

## Mind to Change Your Brain

# This Is Your Brain on Meditation

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I realized today that in all my posts regarding the brain and how to sculpt it with [mindfulness \(/basics/mindfulness\)](#), I've never actually explained *how and why* [meditation \(/basics/meditation\)](#) works. Specifically, the science behind how your brain changes the longer you meditate. I think this is important for many reasons, but one of the most salient is that this information serves as a great motivator to keep up a daily practice (or start one).

I'm sure you've heard people extol the virtues of meditation. You may be skeptical of the claims that it helps with all aspects of life. But, the truth is, it does. Sitting every day, for at least 15-30 minutes, makes a huge difference in how you approach life, how personally you take things and how you interact with others. It enhances compassion, allows you to see things more clearly (including yourself) and creates a sense of calm and centeredness that is indescribable. There really is no substitute.

For those of you who are curious as to how meditation changes the brain, this is for you. Although this may be slightly technical, bear with me because it's really interesting. The brain, and how we are able to mold it, is fascinating and nothing short of amazing. Here are the brain areas you need to know:

- Lateral prefrontal cortex: the part of the brain that allows you to look at things from a more rational, logical and balanced perspective. In the book, we call it the **Assessment Center**. It is involved in modulating emotional responses (originating from the [fear \(/basics/fear\)](#) center or other parts of the brain), overriding automatic behaviors/habits and decreasing the brain's

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- Medial prefrontal cortex: the part of the brain that constantly references back to you, your perspective and experiences. Many people call this the “**Me Center**” of the brain because it processes information related to you, including when you are daydreaming, thinking about the future, reflecting on yourself, engaging in social interactions, inferring other people’s state of mind or feeling empathy for others. We call it the Self-Referencing Center.

What’s interesting about the Medial PreFrontal Cortex (mPFC) is that it actually has *two* sections:

- Ventromedial medial prefrontal cortex (vmPFC) – involved in processing information related to you and people that you view as *similar* to you. This is the part of the brain that can cause you to end up taking things too personally, which is why we referred to it as the unhelpful aspect of the Self-Referencing Center in the book. (In reality, this brain area has many important and helpful functions – since we were focusing on overcoming anxiety, depression (/conditions/depressive-disorders) and habits you want to change, we referred to it as unhelpful because it often causes increases in rumination/worry and exacerbates anxious or depressive thoughts/states/feelings.)
- Dorsomedial Prefrontal Cortex (dmPFC) – involved in processing information related to people who you perceive as being *dissimilar* from you. This very important part of the brain is involved in feeling empathy (especially for people who we perceive of as not being like us) and maintaining social connections.
- Insula: the part of the brain that monitors **bodily sensations** and is involved in experiencing “gut-level” feelings. Along with other brain areas, it helps “guide” how strongly you will respond to what you sense in your body (i.e., is this sensation something dangerous or benign?). It is also heavily involved in experiencing/feeling empathy.
- Amygdala: the alarm system of the brain, what most refer to as the “**Fear Center**.” It’s a part of the brain that is responsible for many of our initial emotional responses and reactions, including the “fight-or-flight” response. (Along with the Insula, this is what we referred to as the Uh Oh Center.)

### ***The Brain Without Meditation – Stuck on Me***

If you were to look at people’s brains before they began a meditation practice, you would likely see strong neural (/basics/neuroscience) connections *within* the Me Center and *between* the Me Center

and the bodily sensation/fear centers of the brain. This means that whenever you feel anxious, scared or have a sensation in your body (e.g., a tingling, pain, itching, whatever), you are far more likely to assume that there is a problem (related to you or your safety). This is precisely because the Me Center is processing the bulk of the information. What's more, this over-reliance on the Me Center explains how it is that we often get stuck in repeating loops of thought about our life, mistakes we made, how people feel about us, our bodies (e.g., "I've had this pain before, does this mean something serious is going on?") and so on.

Why is the Me Center allowed to process information this way, essentially unabated? The reason this happens, in part, is because the Assessment Center's connection to the Me Center is relatively weak. If the Assessment Center was working at a higher capacity, it would modulate the excessive activity of the vmPFC (the part that takes things personally) and enhance the activity of the dmPFC (the part involved in understanding (/basics/empathy) other's thoughts and feelings). This would lead us to take in all the relevant information, discard erroneous data (that the Me Center might want to focus on exclusively) and view whatever is happening from a more balanced perspective – essentially decreasing the overthinking, ruminating and worrying that the Me Center is famous for promulgating. One helpful way to think of the Assessment Center is as a sort of "brake" for the unhelpful parts of the Me Center.

