

Physiology of Love

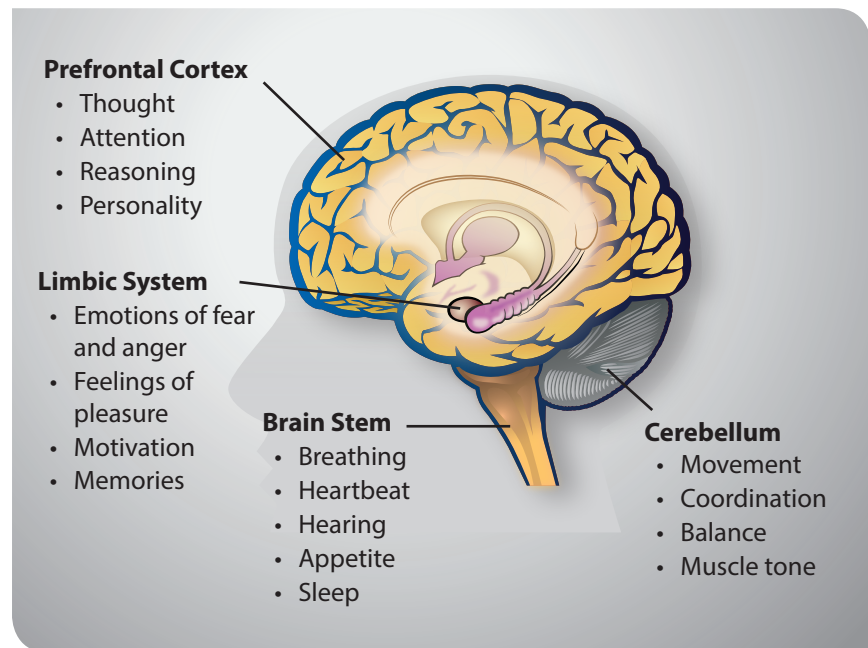


Love is undeniably a nutritional need for all humans. Our physical, mental, and emotional well-being greatly depends on receiving nurturance and positive touch from healthy, reciprocal relationships. But why is this? The answer lies within the organization of our own bodies, specifically our brain and heart.

The Brain

The brain is organized into four main areas, each increasing in complexity (Perry, 2009):

- The brainstem and cerebellum control the most basic bodily functions. They are essential for maintaining overall homeostasis in the body, and thus are less capable of change than the higher levels of the brain. This lack of plasticity ensures that bodily functioning remains stable in order to survive.
- The limbic system is primarily made up of the hypothalamus, hippocampus, and the amygdala. It controls emotional responses and behaviors, is involved in the formation of memories, and handles fight or flight responses.
- The prefrontal cortex is even more complex. It plans cognitive behavior, expresses personality, helps in decision-making, and moderates social behavior.
- Our higher functioning parts of the brain, the limbic system and the prefrontal cortex, are more malleable, allowing us to learn new information and skills regularly. The adaptability of the limbic system and the prefrontal cortex is key to individual emotional regulation and cognitive functioning.



The four areas of the brain are all connected and can communicate with one another via signals. It is much easier for the lower regions of the brain (the brainstem and cerebellum) to send signals that influence the higher functioning regions (the limbic system and prefrontal cortex) than it is for the higher functioning regions, particularly the prefrontal cortex, to send signals down that may influence the more basic responses. Basically, each system can send signals up, but it's much harder to come back down. This is evident as the limbic system, which controls emotions, often overrides the cognitive prefrontal cortex.

The Heart-Brain Connection

Because the prefrontal cortex is more complex, it cannot as easily influence the more basic functioning regions. When under the most severe stress we are driven by our instinctual, survival responses from the brainstem (Rustin, 2003).

So what does this mean for us and our relationships? Even the most rational, cognitive brain can fall victim to emotional reactivity, and we may regret these responses. But, as we know, the systems of the body are all intertwined, thus the heart-brain connection is one of utmost importance.



The first pattern of response in life is the fetal experience of the maternal heartbeat (Perry, 2009):

- At the average rate of 80 beats per minute, the mother's heart instills a pattern in her child.
- This becomes the organizing feature for future emotional arousal, and homeostatic responses.
- The mother's resting heart rate that an individual experienced is the ideal rate for priming the infant cortex to take in new information.
- Throughout our lives, this heart rate (for most – 80 beats per minute; although it can vary from 60-100) remains a soothing rate and is established as a key rhythm in life.

The brain's emotional reaction to something, whether the emotion is frustration or appreciation, drives the heart rhythm patterns (McCraty, Atkinson, Tiller, Rein, & Watkins, 1995; Tiller, McCraty, & Atkinson, 1996):

- Heart rate variability (HRV) is the variation in the time between heartbeats→ should be steady instead of sporadic or irregular.
- Coherence refers to the amplitude, frequency, and regularity of the heartbeat→ want it to be high.
- Those who are having frustrated feelings respond with low HRV and low coherence.
- On the other hand, those who feel appreciation instead of frustration respond with high HRV and high coherence.

