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La meditazion orientade a la *mindfulness* (MOM) inte ricercje mediche e psicologjiche

FRANC FARI*, CRISTIANO CRESCENTINI**

Ristret. La meditazion *mindfulness* e costituìs il sietim pont di un troi cun vot stazions. Si trate di un program psicopedagogjic par liberâsi dal dolôr fisic e psichic metût adun plui di 2500 agns indaûr di Siddharta Gautama, un princip indian cognossût come il Buddha. Gautama al à insegnât cemût praticâ la *mindfulness* intal *Grant discors sui fondaments de presince mentâl*. L'obietîf di cheste meditazion al è chel di imparâ a diventâ cussients dal propri respîr, dal cuarp e imparâ a cjalâ cun atenzion ce che al capite inte nestre ment. Il metodi di meditazion orientade a la *mindfulness* (MOM) metût adun dai autôrs al è organizât in vot setemanis. Par ogni setemane al ven fat un incuintri di 2 oris. I prins 30 minûts dal incuintri a vegnin doprâts par spiegâ un concet impuartant pe *mindfulness*; daspò si medite par 30 minûts (10 minûts puartant la atenzion sul respîr; 10 puartant la atenzion sul cuarp e 10 minûts cjalant ce che al sucêt jenfri la ment). A la fin de meditazion si discutin i risultâts e lis dificoltâts de meditazion par 60 minûts. I autôrs a àn doprât chest metodi par puartâ indenant 6 ricercjis publicadis a nivel internazionâl e altris cuatri in cors di publicazion. Intai prins doi studis e je stade studiade la rapresentazion neuronâl de meditazion MOM, in particolâr chê leade a la cussience dal cuarp (Tomasino e Fabbro 2016; Tomasino et al. 2016). Intes secondis dôs ricercjis a son stadis studiadis lis modificazions de personalitât daspò un cors di meditazion (Campanella et al. 2014; Crescentini et al. 2014). Intes ultimis dôs publicazions al è stât studiât l'efiet de *mindfulness* su lis personis cun dipendence alcoliche e la utilitât dal training MOM in fruts di siet-vot agns (Crescentini et al. 2015a e 2016).

Peraulis clâf. Meditazion, *mindfulness*, neuropsicologjie, psicopatologjie.

1. Introduzion: lis origjins storichis de meditazion *mindfulness*.

Lis peraulis 'medisine' e 'meditazion' a derivin, dutis dôs, dal verp latin 'me-

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deri' che al significhe 'curâ', 'vuarî'. Di fat, la meditazion e je une pratiche spirituâl che e à l'obietîf di vuarî lis personis cun soference fisiche, psicologjiche e spirituâl. Par cheste reson intai ultins 30 agns la meditazion, che si è disvilupade soredut intes tradizions spirituâls dal Orient, si è une vore doprade in medisine e in psicologjie. Se si va a viodi intal portâl di medisine plui doprât intal mont: www.pubmed.gov, a risultin publicâts plui di 1.000 articui sientifics che a rivuardin la *mindfulness meditation*; impen par *mindfulness and pain* si cjatin plui di 300 lavôrs e par *mindfulness and brain* plui di 290 (portâl consultât ai 06/11/2015). Un dai moments plui significatîfs des ricercjis sientifichis su la meditazion è je stade la preparazion di percors standardizâts di meditazion di mût di podê confrontâ i risultâts des diferentis ricercjis. In chest articul al ven descrit il percors di meditazion MOM disvilupât dai autôrs e doprât in 6 ricercjis sperimentâls publicadis.

La meditazion *mindfulness* e je stade disvilupade di plui di 2500 agns dal princip indian Siddharta Gautama, dal popul dai Sakya, che daspò un periodi di assetisim, si jere dal dut realizât (*nibbana*), sveantsi completamentri a nivel spirituâl (*Buddha*). Daspò, Gautama al à passât plui di 40 agns a insegnâ ai siei dissepui cemût rivâ ae complete realizazion. Un dai principis fondamentâi dal so insegnament al rivuardave la impuartance fondamentâl de ment umane. Secont Gautama la realtât e je une costruzion mentâl e nol è pussibil puartâ indenant une azion intal mont cence cjapâ in considerazion la ment. Secont Gautama lis personis a àn di cirî di mantignîsi intune vie di mieç, evitant i doi estremis dal edonisim e dal assetisim (Bareau 1985; Gombric 2009, 2011).

Il sisteme psicopedagogjic disvilupât di Gautama al à cuatri afermazions gjenerâls, che a son stadis clamadis "lis cuatri nobilis veretâts". La prime e sosten che la ment, e duncje dute la realtât, e je caraterizade de esistence dal maljessi e dal dolôr (*dukka*). La seconde afermazion e dîs che la soference e il dolôr a àn origjin de transitorietât intrinseche di dutis lis robis (*anicca*); cheste transitorietât e costituìs la font dai trê velens principâi de ment: il desideri, l'odi e la ignorance. La tierce afermazion e sosten che ducj i umans a puedin liberâsi dal maljessi e dal dolôr rivant a realizâsi completamentri (*nibbana* e *paranibbana*). La cuarte afermazion e mostre la vie par deliberâsi dal dolôr (Bareau 1985; Gunaratana 2001).

La vie par rivâ a la liberazion definitive dal maljessi e dal dolôr e je stade presentade di Gautama come un troi cun 8 scjalins che a àn un caratar progressîf ma, intal stes timp, a àn di jessi metûts in pratiche in ogni moment. Il prin scjalin al rivuarde la juste comprension (*sammā diṭṭhi*), ven a stâi che la nature de psiche e de realtât a son caraterizadis in maniere intrinseche dal maljessi; il secont scjalin si riferìs a la juste intenzion (*sammā saṃkappa*) par rivâ a deliberâsi; il tierç scjalin si riferìs a la juste peraule di doprâ (*sammā vācā)* par no fâ dal mâl a nô stes e a chei altris; il cuart scjalin al rivuarde lis azions justis (*sammā kammanta*) par no aumentâ lis nestris soferencis e chês di chei altris; il cuint scjalin si riferìs a la juste condote di vite (*sammā ājīva*), che e à di stâ tra i doi estremis de baldorie, di une bande, e dal assetisim, di chê altre.

I trê ultins scjalins si riferissin a la pratiche de meditazion par deliberâsi dal maljessi. In particolâr, il sest scjalin al rivuarde il sfuarç just di fâ par meditâ (*sammā vāyāma*); il setim scjalin al rivuarde la pratiche de meditazion di cussience (sammā sati), che par inglês si clame *mindfulness*; l'ultin scjalin al rivuarde la juste concentrazion unitive (*sammā samādhi*). Duncje la meditazion *mindfulness* e rapresente il setim scjalin dal troi di vot ponts che nus puarte a la deliberazion dal maljessi e dal dolôr.

2. Cemût che si pratiche la meditazion *mindfulness*. Cemût praticâ la meditazion *mindfulness* (*sammā sati*) al è stât insegnât diretementri di Gautama intal *Grant discors sui fondaments de presince mentâl* (*Mahasatipaṭṭhāna Sutta)*, che al è il vincjesim secont discors de *Racuelte dai discors luncs* (*Dīgha Nikāya*), une des cinc racueltis che a formin il zei dai discors fats dal Buddha (*Sutta Pitaka*) (Gnoli 2001; Wynne 2009). Il *Grant discors sui fondaments de presince mentâl* al è stât metût adun in forme verbâl subit daspò la muart dal Buddha e butât jù in forme scrite in lenghe Pali intal I secul prime di Crist (Gombrich 2009).

