

# This is your brain on prayer and meditation

There is research backing the idea that meditation and prayer can trigger the release of feel-good chemicals in the brain.

As heartbreaking details continue to emerge from the [tragic Parkland, Fla. school shooting](#), we may feel determined to do something, anything. Maybe it's [donating money to those affected](#), donating blood, signing petitions or calling legislators.

I'm doing all that (which really doesn't feel at all like enough) and then something I don't quite understand: I'm praying.

As an agnostic who does not identify with any organized religion, my version of prayer isn't rooted in any tradition or theology. It's not a regular practice, nor one with set rules or goals. Sometimes I take the pantheistic approach of praying to the universe, focusing on sending healing thoughts out to the world, particularly others who are suffering. Sometimes I'll just visualize a ball of light in my head — a collective conscious benevolence — and aim to contribute positive energy to it. Sometimes I pray to my twin brother, Phillip, who died when we were nine years old.

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Lately I've been wondering just what the science is behind the act of prayer and meditation. What parts of our brains are activated or deactivated? How might such a ritual, regardless of personal faith or intention, affect our behavior?

To learn more, I talked to several doctors including [Dr. David Spiegel](#), associate chair of psychiatry and behavioral sciences and medical director of the center for integrative medicine at Stanford University School of Medicine, who discussed what the brain looks like on prayer.

## THE DEEP PARTS OF OUR BRAIN ARE AT WORK

"Praying involves the deeper parts of the brain: the medial prefrontal cortex and the posterior cingulate cortex — the mid-front and back portions," says Dr. Spiegel, adding that this can be seen through magnetic image resonance (MRI), which render detailed anatomical pictures. "These parts of the brain are involved in self-reflection and self-soothing."

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Spiegel notes that while these reflective regions of the brain are activated, parts of the brain associated with taking action are inactivated. It's an interesting correlation that Spiegel says could play a role in why prayer helps people struggling with addictive urges.

In [one recent study](#) conducted by NYU Langone Medical Center, members of Alcoholics Anonymous were placed in an MRI scanner and then shown drinking-related images to stimulate cravings (it worked, which sounds pretty cruel). But the cravings were soon after reduced when the participants — you guessed it — prayed. The MRI data showed changes in parts of the prefrontal cortex, which is responsible for the control of emotion and "the semantic reappraisal of emotion," the study cited.

## PRAYER & MEDITATION GET US AWAY FROM FIGHT OR FLIGHT MODE

The link between deep reflection and a decrease in action can be a useful one while dealing with a trauma or other negative situation. It's pretty simple: When we're praying, we can't be lashing out or kicking walls in. In other words, we can't react. This isn't to say one should bottle up their anger or sorrow and lock it up in a prayer, but for the sheer purpose of self-care, prayer and meditation can be useful when we're barely able to cope.

"Prayer and meditation are highly effective in lowering our reactivity to traumatic and negative events," says [Dr. Paul Hokemeyer](#), a marriage, family and addictions therapist. "They are powerful because they focus our thoughts on something outside ourselves. [During times of stress](#), our limbic system, more commonly known as our central nervous system, becomes hyper-activated, which does two things: it thrusts us in to survival mode where we freeze, fight or flee the situation, [such that] we move away from the present state of being into a future state. This also shuts down our executive functioning [and] prevents us from thinking clearly. This is why when we're stressed out we can make poor decisions and act in self-

When we sit down and engage in prayer or [meditation](#), we are able to shift away from this frightened and stressed survival mode into "an intentional state," says Dr. Hokemeyer, and ultimately "reengage our prefrontal cortex, the part of the brain that rules our executive functioning and enables us to make intelligent mindful decisions."

## TRIGGERING HAPPY BRAIN CHEMICALS

There's also [research backing](#) the idea that meditation and prayer can trigger the release of feel-good chemicals in the brain.

[Dr. Loretta G. Breuning](#), founder of the Inner Mammal Institute and the author of "The Science of Positivity" and "Habits of a Happy Brain," explains that when we pray, we can activate neural pathways we developed when young to release hormones such as oxytocin.

"Oxytocin is known for its role in maternal labor and lactation, but it also [enables] social trust and attachment, giving us a good feeling despite living in a world of threat," says Dr. Breuning. "It's the idea of 'I can count on something to protect me.' So when a situation comes up and you're out of ideas and you are helpless, feeling much like you did when you were a baby, prayer can provide some other source of hope."

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And these meditative acts may be a way of being real with yourself — of locating where you are right now, what you're feeling and identifying your needs.

“[Praying in part] is saying to myself: I am really hurting about X. I am really hoping for Y. I am looking for support from Z,” says Breuning, adding that as a repeated practice, prayer can serve as a useful habit for times when we're overwhelmed or struggling to figure out a solution.

“All too often, we rush through our day and overlook our deeper impulses,” says Breuning. “Then when our work is done and we try to rest, the bad feelings we've ignored surge up, and we have trouble untangling the cause and finding a solution that restores hope. Praying makes that useful conscious act into a reliable habit.”

## BALANCING PRAYER WITH ACTION

While there's certainly a sound argument to be made for the psychological benefits of prayer and meditation, one discussion that comes up often (especially among those who are agnostic or atheist), is around what prayer can actually do in the world. How can we use it to not only center ourselves and self-soothe, but to take a positive action?

The key, Dr. Hokemeyer finds, is largely one of balance.

“The trick to balancing prayer with results is to recognize when is the time to pray/meditate and when is the time to go out and do something,” says Hokemeyer. “One of the purposes of prayer and meditation is to regain our footing so that we can step out into the world and take positive action: we reconnect, re-center, recharge and gain the strength necessary to take steps that will create real change. In other words, prayer is

[Dr. Anna Yusim](#), a psychiatrist and the author of "Fulfilled: How the Science of Spirituality Can Help You Live a Happier, More Meaningful Life," strongly recommends prayer and meditation, deeming them “wonderful and powerful tools,” but ones that are made all the more wonderful and powerful “when coupled with concerted action.”

A favorite meditation that Dr. Yusim recommends is the [Loving-Kindness meditation](#), which blends breathing techniques with positive thoughts for all beings; she suggests that after you complete this meditation, you straighten up and ask yourself this question:

“What is one thing I can do to help somebody I love right now?”