

Running head: MEDITATION AND COMPASSIONATE BEHAVIOR

Meditation Increases Compassionate Responses to Suffering

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Contemplative science has documented a plethora of *intra-personal* benefits stemming from meditation, including increases in gray matter density (Hölzel, Carmody, et al., 2011), positive affect (Moyer et al., 2011) and improvement in various mental health outcomes (Hölzel, Lazar, et al., 2011). Strikingly, however, much less is known about the *inter-personal* impact of meditation. Although Buddhist teachings suggest that increases in compassionate responding should be a primary outcome of meditation (Davidson & Harrington, 2002), little scientific evidence exists to support this conjecture. Even as scientists have begun to examine the effects of meditation on prosocial action, the conclusions that can be drawn with respect to compassion have been limited by designs that lack real-time person-to-person interactions centered on suffering. Previous work, for example, has utilized meditators' self-reported intentions/motivations to behave in supportive manners toward others (e.g., Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008) and computer-based economic games requiring cooperation (e.g., Leiberg, Klimecki, & Singer, 2011) to assess altruistic action. Such methods, while suggesting that meditation may increase generalized prosocial responding, do not clearly and objectively gauge responses meant solely to mitigate the suffering of others.

To address this gap, we utilized a design where individuals were confronted with a person in pain in an ecologically valid way. If, as suggested by Buddhist theorizing, meditation enhances compassionate responding, participants who completed a brief meditation course should more frequently act to relieve this person's suffering.

Method

Thirty-nine individuals (29 female; $M_{\text{age}}=25.23$, $SD_{\text{age}}=4.66$) recruited from the Greater Boston community for an eight-week study on meditation comprised the final set of

participants.¹ Individuals were randomly assigned either to complete meditation classes or to be on a wait-list control. Those assigned to the meditation condition were further randomly subdivided into one of two protocols: mindfulness or compassion meditation. We utilized two separate meditation protocols both to enhance generalizability and to ensure that any resulting effects of meditation on behavior could not be attributed to demand characteristics. Although techniques to focus and calm the mind were taught in both protocols, direct discussion of compassion and the suffering of others only occurred in compassion meditation training.²

Meditation classes were held in a nondenominational venue dedicated to spiritual activities (e.g., prayer, meditation, yoga). A Tibetan Buddhist lama (W.M.) with 20-plus years of meditation experience conducted both courses. The classes were taught in a secular format featuring 60 minutes of instruction, 30 minutes of practice, and 30 minutes for discussion. Participants also received 20-minute audio-guided meditations to complete independently outside of class. Use of the audio recordings was logged weekly. Participants received \$60 for participation.³

Measuring Responses to Suffering

Following either eight-weeks of meditation practice or approximately eight-weeks after initial recruitment to the waitlist, participants were scheduled to come to the lab under the guise of completing tests of cognitive ability. To obtain a naturalistic measure of responses to suffering, we utilized confederates to construct a test situation outside the laboratory. All confederates were blind both to the hypothesis of the experiment and to each participant's experimental condition. Prior to the participant's arrival, two female confederates sat in a designated waiting area possessing three chairs. Upon arriving at the waiting area, participants sat in the last remaining chair. After the participant had been sitting for one minute, a third

female confederate, who played the role of the “sufferer,” appeared around the corner with crutches and a walking boot. The sufferer, who visibly winced while walking, stopped just as she arrived at the chairs. She then looked at her cell phone, audibly sighed in discomfort, and leaned back against a wall.

To assess compassionate responding, we measured whether the true participant offered his or her seat to the sufferer to relieve her pain. One of the sitting confederates surreptitiously notified the experimenter, who was waiting out of sight, via text message whether the participant offered the seat to the sufferer. If two minutes passed and the participant had not given up his or her seat, the trial was ended and coded as a non-helping response. The experimenter then entered the waiting area, greeted the participant, and escorted him or her to the lab to complete a series of measures unrelated to the goals of the present analysis.

Results and Discussion

Confirming the view that meditation directly enhances compassionate responding, meditators more frequently offered their seats to the sufferer than did non-meditators from the waitlist control, $\chi^2(1)=5.13, p=.02, \phi=0.36$ (see Table 1). Of import, this enhanced prosocial responding did not differ as a function of meditation protocol; those practicing mindfulness meditation were as equally likely to aid the sufferer as were those practicing compassion meditation (see SOM for analyses). That eight weeks of meditation resulted in such a large effect – increasing the odds of acting to relieve another’s pain by more than five times (odds ratio=5.33), is all the more striking given that it occurred in a social context whose features should attenuate such behavior. The simple presence of the two confederates and their total disregard for the pain of the sufferer constitutes a classic “bystander effect” manipulation where

both diffusion of responsibility and norms suggesting an acceptance of nonintervention are heightened (cf. Darley & Latané, 1968).