In chel discors Gautama al insegne cemût realizâ la contemplazion dal cuarp, prin di dut puartant la atenzion sul respîr: "in maniere cussiente si insipire e in maniere cussiente si espire". Cun di plui, la cussience dal cuarp e ven puartade indenant: a) puartant la atenzion su lis diviersis parts dal cuarp ("si à di cjapâ in considerazion lis diferentis parts dal cuarp partint de plante dai pîts par rivâ al cjâf; o pûr partint dal cjâf par rivâ a la plante dai pîts"); b) puartant la atenzion a la posizion dal cuarp ("si à di jessi cussients di dutis lis posizions che il cuarp al cjape"); c)

puartant la atenzion sui moviments dal cuarp ("si à di jessi cussients di dut ce che si sta fasint, cuant che si va e cuant che si ven, [...] cuant che si mangje, bêf, cuant che si mastie e cuant che si gjolt ce che si mangje"; d) puartant la atenzion su lis sensazions dal cuarp ("cuant che si à une biele sensazion si sa che si sta vint une biele sensazion; cuant che si à une sensazion di dolôr si sa che si sta vint une sensazion di dolôr"). La ultime part dal *Grant discors sui fondaments de presince mentâl* al rivuarde la pratiche de osservazion de nature de ment. Par esempli: cjalant cemût che a comparissin o a scomparissin i desideris: "il miò cjâf al è plen di desideris", o pûr "il miò cjâf al è vueit di desideris"; cjalant il comparî e scomparî dal rancûr; "il miò cjâf al è plen di rancûr" o pûr "il miò cjâf al è vueit di rancûr"; cjalant il comparî e il scomparî de confusion: "il miò cjâf al è plen di confusion", o pûr "il miò cjâf al è vueit di confusion" (Walshe 1995; Gnoli 2001). Il *Grant discors sui fondaments de presince mentâl* al mostre cemût che si à di puartâ indenant il setim scjalin dal troi de liberazion insegnât dal Buddha (Gunaratana 1991); cheste pratiche di cussience e corispuint a la meditazion *Vipassanā* (meditazion di clare vision, par inglês: *insight meditation*) disvilupade inte tradizion buddhiste *theravada* (la scuele dai vecjos) che si cjate inte isule di Cylon (Sri Lanka), in Birmanie e in Thailandie (U Ba Kin 2001).

Inte seconde metât dal secul passât si è scomençât a discuti su la pussibilitât di doprâ la meditazion *mindfulness* e *Vipassanā* in psicologjie e in medisine (Naranjo e Ornstein 1972, Shapiro e Walsh 2008); dut a chel dome a la fin dai agns Setante, Jon Kabat-Zinn al à disvilupât un *training* standardizât di meditazion di cussience, clamât *Mindfulness-Based Stress Reduction* (MBSR) (Kabat-Zinn 1994, 2006), une vore doprât in psicologjie e medisine. Chest *training* al è organizât in 8 riunions, une par setemane; ogni riunion e dure 2 oris indulà che a vegnin presentadis cuistions teorichis insiemi a moments di pratiche meditative, cun ancje esercizis di *Habta yoga*, e un moment finâl di discussion. Il metodi MBSR al è stât doprât par disvilupâ centenârs di ricercjis sperimentâls che a àn mostrât che la *mindfulness* e covente a miorâ lis curis di une vore di malatiis organichis, come il cancri, il dolôr cronic e di malatiis psicologjichis, come il stress, la ansie e la depression (Kabat-Zinn 2003; Ludwig, Kabat-Zinn 2008). Cun di plui, la meditazion *mindfulness* e somee jessi un imprest une vore bon par miorâ la formazion dai miedis, psicolics e insegnants.

3. Metodologjie. Descrizion dal training di meditazion orientade a la *mindfulness*. Il training di meditazion orientade a la *mindfulness* (MOM) al somee une vore al program disvilupât par Kabat-Zinn, viodût che ancje il program MOM al è organizât in un incuintri di 2 oris par 8 setemanis; cun di plui lis personis si impegnin a meditâ almancul 30 minûts ogni dì. La pratiche de meditazion MOM e à come riferiment il *Grant discors sui fondaments de presince mentâl*. Par ogni incuintri la pratiche de meditazion e dure 30 minûts: 10 minûts pe pratiche de cussience dal respîr (*ānāpānasati*), 10 minûts pe contemplazion des parts dal cuarp, 10 minûts pe pratiche di osservazion de ment. Durant la meditazion MOM lis personis a stan simpri sentadis e no si fâs nissun esercizi di yoga. Finide la meditazion si fasin 60 minûts di condivision e discussion di problemis, *insight* o pûr cambiaments intal lavôr o inte vite di ogni dì colegâts cu la meditazion (Fabbro e Muratori 2012).

Ognidun dai 8 incuintris al scomence cu la presentazion di un concet colegât cu la *mindfulness*. Intal prin incuintri si presente une *introduzion storiche a la meditazion* mindfulness. Cheste forme di meditazion e je stade disvilupade in Orient jenfri une tradizion spirituâl. Diferentementri de ricercje sientifiche che no contemple nissune veretât assolude, l'insegnament di Gautama al sosten che la nature intrinseche de ment e je la soference e il dolôr (Fabbro 2014). Une atenzion particolâr e ven dade al insegnament de juste posizion e posture che si à di tignî inte meditazion e sui imprescj, come lis cuviertis e i cussins, che a puedin jessi doprâts.

Intal secont incuintri si rispuint a la domande: *ce robe ise la meditazion* mindfulness*?* Inte meditazion *mindfulness* il sogjet al à di stâ fer, cirint di mantignî la atenzion volontarie sul compit (cussience dal respîr, dal cuarp, osservazion de ment). Duncje, inte meditazion no si à di fâ nuie, fasint il lavôr plui dificil che al esist, ven a stâi jessi in ogni moment cussient di esisti. Di fat, la meditazion *mindfulness* no je ce che la int pal solit e pense, no je une tecniche par rilassâsi, no je un metodi par mandâ subit vie ducj i problemis, no je un metodi par rivâ ae estasi o ae trance, no je une tecniche par vuadagnâ podês sorenaturâi; e je une pratiche par aumentâ la cussience (Gunaratana 2001). Rivâ a mantignî la cussience al è un compit une vore dificil parcè che o sin abituâts a vivi in maniere automatizade (Kabat-Zinn 2006). Cu la pratiche de *mindfulness* si impare a cjapâ ce che al capite, a no vê premure, a no rimpinâsi a nuie e a no re-