The cortex, which is the learning part of the brain, is dependent on being in a stable soothing environment to learn. A teacher may ask a class, "Have you ever studied material for a test and learned it, but when you arrived for the test you could not remember anything?" That is because your stress level elevated your heart beat and transitioned your brain from the cortex, towards the limbic system and brainstem. The stress and arousal actually transformed the functioning of the brain. That is why it is much easier to learn material in a classroom, but sometimes it can be difficult to really implement that same material, especially when a person is emotional and aroused (Schacter & Addis, 2007).

Not only can emotions affect the brain's response, but also the heart and overall health. Research (McCraty, Atkinson, & Tomasino, 2001) has shown that:

- When an individual thinks of a previous fight with their partner, but then focuses on a caring memory of the partner, their immune system functioning increases.
- When focusing on feelings of anger and resentment regarding the fight, individuals actually experience a decrease in their immune system functioning.

Elevated stress levels are also known factors for increased hypertension, heart disease, and depression, and may also lead to sleep problems.

The Heart-Brain Impact on Relationships

A couple's chronic fighting creates a patterned emotional response that adversely affects the homeostasis of the body. We are creatures of habit and eventually form a typical reaction to stressful moments with our partners, settling into a common negative interaction. Relationships are bi-directional, or go both ways. Therefore, when one individual in the pair emotionally reacts, the other probably does as well.

Negative emotions can shift HRV, adversely affecting bodily system functioning, causing both individuals in the couple to have decreased immune function and increased cardiovascular responses. Positive emotions, however, keep the heart at a better, healthier baseline rate. If one, or both, stops the negative cycle, the relationship will function in a more positive environment (Bernardi et al., 2001).

Furthermore, the power of touch should not be underestimated as a positive regulation strategy. A partner's touch triggers subconscious physiological responses. In fact, touch triggers a release of hormones in a one-thousandth of a second in both men and women, almost immediately affecting a person's emotional state (Gallace & Spence, 2010).

Being emotional is often the great dysregulator of relationships. This is essential to remember when teaching all of the great relationship material in ELEVATE! When couples go home and try to implement the material, it will be harder to do so when they are angry, resentful, ticked-off, or frustrated.

Educate Couples

Teaching couples about the heart-brain connection can help them become more aware of their physiological response during conflict and other stressful experiences. Helping couples learn strategies, such as **mindfulness**, to regulate their heart-brain response to stressful triggers has been shown to impact multiple facets of individual and couple functioning:

- It re-aligns heart variability patterns within relationships.
- It sets a physiological baseline that strengthens over time and is more resistant to stressful conditions.
- It provides positive coping skills for use when the stress response has been initiated.
- It leads to healthier bodily functioning that, over time, can lead to improvements in the immune system and long-term health and well-being.



For further information on this topic, please visit:
www.heartmath.org/research/science-of-the-heart/introduction.html

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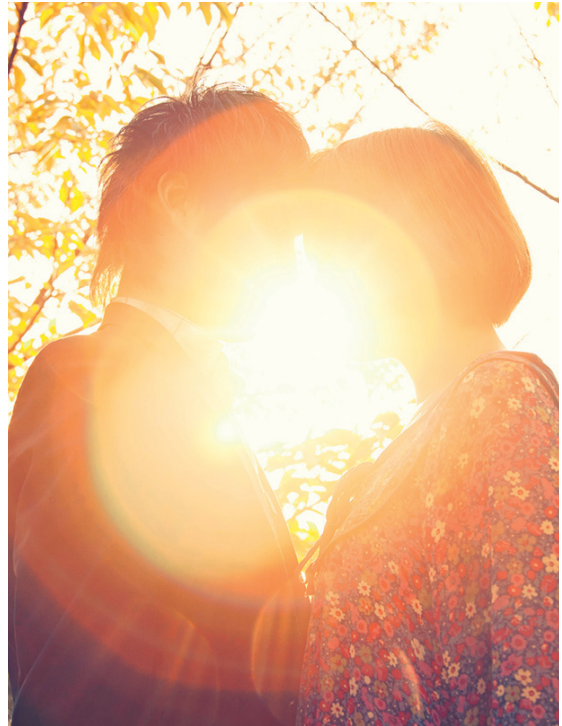
Helping Couples Practice Mindfulness



Relationship Stress and the Brain

A couple's chronic stress (i.e., conflict, finances, children, etc.) creates an emotional response that becomes a habit in the relationship and can adversely impact the health of the relationship and body. Elevated stress levels are known factors for increased hypertension, heart disease, and depression, and may also lead to sleep problems. Further, when individuals focus on feelings of anger or resentment, they experience a decrease in immune functioning (McCraty, Atkinson, & Tomasino, 2001).