Additional work will be needed to isolate the specific causal mechanism more narrowly, as several meditation-induced mediators (e.g., heightened awareness, increased perspective taking) stand as possible candidates (cf. Hölzel, Lazar, et al., 2011). Nonetheless, the current finding is the first to clearly show the power of meditation to increase compassionate responding to suffering, even in the face of social pressures to avoid so doing. As such, it provides scientific credence to ancient Buddhist teachings that meditation increases spontaneous compassionate behavior.

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Notes

¹See Supplementary Online Materials (SOM) for recruitment procedures.

²See SOM for meditation protocols.

³Participants in the meditation conditions also earned \$20 and entry into a \$100 raffle for completing weekly logs.

Table 1.*Observed and expected frequencies of helping behavior across conditions.*

Outcome	Meditation Training		Wait-list Control	
	Observed	Expected	Observed	Expected
No help	10	13.3	16	12.7
Help	10	6.7	3	6.3

Note. $\chi^2(1)=5.13, p=.02, \phi=0.36.$

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Supplementary Online Material (word count: 977)

Participants

During recruitment, all participants self-reported little to no experience with any type of meditation experience and none reported completing any previous meditation course or meditation retreat. All participants passed a telephone-administered version of the Mini-Mental State Examination as indicated by a score greater than or equal to 21 (Newkirk et al., 2004).

Sixty-seven individuals were initially recruited for the study. Twenty-six dropped out prior to completion of the training portion. Two others were removed by experimenters: one who did not take a chair in the waiting area upon arrival and one who expressed suspicion about the study. The final sample consisted of 39 individuals (20 meditators, and 19 waitlist controls).

Supplementary Analyses

Amount of Training

On average, meditating participants attended 6.60 ($SD=0.50$) instruction sessions and reported completing independent 20-minute intervals of meditation 3.74 ($SD=1.04$) times per week.

Helping Behavior by Meditation Class

Those participants who completed the mindfulness- and compassion-based meditation did not differ in frequency of helping behavior, $\chi^2(1)=0.20, p>.65$ (see Table S1).

Gender

Gender differences in helping behavior have been reported in numerous studies, although the direction of these differences vary depending on context. Males help more frequently in some contexts (e.g., short-term encounters), but females help more in others (e.g., long-term close relationships; for a review, see Eagly & Crowley, 1986). In the current study, we found that participant gender did not affect frequency of compassionate responding, $f_{females}=10$ out of 29, $f_{males}=3$ out of 10, $\chi^2(1, N=39)=0.07, p>.79$. Furthermore, the composition of male and female participants in the meditation and control groups did not differ, $\chi^2(1)=0.41$.

Design Limitations: Control Group and Social Network Analysis

The nature of our design required that one group (i.e., meditators) came together for repeated classes, thereby creating a context that afforded interaction with other individuals participating in the study. The waitlist group had no such possibility of interacting with others due to participation in a structured class. Thus, although the control group was matched with respect to interest in meditation and desire to enroll in an 8-week course, its members did not engage in repeated interactions with meditation class members or an instructor. One resulting concern is that repeated interactions with fellow participants in the course may have produced social consequences that could account for increased levels of helping behavior (e.g., increased social resources). To rule out this possibility, we obtained a measure of the number of people that participants interacted with on a regular basis before and after training. At pre- and post-testing (i.e., eight weeks apart), participants received an email with a link to an online version of the Social Network Index (Cohen, Doyle, Skoner, Rabin, & Gwaltney, 1997). This survey asked participants to list the initials of every individual that they “interacted with in person or over the phone at least once every two weeks.” The survey prompted participants to list people in the following categories: *romantic partner, parents, partner’s parents, children, relatives, friends, classmates, co-workers, acquaintances, members of a spiritual group, members of a volunteer group, and members of unspecified groups*. Participants could list up to seven individuals for each category, with the exception of *friends* and *members of unspecified group* (up to ten individuals). Our primary interest concerned the total number of people with whom participants reported interacting. If the meditation classes increased social capital, we would expect to find that those in the meditation group reported an increase in their number of relationships at post-testing, relative to the wait-list group.

A 2 (time: pre, post) X 2 (group: meditators, wait-list) repeated measures ANOVA, with time as the repeated factor, revealed no main effect of group on social capital ($M_{meditators}=11.58; SD_{meditators}=4.53; M_{wait-list}=12.35 SD_{wait-list}=5.07, F(1,31)=0.21, p>.65$, and no effect of time ($M_{pre-test}=12.18; SD_{pre-test}=5.60; M_{post-test}=11.58 SD_{post-test}=5.10, F(1,31)=0.83, p>.37$). There was no interaction, $F(1,31)=1.40, p>.24$ (note that only 13 participants from the WL control group provided responses to the SNI). In sum, participants

in the meditation group did not experience a growth in their social network as a function of participating in an organized class. Thus, the experience of participating in a group activity is unlikely to account for our central finding, at least as stemming from increases in social capital.