fudâ nuie, a lassà lâ vie, a jessi delicâts cun se stes e a viodi i problemis come oportunitâts.
Intal tierç incuintri e ven presentade la cuistion de *consapevolece di sbaliâ*. La meditazion *mindfulness* e scomence cu la concentrazion de atenzion sul respîr, sul cuarp o su la ment; daspò un pôc di timp che o sin cussients la ment e scomence a pierdisi intai ricuarts, inte fantasie, intai pinsîrs; a un ciert pont il sogjet si inacuarç di vê pierdût la atenzion; si inacuarç di vê sbaliât; alore cence rabiâsi, cuntune pose zentile al torne a puartâ la atenzion sul compit (Hasenkamp et al. 2012; Malinowski 2013). Inte *mindfulness* si rive a deventâ cussients propit intal moment che si inacuarzìsi di vê sbaliât; propit in chel moment si à di cjapâ une pose no judicante e zentile, fasint bocje di ridi (*metta*). La pose no judicante no vûl dî autoindulgjence o justificazion dai erôrs (ven a stâi de pierdite de cussience); al vûl dî, invezit, jessi pronts a ricognossi i erôrs cence rabiâsi. Cun di plui, la pose no judicante e significhe jessi pronts a ricognossi ducj i judizis che a nassin inte ment bielvie che o stin meditant.
Intal cuart incuintri si disvilupe la tematiche di rivâ a *vivi chi e cumò* (Kabat-Zinn 2004). I oms a ân un dispositîf mentâl che ur permet di spostâsi intal timp (*mental time travel*); la imagjinazion mentâl e fâs in mût che i oms a sedin bogns di tornâ a costruî il passât e imagjinâsi l'avignî (Schacter et al. 2007). Chest sisteme mentâl al à dât ai oms une vore di pussibilitâts, par esempli la memorie episodiche, la memorie autobiografiche, la costruzion di imprescj, la capacitât di fâ plans pal avignî, la capacitât di disvilupâ il pinsîr storic; ma al à dât ancje dai limits. La capacitât di spostâsi mentalmentri intal timp al à amplificât la disposizion a no vivi intal moment di cumò, ma invezit inte imagjinazion. Si à viodût che lis personis in medie a son simpri cul lôr cjâf a pensâ a robis passadis o pûr a imagjinâ l'avignî. Scjampâ vie dal moment presint al è un dai mecanisims di difese plui doprâts dai oms par no sintî il maljessi che ducj a àn dentri di lôr (Fabbro, Cresentini 2014). Par cheste reson la peraule *sati* (*mindfulness*) si riferìs al impegn di vivi intal chi e cumò, ven a stâi inte uniche dimension vere de esistence.
Intal cuint incuintri al ven presentât il concet di *disidentificazion*. Si trate di un argoment centrâl de meditazion *mindfulness*, avonde dificil di capî. La pratiche di focalizâ la atenzion sul respîr che al jentre e al va fûr dal nâs, insiemi a la concentrazion de atenzion su lis diviersis parts dal

cuarp e sui cambiaments che a capitin dentri de ment a judin la persone a disvilupâ un centri di osservazion interiôr. Chest gnûf centri al da la pussibilitât di mantignî une "cierte distance" dal propri respîr, dal propri cuarp e dai contignûts che a capitin inte ment (ricuarts, fantasiis, emozions e pinsîrs). La distance che si ven a stabilî tra il pont di osservazion e i pinsîrs, fantasiis, ricuarts o emozions e ven clamade *disidentificazion*, o ancje *decentrament*, *defusion* o pûr *ripercezion* (Shapiro, Carlson 2009). Chest procès nus jude a capî che chel che al sucêt inte ment e l'osservadôr no son la stesse robe, ven a stâi che la cussience dai propris sintiments e je diferente dai sintiments stes (Segal et al. 2002; Shapiro, Carlson 2009). Rivâ a mantignî une distance juste dai contignûts de ment al jude la nassite de clarece mentâl, de obietivitât e de ecuanimitât.
Intal sest incuintri e ven presentade une riflession sul probleme de *deautomatizazion*. Daûr diferentis tradizions spirituâls (De Salzmann 2010), confermadis di une vore di ricercjis psicologjichis (Lager 1989; Kahneman 2011), i oms a vivin, la grande part dal timp, in maniere automatizade e incussiente. La condizion di vite automatizade e somee il sisteme di vuide dai aeroplans indulà che al è stât metût in funzion il pilote automatic. Si trate di une condizion psicologjiche dongje a la ipnosi e al sonambulisim. La automatizazion e ridûs la pussibilitât di cjapâ decisions consapevulis e e sbasse une vore la capacitât de memorie episodiche. Invezit la meditazion *mindfulness* e aumente il ricuart di se stes (la peraule meditazion in sanscrit e *je bhāvana*, che e vûl dî "visâsi di se stes"). Duncje la meditazion *mindfulness* e jude a "tornâ a sveâsi", vignî fûr dal sium de automatizazion, disvilupâ une tecniche par jessi vîfs in maniere cussiente, invezit di jessi reatîfs in maniere incussiente. Cun di plui la deautomatizazion nus da une grande flessibilitât e libertât di azion e e costituìs la puarte par jentrâ intune dimension spirituâl (Deikman 1966).
Intal setim incuintri e ven presentade la capacitât di *stâ denant dal dolôr*. La int, almancul in ocident, e cîr, se e pues, di scjampâ vie dal dolôr e de soference. I fruts piçui a reagjissin lamentantsi o vaint. I grancj, pal plui, a dinein la soference e il dolôr psichic, soredut spostant la atenzion su altris robis, o pûr taponant il probleme: ridusint la sensibilitât sul cuarp, la cussience dai sintiments e des emozions; ven a stâi puartantsi intun mût di vivi automatizât. Altris voltis di front dal dolôr lis personis a rispuindin cun sintiments di rabie, agressivitât e depression. La *mindfulness* e

cîr di disvilupâ une gnove modalitât di stâ denant dal dolôr, ven a stâi invezit di scjampâ vie, metisi denant de soference cirint di deventâ cussients des carateristichis dal dolôr (localizazion, intensitât, variazions intal timp). Si cîr di imparâ a stâ fers denant dal dolôr cun cussience e dignitât, fasint bocje di ridi (Fabbro, Crescentini 2014).
Intal otâf e ultim incuintri e ven presentade la capacitât di *lassâ lâ vie*. Un bon pont di partence par imparâ a rinunziâ al sintiment di control e abandonâsi al moment di cumò al è chel di concentrâ la atenzion sul maljessi e sul dolôr. Daspò vê imparât a stâ cun dignitât denant dal dolôr, si cîr di focalizâ la atenzion sui sintiments e lis emozions che a nassin dentri di nô, come par esempli la urgjence di scjampâ vie, ribelâsi o protestâ; propit cuant che chescj sintiments a cressin dentri di nô o podìn imparâ a lassâju lâ vie, fasint bocje di ridi. Lassâ lâ vie al vûl dî che o molìn la prese e il control de situazion, si lassìn lâ al moment presint fasint bocje di ridi. O vivìn il moment di cumò cence cirî di cambiâlu, o acetìn la situazion cence resisti o lotâ. Lassâ lâ vie la abitudin a controlâ la situazion nus vierç ai sintiments di compassion viers di nô e ducj chei altris. Acetâ lis robis come che a son nol vûl dî che o sin dacuardi cun dut ce che al sucêt, ma che o viodìn lis robis in maniere cussiente come che a son in chest moment e lis lassìn jessi.
Il metodi de meditazion orientade a la *mindfulness* (MOM) daspò jessi disvilupât plui di dîs agns indaûr di bande di un dai autôrs (F.F.) al è stât doprât intune vore di cors di Educazion Continuative in Medisine (ECM) tignûts intal Ospedâl di Udin e inte Universitât di Udin. Duncje al è stât pussibil meti sù un grop di personis che a pratichin la meditazion *mindfulness* cun regolaritât, selezionant une desene di istrutôrs (personis che a pratichin la meditazion di agns e che a àn imparât a insegnâ intai cors di meditazion, https://groupmom.wordpress.com). Chest fat al à puartât a realizâ une serie di cors MOM par miedis, psicolics e insegnants disvilupâts in gjenar a gratis. Viodût che chescj cors a son stâts realizâts ae Universitât a son stâts, cuasi simpri, materie di ricercjis sperimentâls.