### ***The Brain on Meditation – I Can See Clearly Now***

In contrast, if you meditate on a regular basis, several positive things happen. First, the strong, tightly held connection between the Me Center (specifically the unhelpful vmPFC) and the bodily sensation/fear centers begins to break down. As this connection withers, you will no longer assume that a bodily sensation or momentary feeling of fear means something is wrong with you or that you are the problem! This explains, in part, why anxiety (/basics/anxiety) decreases the more you meditate – it's because the neural paths that link those upsetting sensations to the Me Center are decreasing. Said another way, your ability to ignore sensations of anxiety is enhanced as you begin to break that connection between the unhelpful parts of the Me Center and the bodily sensation/fear centers. As a result, you are more readily able to see those sensations for what they are and not respond as strongly to them (thanks to your strengthened Assessment Center).

Second, a heftier, healthier connection forms between the Assessment Center and bodily sensation/fear centers. This means that when you experience a bodily sensation or something potentially dangerous or upsetting, you are able to look at it from a more rational perspective (rather than automatically reacting and assuming it has something to do with you). For example, when you experience pain, rather than becoming anxious and assuming it means something is wrong with you, you can watch the pain rise and fall without becoming ensnared in a story about what it might mean.

Finally, an added bonus of meditating is that the connection between the helpful aspects of the Me Center (i.e. dorsomedial prefrontal cortex) – the part involved in processing information related to people we perceive as being *not like us* – and the bodily sensation center – involved in empathy – becomes stronger. This healthy connection enhances your capacity to understand where another person is coming from, especially those who you cannot intuitively understand because you think or perceive things differently from them (i.e., dissimilar others). This increased connection explains why meditation enhances empathy – it helps us use the part of the brain that infers other people’s states of mind, their motivations, desires, [dreams \(/basics/dreaming\)](#) and so on, while simultaneously activating the part of the brain involved in the actual experience of empathy (insula). The end result is that we are more able to put ourselves in another person’s shoes (especially those not like us), thereby increasing our ability to feel empathy and compassion for everyone.

### ***Daily Practice is Important***

Essentially, the science “proves” what we know to be true from the actual experience of meditating. What the data demonstrate is that meditation facilitates strengthening the Assessment Center, weakening the unhelpful aspects of the Me Center (that can cause you to take things personally), strengthening the helpful parts of the Me Center (involved with empathy and understanding others) and changing the connections to/from the bodily sensation/fear centers such that you experience sensations in a less reactive, more balanced and holistic way. In a very real way, you literally are changing your brain for the better when you meditate.

In the end, this means that you are able to see yourself and everyone around you from a clearer perspective, while simultaneously being more present, compassionate and empathetic with people no matter the situation. With time and practice, people do truly become calmer, have a greater capacity for empathy and find they tend to respond in a more balanced way to things, people or events in their lives.

However, to maintain your gains, you have to keep meditating. Why? Because the brain can very easily revert back to its old ways if you are not vigilant (I’m referencing the idea of neuroplasticity here). This means you have to keep meditating to ensure that the new neural pathways you worked so hard to form stay strong.

To me, this amazing brain science and the very real rewards gained from meditation combine to form a compelling argument for developing and/or maintaining a daily practice. It definitely motivates me on those days I don’t “feel” like sitting. So, try to remind yourself that meditating every day, even if it’s only 15 minutes, will keep those newly formed connections strong and those unhelpful ones of the past at

bay.

Addendum: For those wanting to start a meditation practice or who might be experiencing emotional issues, [memories \(/basics/memory\)](/basics/memory), etc. when meditating, please seek out an experienced meditation teacher. I have received some comments from people stating they do not believe meditation works (which is likely true for some people) or that it could be harmful if done incorrectly. Obviously, meditation has been very positive for me, but I have always worked with a meditation teacher or mentor and I would suggest you do the same, as a teacher can help you figure out what is right for you and guide you through any difficulties you may be having.



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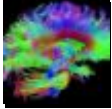
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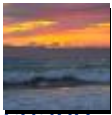


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