It could also be argued, however, that exposure to a caring or charismatic instructor might have exerted an influence, principally through modeling. That is, meditation in and of itself covaried with exposure to an instructor in our design. Although certainly possible, we believe that such a factor is unlikely to account for our findings in the present case. If it were the influence of exposure to a caring instructor, we would expect to find a greater effect of meditation on prosocial behavior among

participants following the compassion meditation protocol, where actual discussion of the virtue of relieving the suffering of others was discussed by the instructor. In the mindfulness meditation condition, no such discussions occurred; all instruction centered on techniques involved in centering attention (e.g., breathing), and consequently provided no opportunity for prosocial behavior to be modeled on or directly influenced by the instructor's explicit or implicit goals. Nonetheless, having established the basic phenomenon, we believe it fruitful for future investigation to aim toward disambiguating the exact mechanisms associated with contemplative training that may underlie its enhancement of prosocial behavior, as well as individual susceptibility to such enhancement.

References for Supplementary Material

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Supplementary Table 1.*Observed and expected frequencies of helping behavior by meditation group.*

Outcome	Mindfulness-group		Compassion-group	
	Observed	Expected	Observed	Expected
No help	5	4.5	5	5.5
Help	4	4.5	6	5.5

Note. $\chi^2(1)=0.20, p>.65$

Supplementary Table 2A.*Mindfulness-based training protocol.*

Week	Training components
1	Open awareness meditation Introduction of basic techniques (e.g., body-scan) for relaxing the body and monitoring the mind's natural tendency to wander from the object of attention (i.e., the body).
2	Mindfulness of a physical object Introduction and elaboration of practices for learning to calm the conceptually discursive mind for the purpose of attenuating involuntary thoughts. Stability of attention (i.e., on a physical object) is practiced with the goal of sustaining attention in a purposeful, non-judgmental manner for an extended period.
3	Mindfulness of the breathing with relaxation (I) Continuing practice of techniques designed to instill a deepening sense of physical and mental relaxation, stillness, and vigilance. When successful, involuntary thoughts subside and vividness of attention gradually increases. This gives rise to an overall sense of greater presence, calm, and equilibrium.
4	Mindfulness of the breathing with relaxation (II) Continuing practice from Week 3. Additional instruction focused on common impediments to meditation practice, including sleepiness, agitation, and boredom.
5	Settling the mind in its natural state (i. e., mindfulness of mental events) (I) Introduction of practices for further refining the meditator's metacognitive abilities, with the goal of attenuating the immediate and habitual absorption in one's thoughts that characterize most mental functioning. When successful, insight into the nature of the mind and its activities is achieved.
6	Settling the mind in its natural state (II) Continued practice with the goal of developing increased relaxation, stillness of awareness in the midst of mental activities, and vividness, together with heightened metacognitive abilities to observe mental states and processes without identifying with them.
7	Awareness of awareness (I) In this final technique, relaxation, stillness, and vividness of attention continue to be enhanced, leading to a perception of the process of becoming aware, as opposed to only perceiving the contents of awareness.
8	Mindfulness of awareness and thoughts Participants use the techniques they've learned from all previous weeks and apply them to concentration on the quality of immediate mental experience. Instead of using breath or body as an object, now mind itself becomes the meditation object. Particular attention will be paid to working with the arising and disappearing of thoughts.

Supplementary Table 2B.*Compassion-based training protocol.*

Week	Training components
1	Developing attention and stability of mind Introduction of basic meditation techniques for focusing attention for increasingly longer periods of time. <i>These techniques are included in the practice of all subsequent compassion meditation components.</i>
2	Baring witness to ones current life-stressors and difficulties Introduction of practice for noticing and reflecting on current life challenges, such as a difficult situation, event, or person. Participants learn to accept themselves in these moments and relax resistance to discomfort to remain and experience these states without judgment or a need to remedy it. When successful, this practice leads to the dissolution of discomfort.
3	Commune with other's life-stressors and difficulties Introduction of techniques to develop awareness of the commonality of one's own suffering. Participants learn to recognize that all others feel discomfort just as they do. Participants imagine themselves in a community of others experiencing the same discomfort.
4	Extending compassion outward Building on previous practice of bearing witness and communing with suffering, participants visualize breathing own and others suffering into the heart (inhalation) and dissolving all difficulties outward into a spacious sky (exhalation).
5	Release of suffering Introduction of practice for letting go of one's own and others' suffering into a state of open awareness.
6	Exchange with others – close target The culmination of previous instruction are specifically applied to a close other (i.e., a person that one cares about). Participants visualize the disappearance of another's suffering as they breath it inward and send compassion outward.
7	Exchange with others – neutral, unknown target and a difficult, annoying target Extending practice of exchange with others to neutral and difficult targets.
8	Exchange with others – all sentient beings Extending practice of exchange with others to all sentient beings.