4. Risultâts. Studis neuropsicologjics su la meditazion orientade a la *mindfulness*. Il grop di ricercje su la meditazion *mindfulness* de Universitât dal Friûl, prin di dut, al à analizât lis struturis dal cerviel che a son

impegnadis inte meditazion cun doi studis di meta-analisi de leterature. Intal prin studi a son stâts analizâts 24 lavôrs sperimentâi cun 150 ponts di ativazion, cuntune tecniche di neuroimagjin (PET o fMRI), biel vie che i sogjets a meditavin. Cuant che i sogjets a meditavin si ativavin une schirie di struturis cerebrâls, come: il zîr frontâl mediâl bilaterâl, il lobi parietâl superiôr di çampe, il zîr soremargjinâl di drete e la insule di çampe (Tomasino et al. 2013). Intun secont studi a son stadis studiadis lis struturis cerebrâls colegadis di une bande a lis formis di meditazion che si ispiravin a la tradizion buddhiste (16 esperiments e 96 ponts di ativazion), confrontadis cu lis struturis che si ativavin cun formis di meditazion che si ispiravin a la tradizion induiste (8 esperiments e 54 ponts di ativazion). Si è viodût che lis formis di meditazion che si ispiravin al buddhisim a ativavin une schirie di struturis dal lobi frontâl colegadis a lis funzions esecutivis, dimpen lis formis di meditazion che si ispiravin a la tradizion hinduiste a ativavin il zîr postcentrâl, il lobi parietâl superiôr, l'ipocjamp e la scuarce dal cingul mediâl (Tomasino et al. 2014), struturis colegadis cul sisteme emozionâl e cu lis esperiencis religjosis (Fabbro 2010).
Di resint a son stâts puartâts indenant doi studis di risonance magnetiche funzionâl in sogjets che a àn fat un *training* di meditazion orientade a la *mindfulness* (MOM) di 8 setemanis. Intal prin studi si è cirût di analizâ lis struturis cerebrâls coreladis a un program di meditazion *mindfulness*. I sogjets a àn fat doi esercizis di *mindfulness*, *ānāpānasati* e contemplazion dal cuarp, prime e daspò il *training* di 8 setemanis. La analisi des neuroimagjins e à studiât la ativazion e la deativazion des struturis cerebrâls daûr dal paradigme fMRI: "daspò la meditazion" mancul "prime de meditazion". Cussì si è podût viodi che il *training* MOM al determinave une *ativazion* de scuarce prefrontâl dorsolaterâl di drete, dal cuarp caudât e de insule anteriôr di drete (struturis gnervosis coreladis cu la atenzion volontarie e cul bielstâ fisic) (cfr. Figure 1). Intal stes timp si à podût viodi che il *training* MOM al determinave une *deativazion* de scuarce prefrontâl mediâl e de scuarce somatosensoriâl di drete (struturis coreladis cu la rapresentazion dal cuarp e dal se) (Figure 1; cfr. Tomasino, Fabbro 2016). Dal pont di viste des neurosiencis chescj risultâts a mostrin che il *training* MOM al è dal dut comparabil cun altris *training* di meditazion *mindfulness*, in particolâr cul *training* MBSR (cfr. Tomasino et al. 2014). In t'une seconde ricercje cu la fMRI a son stadis studia-

dis lis struturis cerebrâls colegadis a la rapresentazion di se stes in diferentis prospetivis. Daspò il *training* MOM i sogjets a jerin bogns di disvilupâ une vision di se stes plui distacade che si corelave cuntune ativazion dal zîr orbitâl mediâl dal lobi frontâl di drete (Tomasino et al. 2016). Un setôr di studi une vore interessant al inten la modificazion de personalitât e dal se daspò un *training* di meditazion MOM (cfr. Crescentini, Capurso 2015). Intun prin studi a son stâts studiâts i efiets dal *training* MOM su la personalitât misurâts cul *Temperament and Caracter Inventory* (TCI) di Cloninger (Cloninger et al. 1994). A son stâts metûts adun cuatri grops di sogjets: i prins trê a àn fat un *training* MOM, il cuart no (grop di control). I grops 1 e 2 a àn meditât cun regolaritât par doi mês; invezit il grop 3 al à meditât une vore pôc. Si è podût viodi cussì che i prins doi grops (1 e 2) a presentavin une modificazion significative des variabilis relativis al disvilup positîf de personalitât (autonomie, cooperativitât e autotrassendence). Invezit, chei altri doi grops (3 e 4) no àn mostrât nissun miorament (Campanella et al. 2014). Cuntun secont studi a son stadis studiadis sei lis variazions cussientis de personalitât daspò un *training* MOM, ma ancje lis variazions incussientis, midiant un *Test di Associazion Implicite* (IAT) (Crescentini et al. 2014). Cun chest secont studi si à podût viodi che il *training* MOM al modifiche, in sens positîf, sei lis componentis spirituâls cussientis de personalitât sei chês incussientis. Chescj risultâts a sostegnin la ipotesi che un *training* di meditazion *mindfulness* al è bon di rinfuartî in maniere coerente i aspiets religjôs e spirituâi dal se. I efiets di un *training* di meditazion *mindfulness* a son stâts studiâts ancje intun grop di sogjets che a presentavin une dipendence dal alcool. Ancje chestis personis daspò vê praticât la *mindfulness* par 8 setemanis a àn mostrât un disvilup positîf dal se misurât cul TCI; cun di plui a àn sbassât cetant, rispiet a un grop di control, la tendence a tornâ a bevi sostancis alcolichis (Crescentini et al. 2015a).
Di resint si è cirût di studiâ l'efiet di un *training* di meditazion *mindfulness* MOM in fruts de scuele primarie, di 7-8 agns. A son stâts metûts dongje doi grops di fruts, un che al à fat il *training* MOM par doi mês e un altri grop di control, che al à disvilupât un metodi di cognossince des emozions. I fruts che a fasevin il *training* MOM a àn scomençât a meditâ 9 minûts a la volte la prime setemane (3 minûts di *ānāpānasati*; 3 minûts di contemplazion dal cuarp e 3 minûts di osservazion de ment), aumentant simpri di plui il timp di meditazion fin a rivâ ai classics 30 minûts te otave setemane. In ducj i fruts prime e daspò i *training* a son stadis misuradis des variabilis psicologjichis midiant la *Child Behavior Checklist-Teacher Report Form* (CBCL-TRF) e la *Conners Teacher Rating Scale-Revised* (CTRS-R). Il prin risultât impuartant al è stât chel di mostrâ che ancje i fruts sot dai 10 agns a son bogns e ancje contents di fâ un *training* di meditazion di 8 setemanis; in plui i risultâts dai tescj psicologjics a àn mostrât che dome intal grop di fruts che a meditatavin si je rinfuartide une vore la atenzion volontarie, e je diminuide la impulsivitât e a son diminuîts i segns di disatenzion e iperativitât (Crescentini et al. 2016). Intal moment presint o stin puartant indenant altris ricercjis che a cirin di studiâ l'efiet de meditazion *mindfulness* intal lavôr (students, insegnants, miedis e infirmîrs) e in ciertis malatiis cronichis, come la sclerosi multiple.

