

4-2020

## Buddhist Meditation Effects on Emotion Control

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### ScholarWorks Citation

Battiston, Sarah, "Buddhist Meditation Effects on Emotion Control" (2020). *Exemplary Undergraduate Research*. 1.

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REL 300-01

18 April 2020

### Buddhist Meditation Effects on Emotion Control

There has been a surge in popularity of meditation in medical research. Meditation is being considered an alternative to pharmacotherapy or a supplement to treatment of both mental and physical ailments. Two popular forms of meditation practices are being studied. This includes mindful meditation which finds its roots in Buddhist meditation techniques and the meditation practice of Zen Buddhism. Both forms outline a specific activity of meditation in order to achieve a goal. Mindful meditation and Zen Buddhism similarly partake in a sitting meditation with focus on breath and present awareness. Mindful meditation challenges the practitioner to become aware of any present feelings or thoughts with a non-judgmental attitude (Hanh 138). Zen Buddhism's activity, called zazen, allows the practitioner to have control over the mind's movement (Suzuki 33-46). One outcome of these meditations is the increase in emotional control and this is where the medical field takes interest. Recent medical research has studied the effects of this activity on the emotion centers of the brain. By analyzing the activity of zazen and mindful meditation and their effects on the brain, one can understand how they cause the practitioner to gain emotional control.

### THE ACTIVITY OF MEDITATION

The research on the effects of meditation on emotional control tends to focus on two techniques of meditation, zazen and mindful meditation. Zen is a form of Buddhism that traces back to 5<sup>th</sup> century BCE India (Ku 1). A Zen practitioner that popularized Zen in the West was

Shunryu Suzuki (Ourvan 35). The activity of Zen Buddhism is a sitting meditation called zazen. Suzuki in his novel *Zen Mind, Beginner's Mind*, outlined the correct position of the sitting posture and explained how to partake in zazen. The posture starts with the practitioner taking the lotus position- sitting on the ground. The left leg is bent to have the left foot resting on the right thigh and the right leg is bent to have the right foot resting on the left thigh. The spine is straight with relaxed shoulders in line with the ears. The hands form the “cosmic mudra”- where both palms face upwards with the left hand on top of the right hand so the middle knuckles touch and the thumbs reach up to slightly touch making an oval shape. After the position is taken, the practitioner begins to focus on their breath. They become aware of the present moment and notice the flow in and out of their breath. If a thought pops into the practitioner’s mind, the practitioner acknowledges it and lets it pass. Once the practice ends, Suzuki instructed for the practitioner to bow nine times (25-46).

Mindful Meditation has two important pioneers, Thich Nhat Hanh and Jon Kabat-Zinn. Thich Nhat Hanh recognized many forms of mediation, sitting, walking, etc., but stressed the inclusion of mindfulness, to be aware of the present moment. In his book *Being Peace*, he explained “Meditation is to be aware of what is going on—in our bodies, in our feelings, in our minds and in the world.” (14-15). During meditation practice, Hanh suggested bringing in this mindfulness of the present moment, becoming aware of breathing and how the body and mind feel. Jon Kabat-Zinn popularized mindful meditation in the West by creating Mindfulness Based Stress Reduction (MBSR). This is an 8-week program that teaches mindful meditation techniques and incorporates some yoga asanas. The program meets weekly for 2.5 hours and has one 7-hour retreat. The mindful meditation taught by Zinn’s program also covers being mindful of the present moment by using focus on breath along with body scanning to focus on one’s

physical state. Body scanning is a technique where the practitioner starts at the head and slowly scans down the body noticing areas of tension and how the body feels (Kabat-Zinn 31-120).

An important function of the activities of Zen and mindful meditation is emotional control. Suzuki in *Zen Mind, Beginner's Mind*, explained "The true purpose [of Zen] is to see things as they are, to observe things as they are, and to let everything go as it goes." (33). The intent of this mindset is to limit urges and emotions created by the mind. As Suzuki explained one must just observe, not react, and let it be. The goal of mindful meditation in the context of Hanh follows this ability to have control over emotions. In *Awakening of the Heart*, Hanh drew inspiration for this function from a sermon from the Buddha in the Sutta of the Four Establishments of Mindfulness. Hanh translated this as "Bikkus, there is a most wonderful way to help living beings realize purification, overcome directly grief and sorrow, end pain and travel the right path, and realize nirvana. This way is the Four Establishment of Mindfulness." (101). Hanh drew from this sutta and explained that a function of mindful meditation is to have control over the emotions (138-142). Zinn followed this function of emotion control and explained that an effect of his MBSR is enhancing self-control over emotions and coping with emotions (Kabat-Zinn 33-46). An important question that imbeds these activities is how do they cause emotional control? With the increasing interest of the medical field in meditation, medical research gives insight as to how these activities affect the emotional control centers of the brain and in turn cause emotional control.

