6	24	72	• Trying to feel the difference of breath by putting the hands on the throat, on the chest, on the abdomen. • Raisin meditation: trying to smell, watch, and touch the raisin before eating it. • Silently watching the eyes of the mates. Trying to understand their thoughts.	Chapter 13–14–15 Try to draw where the emotion found in the heart comes from.
7	27	81	• Feeling the points that air touches when it comes in and out. • Imaging to be an animal and moving like it. • Visualizing thoughts as a masquerade parade. Observing them and noticing that they are external to the person.	Chapter 16–17–18 Try to draw the path of the emotions: where they come from and where they go, if they disappear.
8	30	90	• Imaging a little man in the nose that moves, following the air coming in and out. • Laying down pretending to be a paper and imaging to scan the body, as if you were in a copying machine. • Visualizing thoughts as a masquerade parade, drawing them and observing the differences between thoughts and drawing.	Chapter 19–20–21 Try to find a still and quiet place in the heart to enter when feeling overwhelmed by emotions.

A brief description of the activities is given for each week. Activities remained constant for the three meetings of a given week. Chapter in the active control condition refers to chapters of the Six pixies in my heart book (Corallo, 2011).