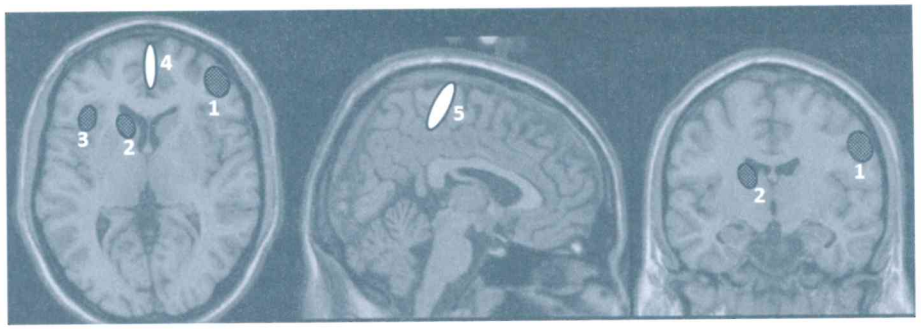

Figure 1. Lis struturis dal cerviel coreladis a la meditazion orientade a la *mindfulness* (MOM) a vegnin presentadis intai trê plans (assiâl, sagjitâl e coronâl) de neuroimagjin fMRI dal cerviel. Lis areis pituradis in neri si riferissin a lis struturis cerebrâls ativadis inte meditazion MOM (daspò mancul prime): 1) scuarce prefrontâl dorsolaterâl di drete; 2) nucli caudât di çampe; 3) insule anteriôr di çampe. Lis struturis che a diminuissin il lôr funzionament a son rapresentadis in blanc (daspò mancul prime): 4) scuarce prefrontâl mediâl; 5) scuarce somatosensoriâl di drete.

5. Discussion e conclusions. La meditazion orientade a la *mindfulness* (MOM) e somee une vore a la *Mindfulness Based Stress Reduction* (MBSR) disvilupade di Jon Kabat-Zinn. Dôs a son lis diferencis plui impuartantis: la prime e rivuarde il fat che la MOM e je une pratiche meditative di base che si riferìs diretementri al insegnament dal princip Gautama, e in particolâr al *Grant discors sui fondaments de presince mentâl*; cun

di plui inte MOM no vegnin dopradis altris tecnichis meditativis, come par esempli l'Hatha yoga, ni altris pratichis di *mindfulness*, come la meditazion intant che si cjamine o piçui ritîrs di meditazion. La seconde diference e rivuarde il fat che il *training* MOM nol à pôre di confrontâsi cu la cuestion de spiritualitât. Invezit, Kabat-Zinn (2003, 2004, 2006) si è sfuarçât il plui pussibil par tignî fûr la MBSR des tematichis spirituâls, par vie che al voleve introdusi a la fin di chel altri secul la pratiche meditative intai ospedâi e intai studis di psicologjie. Daspò 30 agns dal disvilup de MBSR la situazion e je une vore cambiade. Di une bande si pues discuti e studiâ la spiritualitât in maniere laiche e sientifiche (Urgesi et al. 2010; Crescentini et al. 2014; cfr. Fabbro 2010, 2014). Cun di plui i efiets positîfs de *mindfulness*, biologjics e psicologjics, a somein colegâts cu la spiritualitât (Carmody et al. 2008; cfr. Pezzetta et al. 2015). Par chest motîf in ogni incuintri di meditazion orientade a la *mindfulness* a vegnin dedicâts 30 minûts a la presentazion di aspiets fondamentâi de *mindfulness* che a puedin jessi di nature storiche, filosofiche, psicologjiche, neurosientifiche e spirituâl (par esempli: vivi chi e cumò, disidentificazion, deautomatizazion, lassâ lâ vie e vie indenant).

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Mindfulness-Oriented Meditation (MOM) in medical and psychological research

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Abstract. Mindfulness meditation is the seventh step of the Noble Eightfold Path, a psycho-educational program for liberation from physical and psychic pain and suffering developed over 2,500 years ago by Siddhartha Gautama, an Indian prince known as the Buddha. Mindfulness has been described in "The Great Discourse on the Foundations of Mindfulness' of Gautama. This form of meditation consists of learning to become aware of the breath, the body and the ability to observe the contents of the mind. The method of mindfulness-oriented meditation (MOM) developed by the authors consists of eight weekly sessions, each involving three parts: the first 30 minutes are devoted to the presentation of a relevant issue for mindfulness; the middle 30 minutes concerns the practice of mindfulness (10 minutes of attention to the breath, 10 minutes of contemplation of the body, 10 minutes of observation of the mind); at the end of the meditation about 60 minutes are dedicated to the discussion of any difficulties and achievements. The MOM training has been employed by the authors in 6 published experimental researches and in 4 other studies currently in progress. In the first two published neuroimaging researches, we investigated the neural correlates of MOM, in particular those related to body representation and contemplation (Tomasino, Fabbro 2016; Tomasino et al. 2016); in two other studies we assessed the possible changes in personality and spirituality traits after the MOM training (Campanella et al. 2014; Crescentini et al. 2014); finally, the last two studies focused on the effectiveness of MOM in the prevention of relapse in patients with alcohol dependence (Crescentini et al. 2015a) and on the usefulness of the meditation training in typically developing children of 7-8 years (Crescentini et al. 2016).

Key-words. Meditation, mindfulness, neuropsychology, psychopathology.

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1. Introduction: The historical origins of mindfulness meditation. The terms "medicine" and "meditation" both derive from the Latin verb *mederi* that means "to cure" and "to heal". Indeed, meditation is a practice that aims to cure physical, psychological and spiritual suffering. For this reason, in recent decades meditation, developed mainly in the spiritual traditions of the East, has been used increasingly in the medical and psychological fields. If one searches the keywords "mindfulness meditation", "mindfulness and pain", and "mindfulness and brain" in pubmed (www.pubmed.gov), namely one of the premier database of scientific scholarly medical citations, the system returns respectively more than 1,000, 300, and 290 scientific papers (website accessed on 6 November 2015). A key aspect of scientific research on meditation has been the development of standardized meditation trainings that has allowed researchers to compare findings and develop a shared body of knowledge. The present article describes the MOM training developed by the authors and used by them in 6 published experimental studies.

Mindfulness meditation was developed over 2,500 years ago by Siddhartha Gautama, an Indian prince born in the Sakya clan, known as the Buddha. After a period devoted to asceticism, the Buddha reached the full realization and perfect wisdom (*Nibbana*), a "fully awakened" status commonly known as the enlightenment. Later, Gautama has dedicated more than 40 years of his life to teaching other sentient beings the way to reach the full realization and liberation. One of the fundamental principles of his teaching concerns the central role of the mind. According to Gautama, the reality is a mental construct and one cannot act on the world except through his mind. In his opinion, people should try to keep a balanced life (the Middle Way), avoiding all extremes in conduct and views, that is indulgence and hedonism on the one side, and self-mortification on the other (Bareau 1985; Gombrich 2009, 2011).

The psycho-educational program developed by Gautama involves four general statements, which have been called the "Four Noble Truths". The first argues that the mind, and therefore the reality, is characterized by the intrinsic existence of suffering and sorrow (*Dukkha*). The Second Noble Truth describes the principal causes of suffering and says that pain and suffering arise from the transience of all things and human life (*Anicca*); the impermanence of life is the root cause of the three main poisons of the mind (or the three unwholesome roots): ignorance, attachment, and aversion. The Third Noble Truth says that suffering can be overcome and happiness (full realization) attained (*nibbana and paranibbana*). The Fourth Noble Truth is the way (i.e., The Middle Way) to enlightenment and hence refers to the eight steps to achieve liberation from pain (Bareau 1985; Gunaratana 2001).

