
Discussing The Effects Of Meditation On Neuroplasticity

Close your eyes and expand your mind: meditation's effects of neuroplasticity

Waves roll softly over the sand onto your bare feet as you deeply inhale the sweetly salted scent of fresh ocean air. Tension is released from your body as you exhale, inhale, and exhale again, until all tension is released and you are rendered with a fulfilling sense of calm. Continue this deep breathing. Rock back and forth with the rolling of the waves: backward as you inhale and forward as you exhale. Centralize your attention on this motion and only this motion. In the distance you hear the soft calling of seagulls while the glow of the sun warms the sand surrounding you, warming your body throughout. These experiences are noticed, but your attention continues to be focused on the synchronizing of your rocking with the rolling of the waves. As you do this you inhale, exhale, inhale . . .

Daniel J. Sigel, award-winning educator and distinguished member of the American Psychiatric Association claims that practicing mindfulness, an aspect of mediation, people can quite literally expand their mind by promoting a neural phenomenon known as neuroplasticity (Siegel, 2010). Neuroplasticity, according to Richard Widdett in his honors thesis on, "Neuroplasticity and Mindfulness Meditation," is a phenomenon that occurs throughout a person's lifetime; the brain changes in shape as a result of the birth of neurons and neural connections following external, or even internal experiences (Widdett, 2014). Experiences, such as these, facilitate changes within the physical structures within the brain thus, altering or enhancing the function of those structures. Consequently, just as there is a plethora of different experiences in which an individual may engage, there are an equal number or greater of neural responses possible in which those experiences may result. The repetition of neural responses is what, in turn, results in the neurological spectacle that is neuroplasticity. Interestingly enough, it wasn't until recently that researchers began to look more closely at the effects of internal experiences on the brain.

Internal experiences are as they sound; they are experiences that one has within the realm of their own mind (Begley, 2004). As of late, internal experiences, such as the practice of meditation, have become a center focus in the study of neuroplasticity. Psychology today defines meditation as a practice involving the focusing of attention on a single physical object or phrase (known as a mantra). During meditation, the individual's focus remains on the present moment and all distractions are removed (Meditation, 2016). Successfully maintaining this level of intensive focus required by meditation would obviously take repeated practice; repeated practice, in turn, that would initiate the physical changes of neuroplasticity. Extensive research

Need help with the assignment?

Our professionals are ready to assist with any writing!

[GET HELP](#)

on the recently hypothesized effects of mediation on neuroplasticity has uncovered several areas in which the physical structures of the brain can be changed by the repetitive practice of mediation. These changes in the physical structures of the brain have revealed interesting developments in the very nature of an individual's overall sense of well-being. In other words, structural changes in the brain due to the practice of mediation have been shown to alter areas of the brain responsible for cognitive processes such as an individual's ability to remain attentively focused on a task for a prolonged period, as well as those responsible for the regulation of emotional and executive processes (Pagnoni & Cekic, 2007).

First and foremost, mediation is essentially a work out designed specifically for the brain for the promotion of its structural and neural development. This development, as previously mentioned, results in countless changes in the way the brain perceives and processes information. In addition to these possibilities, includes a principal aspect of mediation that also affects what is perceived from the environment and how the perceived stimulus is entertained by the normally wondering mind: attention. TIME Magazine recently reported in May of last year that the human attention span has steadily decreased since the year 2000; a recent study on the human attention span reveals that the average adult attention span lasts no longer than eight seconds: one second short of that of the average gold fish (McSpadden, 2015). The question that remains, is how mediation can alter physical regions of the brain to support a longer attention span. Answering such a question relies on the results revealed in extensive studies done on the basic effects of meditation on the brain by researchers such as Antonino Raffone and Narayanan Srinivasan, whom conducted a study on mediation as it relates to the neuroscience of attention and consciousness.

From their research, Raffone and Narayanan concluded that since focusing attention on a singular object or mantra is an imperative aspect of meditation, the repeated practice of mediation revealed an increase in an individual's ability or skill to hold their attention for longer durations of time, with a decrease in the effort to do so (Raffone & Srinivasan, 2010). A specific style of mediation known as Focused Attention mediation, or (FA) meditation, can result in these changes in attention span after prolonged practice. (FA) mediation is exactly what the name implies; it is a style of mediation that involves not only the focusing of attention on a single object or mantra, but also the acknowledgment of, and disengagement from, distraction. Another style of meditation, called Open Monitoring (OM) mediation also involves the disengagement from distractions as it calls on the individual to hold a non-judgmental awareness of their surroundings, focusing solely on the present moment. With repeated practice, (FA) meditators are able to notice a distracting thought but, they let it pass without so much as another moment of their attention. An interesting outcome of practicing this form of mediation is the effects on the systems of the brain responsible for conflict monitoring (Raffone & Srinivasan, 2010).

Need help with the assignment?

Our professionals are ready to assist with any writing!

GET HELP

It's plausible that with the development of the attention skills from practicing (FA) mediation, an individual would be able to treat a conflict as more of a distraction. Thus they would be better able to deal with the situation more objectively as a result of their ability to relinquish distracting thoughts that would otherwise interfere with resolving the conflict. In fact, regions of the brain such as the dorsolateral prefrontal cortex, and superior and intraparietal sulci, shown on fMRI images, were activated during mediation; these areas are associated with the processes of engaging attention and attentional orientating respectively (Davidson & Lutz, 2008). Generally speaking, the practice of either (FA) or (OM) mediation has been shown to greatly improve one's ability to stay focused and disregard distracting environmental stimuli. Thus, an individual may be better able to sustain attention on certain tasks that require greater concentration; the successful completion of tasks such as driving, studying, or even strategized games like chess, could benefit significantly from an increase in ability to focus and disregard distraction. Meditation offers such abilities through the neural changes that occur in response to its practice. Neuroplasticity is the perceivable solidification of the new neural pathways mediation encourages and facilitates in those that routinely practice it.