## THE EFFECTS OF MEDITATION ON THE EMOTIONAL CONTROL CENTERS

Much of the research on zazen and mindful meditation effects on the brain's emotional centers has focused on two brain structures: anterior cingulate cortex (ACC) and the amygdala.

The anterior cingulate cortex is a part of the limbic system. Its role is information processing through an executive attention network involved in emotion response. It does this through control of and connection to the limbic system. The ACC allows for attention on and regulation of emotions by modulating the amygdala's response to emotional state (Bush et al. 215-222, Posner et al. 391-394). As part of the limbic system, the amygdala modulates emotional response, including negative and positive affect. The amygdala receives emotional stimuli and facilitates emotional responses through modulation of attention and perceptual processes. It causes many emotions, but is critical in anger and fear (Davis and Whalen 13-15, Phelps 29-41).

Zen Meditation and mindful meditation are found to have an effect on the anterior cingulate cortex and the amygdala. During the practice of zazen and mindful meditation, the ACC was found to have higher activation (Amihai and Kozhevnikov, 4). This was exemplified in two clinical trials that tested the effect of Integrative Body-Mind Training (IMBT) on emotion control. IBMT is a program that includes mindfulness and Zen breathing techniques. The first study was a short 5-week program that entailed 46 undergraduate students with no meditation experience and found a stronger activation of the ACC while the participants were meditating (Tang et al., "Central and Autonomic" 8865-8870). In another study on IMBT, long-term effects on ACC were examined. Four weeks after IMBT training, researchers observed an increase in size of the white matter tract connecting the ACC to other structures it modulates, therefore creating a stronger connection between the ACC and the structures it's connected to (Tang et al., "Short-term Meditation" 15649-1565). In summary, the direct act of meditation was found to activate the ACC and repeated acts of meditation was found to cause a stronger connection of the ACC to the areas it modulates. For the amygdala, effects focused mainly on its inactivation. In an 8-week mindful meditation training for participants without meditation background, amygdala

activation was measured when participants were shown emotion provoking images. These images were presented when the participants were not in a meditative state. It was found that after mindful meditation training there was a reduction in amygdala activation to visual emotion provoking images and a decrease in emotional response (Desbordes 3-11). Another study evaluated structural changes to the amygdala after an 8-week MBSR program. After the program, the MBSR participants were found to have a decrease in grey matter density in the amygdala, an effect of continual inactivation (Hozel 12-15).

Further studies on the effects of zazen and mindfulness evaluate emotional processing through patient reaction and patient subjective reports. Multiple studies found that after taking a mindful meditation course including zazen attention to breath, participants had a decrease in emotional reaction intensity. Researchers typically found this through giving emotion provoking tasks (Wu 8, Erisman and Roemer 8-9, Rosenberg et al 778-789). The significance of the effects on the anterior cingulate cortex and the amygdala give insight to the change in emotion control. Recall that the ACC increases attention of emotions and causes emotion regulation. As noted from the studies above, the activity of meditation increased ACC activation and consequentially increased emotion regulation. There was also an increase in ACC connection to the areas it regulates increasing the efficacy of the ACC's ability to cause emotion regulation. For the amygdala, there was a decrease in activation in events that were emotion provoking and evidence of inactivation over time through the decrease in grey matter. Meditation therefore caused a decrease in emotion response to emotion provoking events.

## CONCLUSION

Two forms of meditation, zazen and mindful meditation, are two popular areas of research for medicine. The activity of zazen is a sitting meditation that stresses awareness of breath and awareness of the present moment. Mindfulness meditation focuses on the present awareness of the body, emotions and surroundings. Both of these meditation activities allow the practitioner control over the emotional centers of the brain and lead to emotion control through their effects on the anterior cingulate cortex and the amygdala. These effects include the increase activation of the ACC and its connections, as well as a decrease in amygdala activity and its grey matter density.

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