The path to achieve complete liberation from suffering and pain was summarized by Gautama in eight steps (Noble Eightfold Path), which, despite their progressive character, must be finalized at the same time. The first six steps of the path are related to the lifestyles preparatory to liberation. The first step is "right view" or "right understanding" (*sammā ditthi*) that the nature of the mind and reality are intrinsically characterized by suffering; the second step is "right intention" or "right thought" (*sammā sankappa*) and refers to the intention to pursue the path to attain liberation; the third step is "right speech" (*sammā vācā*) and deals with the way in which one should best make use of his words and verbal expression in order to not produce negative effects on oneself and others; the fourth step is "right action" or "right conduct" (*sammā kammanta*) and relates to how one should not act in ways that would bring harm and suffering to oneself or to others; the fifth step is "right livelihood" or "right way of life"(*sammā ājīva*) and means living in a balanced way by resisting and rejecting the excesses.

The last three steps relate to the practice of meditation to attain liberation from suffering. The sixth step is "right effort" or "right endeavor" (*sammā vāyāma*) and refers in particular to the practice of realizing the right effort during meditation; the seventh step is "right mindfulness" or "right attention/awareness" (*sammā sati*) and deals with the practitioner who tries to constantly keep his mind in the present and alert to phenomena that affect the body and mind; finally, the eighth and final step is "right unitive concentration" (*sammā samādhi*) where the practitioner tries to reach a state of unitive absorption. Thus, mindfulness meditation is the seventh step of the Noble Eightfold Path that leads to liberation from suffering and pain.

2. How to practice mindfulness meditation. How to practice mindfulness meditation (*sammā sati*) has been taught directly by Gautama in "The Great Discourse on the Foundations of Mindfulness"(*Mahasatipaṭṭhāna Sutta*), which is the twenty-second discourse of the "Collection of Long Discourses" (*Dīgha Nikāya*); one of the five collections (*Nikāyas*) that form the so-called "Basket of Discourses" delivered by the Buddha (*Sutta Pitaka*) (Gnoli 2001, Wynne 2009). The Great Discourse on the Foundations of Mindfulness was described verbally immediately after the death of the Buddha and then transcribed in Pali in the first century BC (Gombrich 2009).

In this discourse, Gautama teaches how to contemplate the nature of the body (i.e., body scan), first focusing on awareness of breathing: "consciously he inhales; consciously he exhales". In addition, body scan is then realized by focusing on body awareness through the: a) awareness of body parts: "he reflects on precisely this body itself, from the soles of the

feet up and from the crown of the head down"; b) awareness of body position: "In whatever position his body happens to be, he is aware of the position of his body"; c) awareness of the actions of the body: "he is fully aware of everything he is doing [...], when he eats or drinks, chews or savors the food, he applies full awareness to all this"; d) awareness of the sensations of the body: "when experiencing a pleasant feeling, he understands: I experience a pleasant feeling; when experiencing a painful feeling, he understands: I experience a painful feeling". The final part of the Great Discourse on the Foundations of Mindfulness is about the practice of observation of the mind. For example: "when sense-desire is present, he knows with understanding: there is sense-desire in me, or when sense-desire is not present, he knows with understanding: there is no sense-desire in me"; "when anger is present, he knows with understanding: there is anger in me, or when anger is not present, he knows with understanding: there is no anger in me"; "when worry and agitation are present, he knows with understanding: there are worry and agitation in me, or when worry and agitation are not present, he knows with understanding: there are no worry and agitation in me" (Walshe 1987; Gnoli 2001).

The Great Discourse on the Foundations of Mindfulness specifies the meditative practice that is necessary to achieve the seventh step of the Noble Eightfold Path (Gunaratana 1991); this practice corresponds to *Vipassanā* meditation (often referred to as insight or clear-seeing meditation), which was developed in the Theravada (literally "school of the elder monks") Buddhist tradition and widespread in the Island of Ceylon (Sri Lanka) and in Burma and Thailand (U Ba Khin 2001). In the second half of the last century a number of researchers have discussed the possible application of mindfulness and *Vipassanā* meditation in the medical and psychological fields (Naranjo, Ornstein 1972; Shapiro, Walsh 2008). In the late seventies, Jon Kabat-Zinn has developed a standardized introductory program of mindfulness meditation called Mindfulness-Based Stress Reduction (MBSR) (Kabat-Zinn 1994, 2006). This program is organized in eight weekly sessions of about two hours. Each session is divided into different moments involving the presentation of some theoretical concepts, the practice of meditation, some exercises of hatha yoga and a space for discussion. The MBSR method allowed realizing hundreds of experimental studies that have shown the usefulness of mindfulness meditation in the treatment of serious organic diseases, such as cancer and chronic pain, and psychological ones such as stress, anxiety and depression (Kabat-Zinn 2003; Ludwig, Kabat-Zinn 2008). In addition, mindfulness meditation has proved a very effective tool in the training of medical doctors, psychologists and teachers.

3. Methodology: Description of the mindfulness-oriented meditation training. The mindfulness-oriented meditation (MOM) training is very similar to the MBSR program developed by Kabat-Zinn, because it is organized in eight weekly sessions of 2 hours each and requires the commitment from the participants to meditate at least 30 minutes per day for the entire duration of the course (two months). The practice of meditation involved in the MOM program is exclusively inspired by the "Great Discourse on the Foundations of Mindfulness". In each 30-minute meditation session, 10 minutes are dedicated to the practice of mindfulness of breathing (*ānāpānasati*), 10 minutes to the contemplation of the body and the last 10 minutes to the observation of the mind. During the practice of MOM meditation, participants are seated and there is no yoga exercise. After the practice, about an hour is dedicated to the discussion of any issues relating to meditation, the possible insights gained during the practice and the eventual repercussions of meditation in the family and work life (Fabbro, Muratori 2012).

Each of the eight meetings starts with a short discussion (30 minutes) of a theme related to mindfulness. The topic addressed in the first meeting concerns a *"historical introduction of mindfulness meditation"*; it is emphasized that this practice developed in a spiritual context, because contrary to scientific epistemology that considers knowledge as always relative and incomplete (Fabbro 2014), the teaching of Gautama considers the existence of suffering and pain as a constitutive feature of the mind. Special attention is also given to the achievement of the correct posture to maintain during meditation and the aids (blankets and pillows) that can be used.

The second meeting addresses the topic *what mindfulness meditation is*. During mindfulness meditation, the practitioner has to learn to remain seated without moving, trying to keep the focus on the task (mindfulness of breathing, body scan and observation of the mind). During meditation, the subject should not do anything, doing at the same time, the most difficult job in the world, which is trying to be mindful. Mindfulness meditation is not what people generally think. It is not a relaxation technique; a method to ensure that any problem disappears rapidly; a practice to achieve ecstasy or trance; or a way to escape from reality or to acquire paranormal abilities (Gunaratana 1991). To maintain mindful awareness is an extremely difficult cognitive task because our tendency to behave on "autopilot" rather than being present to moment-to-moment experience is highly developed (Kabat-Zinn 2006). During mindfulness meditation the practitioner learns not to expect anything, to accept the present and letting go of what it cannot be changed, to be patient, not to force anything or deny anything, to be kind to himself, and to see problems as opportunities.