Not only does meditation facilitate the development of attention span skills; mediation has been scientifically shown to effect the volume of gray matter, as well as the myelin density of white matter. A cross-sectional design study done by Giuseppe Pagnoni and Milos Cekic on the physical effects of meditation on the typical decrease in gray matter volume associated with aging, used yet another style of meditation named Zen meditation. Zen meditation is third style of mediation that is very similar to (OM) mediation that requires the practicing individual maintain an open attitude and a regular breathing pattern, all while keeping good posture (Pagnoni & Cekic, 2007). Participants of their study were separated into two groups, one of long-term Zen meditators and one of controls, and asked to complete a sustained attention task while the researchers administered a Voxel-based-morphometry for an MRI to each participant. Data collected upon completion of the study illustrated that brains of the participants that did not regularly practice mediation showed the normal level of decrease of gray matter volume as a result of aging however, those that did showed no such decrease. With respect to the meditator's group, a slight increase in their gray matter volume was shown, particularly in the putamen (Pagnoni & Cekic, 2007). Thus, as the overall volume of gray matter increases, it is reasonably predictable that individuals that practice meditation may perform better at tasks relating to the regions responsible for sensory perception, emotions, attention, etc., as these are areas located within the gray matter area. With regards to the putamen structure of the brain; Pagnoni and Cekic disclosed that the largest amount of gray matter increase in the meditator's brains, was found in this area (2007).

Putamen, located at the base of the forebrain, are involved in motor control. That being said, individuals having more gray matter volume in their putamen would likely perform better with tasks relating to having skilled motor control as a result of the greater amount of volume readily

Need help with the assignment?

Our professionals are ready to assist with any writing!

GET HELP

available to strengthen those neural connections within the putamen. Gray matter aside, the nearly equally extensive regions of white matter, in this case the anterior cingulate cortex, have also shown dramatic changes in terms of neuroplasticity, resulting from the prolonged practice of mediation as reported in a study done by Tang et al. in 2012. Along with 4 other colleagues, Tang discovered in 2012 that neuroplasticity, as a result of mediation, significantly changed the ACC's neural activity. As a result of neurological development within the anterior cingulate cortex, Tang et al. saw an elevation in the connections between the ACC and other regions of the brain. By utilizing fractional anisotropy as a measure of neural connectivity, researchers were able to detect neuroplastic changes in the ACC through the means of diffusion tensor imaging. Tasks pertaining to the functions of the ACC, such as problem solving abilities as well as the ability to exhibit control over one's cognition and emotions, could also be improved with the expansion of neural connections (Tang et al., 2012).

In addition to the changes seen in the ACC, increases in axonal density, in other words myelin production, were also seen in response to the birth of new neural connections within the brains of experience meditators. Such increases in myelin production are speculated to be caused by the subsequent decrease in radial diffusivity or (RD). Since increases in (RD) are scientifically associated with decreases in myelination, such a decrease in (RD) would theoretically be associated with an occurrence of myelination. Such an occurrence as this would include the birth of neural connections, resulting in the further advancements of skills and cognitive abilities relative to the respective region in which these neuralplastic changes occur (Tromp, 2013). Generally speaking, meditation facilitates neuralplastic changes within the brain in a variety of ways but, aside from some of the smaller, possibly less noticeable changes, meditations offers an opportunity to not only heighten and build upon neurological structures within the brain, more importantly, it offers the individual an exercise of the mind that can influence one's interaction with, and reaction to, life's most challenging and rewarding experiences.

The possibilities, by and large, seem almost endless when it comes to the physical and mental health benefits that can arise with the integration of regular mediation practice into one's lifestyle. Milestones in cognitive systems of processing have been discovered in the various studies previously discussed yet, there is so much more to meditation than what science can currently explain. As of right now, meditation has been shown to reduce high blood pressure, increase attention as well as give a favorable boost to the immune system. Albeit that further research will more than likely uncover more of meditation's benefits in the human brain, the benefits that are currently understood have a great deal to offer and should be seriously considered a daily practice to integrate into one's lifestyle. As Widdett contends in his article, that an individual's overall sense of well-being and empathy towards others is heightened, as well as strengthened, as a result of mediation (2014).

But, Widdett's claims are not without scientific evidence as presented in previous studies that

Need help with the assignment?

Our professionals are ready to assist with any writing!

GET HELP

he cites in his article, as well as the select studies mentioned in previous paragraphs. To reiterate, mediation produces effects relating to physical, emotional, and cognitive aspects of the human experience (Wilson, 2013). It's the kind of investment in which the effort put in is greatly surpassed by the associated rewards. In one last pitch, mediation has been shown in research to lower blood pressure which could help those of whom struggle with hypertension. The emotional regulation possible by meditation can help in various situations in which a cool, calm, collected mind is necessary. Lastly, neural developments in the cognitive systems as a result of the regular practice of mediation could prove useful in the event that higher levels of concentration are needed. Mediation comes with a myriad of possibilities for improving experiences in life, all it takes is time and practice to build up a skill that will serve its purpose over a lifetime.

gradesfixer.com

Need help with the assignment?

Our professionals are ready to assist with any writing!

[GET HELP](#)