The third session introduces the top-

ic of *attention*. Mindfulness meditation is a process in which the subject tries to focus his attention on the breath, the body or on the mind; inevitably, after a while concentration and attention will be lost and the mind will begin to wander in memories, fantasies and thoughts; at some point the person will realize his mistake (wandering attention) and, with a non-judgmental and gentle attitude, he will return to focus on the task (Hasenkamp et al. 2012; Malinowski 2013). During mindfulness meditation, full awareness is reached just at the moment when the practitioner realizes that he was wrong, to which follows the willingness to start again with a non-judgmental attitude and a slight smile on the lips (*metta*). Cultivating a non-judgmental attitude during meditation does not mean self-indulgence or justification of the mistakes (loss of concentration on the task); rather it means being willing to acknowledge and accept mistakes for what they are, without getting angry about our inability. Non-judgmental attitude also means being willing to consciously observe the judgments that naturally arise in the mind during meditation.

The fourth meeting introduces the topic *being in the here and now* through mindfulness meditation (Kabat-Zinn 2004). It is known that humans have a mental system that allows them to travel mentally in time; mental imagery and memory allow one to reconstruct the past and to simulate the future (Schacter et al. 2007). This system has provided enormous opportunities to humans (e.g., the development of autobiographical memory, the rise of historical thinking, the simulation of future plans, the construction of tools, etc.) but has also introduced limits. The ability to travel mentally in time amplifies the tendency to avoid living in the present moment. It has been shown that people tend systematically to rehash and dwell on the past or project and worry about the future. Avoid living the present moment is one of the most powerful defense mechanisms to not feel the discomfort and existential malaise that pervades us (Fabbro, Crescentini 2014). For this reason the words *sati* and *mindfulness* refer to the ability to be present in the here and now, that is, in the only real dimension of existence.

The theme of the fifth session is *disidentification*. This is a central topic of mindfulness meditation, which, however, is difficult to understand for those who have not experienced it. The practice of paying attention to the parts of the body and to focus attention on the breath, which enters through the nostrils while inhaling and leave the nostrils while exhaling, can allow the subject to develop a "detached viewpoint" from where paying attention to the task. This new psychological viewpoint allows the subject to observe from a certain "distance" his breath, the parts of his body and the contents of his mind (memories, fantasies, thoughts and emotions). The distance that is created between the observer and his thoughts, sensations and emotions is called "dis-identification" or "detachment", "defusion" or "reperceiving" (Shapiro, Carlson 2009). This process allows the practitioner to understand that what happens in the mind and the observer are not necessarily the same thing; in other words, that the awareness of one's thoughts and feelings is different from the thoughts and feelings themselves (Segal et al. 2002; Shapiro, Carlson 2009). Being able to keep some distance from the contents of the mind contributes to equanimity, clarity and objectivity.

The sixth meeting is introduced by a discussion on the theme of *de-automatization*. According to different spiritual traditions (De Salzmann 2010), recently confirmed by several psychological researches (Langer 1989; Kahneman 2011), much of human behavior is based on mindless and unconscious processing. Automatized thought processes and reactions are similar to the automated flight system in which an autopilot is inserted and are comparable to the hypnosis or somnambulism conditions. Automatized processes reduce awareness as well as the ability to make conscious decisions, and the ability to be present to the experiences of life; for these reasons automatic processes reduce episodic memory. Meditation is instead a system to increase self-remembering (*bhāvana*, the Sanskrit word for meditation which means: to remember what we are doing) and mindfulness meditation, in particular, is a practice with an effect of de-automatization in which one's tendency to unconsciously and effortlessly engage in maladaptive reactive behaviors becomes controlled and conscious. Mindful awareness is thus a way to achieve de-automatization; this allows individuals to explore the spiritual dimension of experience also leading to greater flexibility and freedom of choice and action (Deikman 1966).

The seventh meeting introduces the topic of *facing the experience of pain*. A widespread attitude in the West is to try to avoid suffering. In other words, the most common attitude in the face of pain is that of escape. When facing pain, the children react complaining or crying. Instead, adults tend to deny the suffering and pain (shifting attention to other experiences or stimuli or through rationalization) or to hide these experiences (reducing awareness of the body, emotions and feelings through automatized actions). In other circumstances, when faced with pain and suffering, adults may respond by expressing feelings of anger, depression and aggression. The attitude of mindfulness meditation in the experience of pain suggests to not avoid suffering and pain but to carefully observe their characteristics such as their intensity and quality; through mindfulness meditation one learns to stand in front of the pain with dignity and without any desire, maintaining at the same time a slight smile on the lips

(*metta*). Instead of reacting and to run away from pain, we learn to stand still and look at all the sensations of pain and at what is happening in the mind (Fabbro, Crescentini 2014).
In the eighth and last meeting the issues of *letting go* and *acceptance of present-moment experience* are presented. A good starting point to learn the difficult ability of letting go of control and surrendering to the present moment is to focus attention on pain and suffering experiences, starting concretely from a condition of physical or psychological discomfort. After learning to stand still with dignity in the face of pain, the practitioner tries to observe the emotions related to pain, such as the urge to flee and to protest; at this point one can learn to accept these feelings, emotions and reactions and to let them go, keeping a slight smile on the lips. Letting go means letting experience be whatever it is, allowing the thought to occur without suppressing or evaluating the thought; it is an invitation to cease clinging to anything and to give up control of the situation. We abandon ourselves to the present moment. In other words, we give up with the idea that in the present moment should happen something different than what is happening. What happens, it happens; when we accept the present moment for what it is, we are accepting what is already there without struggle or resistance. To develop the ability to accept our present situation and let go of control is a preliminary condition for the generation of feelings of compassion toward ourselves and others. Accepting the present moment simply as it is does not mean that we have to like all events and beings or that we must be passive in the face of everything, it just means that we try to see things as they are; mindful awareness and acceptance help the knowledge of who we are at that time and this can help make our future actions more articulate, bright and clear.
After it was developed a decade ago by one of the authors (FF), the MOM method has been used in numerous courses for physicians and psychologists held at the University-Hospital of Udine and at the University of Udine. Therefore, it was possible to constitute a group of people who regularly practice mindfulness meditation, selecting among them about ten instructors (people who practice mindfulness for a few years and that have been formed to conduct meditation groups) (https://groupmom. wordpress.com). This has enabled a series of MOM courses for doctors, psychologists, teachers and individuals engaged in other professions, which have been carried out mainly free of charge. Since these courses were carried out in university settings, they were almost always subject to experimental research.

4. Results: Main neuropsychological studies on mindfulness-oriented meditation. The brain structures activated during meditative tasks have been analyzed by our research group with two meta-analysis studies. The

first study involved 24 experiments with 150 foci of activation observed during meditation practices which were inspired by both the Hindu and Buddhist tradition. This study revealed a network of activation including the bilateral medial frontal gyrus, the left superior parietal lobe, the right supramarginal gyrus and the left insula (Tomasino et al. 2013). In a subsequent study we have separated the two main meditation practices (Buddhist vs. Hindu). The practices that were inspired by the Buddhist tradition (16 experiments with 96 foci of activation) were associated with activation in frontal lobe areas thought to be critical for executive control and attention functions; meditation practices that were inspired by the Hindu tradition (8 experiments with 54 foci of activation) reflected in activation of a brain network, including the postcentral gyrus, the superior parietal lobe, the hippocampus and the medial cingulate cortex, which is involved in the generation of religious/spiritual experiences (Tomasino et al. 2014).
More recently, we have carried out two functional magnetic resonance imaging (fMRI) studies in individuals who practiced an 8-week MOM course. In the first study we investigated the brain areas that were activated and deactivated after the MOM training. This goal was reached by subtracting the brain structures activated (and deactivated) before the training from the brain areas activated after the training while subjects performed mindfulness of breathing and body scan tasks. The MOM training determined activation of the right dorsolateral prefrontal cortex, the left anterior insula and the nucleus caudate, which are areas believed to be related to attention and psychological well-being (cf. Figure 1). Moreover, the MOM training led to deactivation of the medial prefrontal cortex and the right somatosensory cortex, which are regions involved in the representation of the body and the self (Tomasino, Fabbro 2016). From a neuroscientific point of view, these data indicate that the MOM training is comparable to other mindfulness meditation trainings such as the MBSR (see Tomasino et al. 2014).
In a second study, we analyzed the neural correlates of the ability to take different perspectives in a body representation task. After the MOM training, subjects were able to take a more detached perspective that was correlated with a greater activation of the right medial orbital gyrus (Tomasino et al. 2016).
A promising area of research carried out with the MOM method has concerned the study of personality and self-representation changes observed in meditators (see Crescentini, Capurso 2015). In a first study (Campanella et al. 2014), we assessed the effects of a MOM training on individuals' personality by using the Temperament and Caracter Inventory (TCI) for personality traits devised by Cloninger et al. (Cloninger et al. 1994). This was done on four groups of subjects. Groups 1 and 2 were

formed by subjects who meditated regularly for two months; group 3 had meditated irregularly (less than four times a week) while the fourth group involved subjects who had not meditated at all. In the first two groups (1 and 2), the MOM training led to a significant increase of the TCI aspects that measure the maturity of the self (i.e., the three TCI character scales of self-directedness, cooperativeness and self-transcendence). By contrast, in the last two groups of participants (3 and 4) there was no evidence of significant changes in personality traits. In a second study, we investigated the personality changes induced by the MOM training evaluating not only the explicit components of personality, assessed through the TCI, but also the implicit components, which were analyzed using an Implicit Association Test (IAT). The study revealed that the MOM practitioners showed significant increases in both explicit self-transcendence and implicit religiosity/spirituality levels (Crescentini et al. 2014). These results suggest that an 8-week MOM training can strengthen a coherent image of the self together with religious/spiritual aspects. In a clinical study we investigated the effects of a MOM training in a group of patients with alcohol dependence. Similarly to the study on healthy subjects mentioned above, after the 8-week MOM training the patients showed increased maturity of the self (the three TCI character scales); moreover, compared with a treatment as usual control group not involved in meditation, the MOM practitioners also showed decreased warning signs of relapse (Crescentini et al. 2015a).

Finally, in a recent research we evaluated the effects of a MOM training adapted for a group of children of 7-8 years. In this study, a different group of children of 7-8 years from the same primary school underwent a control training based on emotion recognition and awareness; the control training followed the same procedures of the MOM training but did not involve any form of meditation. Before and after the control and MOM trainings, the children were evaluated by the main teacher, who was blind about the trainings and study aims, using the Child Behavior Checklist-Teacher Report Form (CBCL-TRF) and the Conners Teacher Rating Scale-Revised (CTRS-R). During the first week the children in the MOM group meditated for 9 minutes (3 minutes of mindfulness of breathing, 3 minutes of body contemplation, and 3 minutes of observation of the mind); in the following 7 weeks the time devoted to meditation grew up until reaching 30 minutes in the last week. Compared with the control group, the MOM participants showed a significant improvement in attention and impulsivity and reported reduced symptoms related to Attention-Deficit/Hyperactivity Disorder (ADHD) (Crescentini et al. 2016). In addition, this research has shown that the MOM training can be practiced effectively by children under 10 years of age.

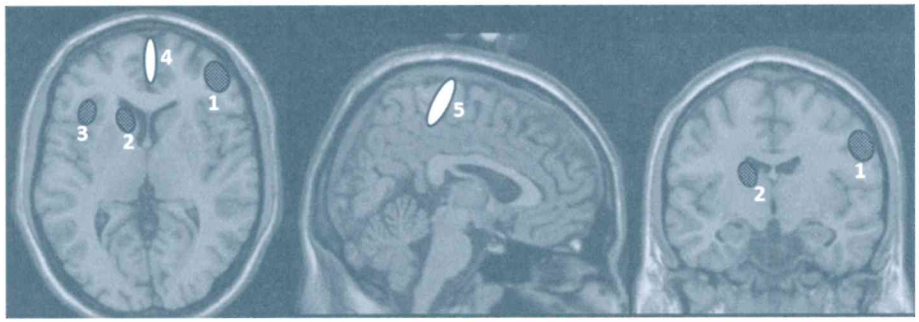

Figure 1. The brain bases of the MOM training are displayed on three (axial, sagittal, and coronal) planes of brain structural image. The areas in black refer to activations observed after (versus before) MOM (1: Right dorsolateral prefrontal cortex; 2: left nucleus caudate; 3: left anterior insula). The areas in white refer to deactivations observed after (versus before) MOM (4: medial prefrontal cortex; 5: right somatosensory cortex).

Finally, as mentioned at the beginning of this article, four other researches have been carried out in which the MOM protocol has been applied in healthy subjects (teachers and adults involved in other professions) or in patients with multiple sclerosis in order to further verify the effectiveness of mindfulness-oriented meditation on various indices related to participants' psychophysical well-being.

5. Discussion and Conclusions. The Mindfulness-Oriented Meditation (MOM) training is very similar to the Mindfulness Based Stress Reduction program developed by Kabat-Zinn. There are, however, two major differences. The first concerns the fact that the MOM training is a basic meditative practice that directly relates to the teaching of the Prince Gautama, and more specifically to the "Great Discourse on the Foundations of Mindfulness"; furthermore, the MOM training does not include meditation techniques such as Hata-yoga and walking meditation or different types or procedures of mindfulness practices (for example increasing the duration of the meditation exercises during the course up to a mini-retreat of several hours). The second difference is the attitude of the MOM training towards the theme of spirituality which is very relevant to meditation. The MBSR training, developed by Kabat-Zinn more than thirty years ago, wanted to differentiate itself clearly from spiritual themes (Kabat-Zinn 2003, 2004, 2006); this was probably due to the aim of introducing this training in medical and psychological research. After thirty years the situation has changed. Several studies are showing that it is possible to study religiousness and spirituality in a scientific context (Urgesi et al. 2010; Crescentini et al. 2014; see in Fabbro 2010, 2014). Moreover, recent studies

suggest that spirituality is a fundamental way through which mindfulness meditation leads to improvements in medical and psychological symptoms (Carmody et al. 2008; see in Pezzetta et al. 2015). In our opinion, it is now possible to deal with issues related to spirituality both in a secular way (i.e. without requiring adherence to any religious belief or creed) and experimentally (Fabbro 2010; Pezzetta et al. 2015). For this reason the MOM training devotes the first 30 minutes of each meeting to analyze some issues regarding the practice of mindfulness (such as de-automatization, dis-identification, the here and now, letting go, etc.); these all are key aspects that are considered important from the historical, neuropsychological and spiritual perspectives.

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