One way to address stress is to teach and learn mindful behaviors. Mindfulness-Based Stress Reduction (MBSR) is an evidence-based strategy and skillset for managing chronic stress and the acute stress response. Participating in these behaviors helps us alter the habitual responses due to emotion and set a stronger physiological baseline for reactivity (Bernardi et al., 2001). These physiological changes also help our physical and mental health (Grossman, Niemann, Schmidt, & Walach, 2004).



Mindfulness Overview

Mindfulness is an open attention to and awareness of the present moment. Awareness is experienced both internally and externally.

Programs have been developed that focus on the skills of mindfulness practice. These skills can be used to develop an understanding of thoughts and feelings in the present moment. Mindfulness can also help one act skillfully and not emotionally in stressful situations.

Mindfulness is based on seven principles (Kabat-Zinn, 1990):

- Non-judging: be an impartial observer to each experience.
- Patience: allow each experience to emerge in its own time.
- Beginner's mind: don't allow what we "know" to impact the present moment; try to experience something as if it is for the first time.
- Trust: believe in your intuition and your own ability.
- Non-striving: mindfulness is not for a purpose – to get somewhere or something; it is about just being or "non-doing."
- Acceptance: see things as they actually are in the present moment.
- Letting go: detach from feelings and thoughts; don't reject or elevate certain experiences or feelings.

Mindfulness and Relationships

Mindfulness is important for relationships because it promotes unity, connection, and closeness within relationships (Kabat-Zinn, 1990). It helps one approach stressful situations as challenges (Kabat-Zinn, 1990), increases empathy (Kristeller & Johnson, 2005), and promotes acceptance and less avoidant behaviors (Wachs & Cordova, 2007). Having higher levels of mindfulness is associated with greater relationship satisfaction (McGill, Adler-Baeder, & Rodriguez, 2016; Burpee & Langer, 2005; Barnes et al., 2007), more positive emotional skills (Wachs & Cordova, 2007), and higher levels of love and commitment toward one another (Barnes et al., 2007).

Research indicates that after participation in a mindfulness-based relationship education program, couples report improvements in couple satisfaction, relatedness to their partner, closeness with one another, acceptance of one another, and lower levels of relationship distress and negative affect (Carson, Carson, Gil, & Baucom, 2004; Gambrel & Piercy, 2015). In addition to improvements in couples' relationships, participation in these programs also improves individual well-being including, greater autonomy, mindfulness, self-expansion, and ability to cope with stress (Carson, Carson, Gil, & Baucom, 2007; Gambrel & Piercy, 2015).

Mindfulness and Health

Research (Grossman, Niemann, Schmidt, & Walach, 2004) shows that mindfulness has positive effects on the brain and brain functioning, which in turn, can improve:

- Physical health by reducing physical pain, physical impairments, skin problems, and headaches.
- Mental health by reducing depressive symptoms, anxiety, sleeping problems, and affective perceptions of pain.

Mindfulness can also impact negative thinking, emotional regulation, and negative behaviors. It improves mood! Therefore, mindful individuals are able to cope with stress better, which decreases overall stress as well as relationship stress (Carson, Carson, Gil, & Baucom, 2004).

Mindfulness, in addition to positive relationship behaviors and lower levels of stress, positively influences relationship quality (McGill & Adler-Baeder, 2020). Research suggests that mindfulness can be a resource that promotes successful intimate partnerships that outweigh the damaging effects of anxiety (Cox, Adler-Baeder, McGill, & Cooper, 2020). One's own mindfulness can influence assessments of one's own and one's partner's reports of relationship quality and sexual satisfaction (McGill, Burke, & Adler-Baeder, 2020).

Trait & State Mindfulness

- Trait mindfulness is having a mindful personality. In other words, one is primed to be mindful or has a predisposition to be in the moment.
- State mindfulness is situational. In other words, in a specific situation you are mindful, where in others you may not be (Barnes, Brown, Krusemark, Campbell, & Rogge, 2007).



Mindfulness Practice

Mindfulness is practiced using many different meditation, or breathing-focused, techniques (e.g., loving-kindness, lake meditation, and body scan). The focus of these techniques is always about being in the present moment and fully experiencing the moment and the feelings associated with it. Mindfulness can be practiced during all activities that one engages in throughout the day (e.g., walking, eating, yoga).

One teaches mindfulness by leading the participants through the exercises and processing the experiences with them afterwards. The ELEVATE curriculum includes mindfulness-based practices that educators can facilitate during class. Below are a few tips on how to facilitate mindfulness:



- **Maintain a calm environment.** Turn the lights off or low before you begin the mindful practice. Keep your voice soft and slow while you say the directions during the meditation.
- **Explain what is about to happen.** It can be helpful to tell the participants the purpose of the activity, and what you will be having them do during the meditation. This will make them feel more comfortable and will help them be better able to concentrate.
- **Model breathing techniques.** It is sometimes helpful to breathe audibly to discretely remind participants to focus on their breath. You can also teach people about 3-part breath (dirge pranayama). To do this technique you inhale into your belly, then your ribcage, and finally your chest. On the exhale you reverse the order: out of your chest, ribcage, then belly.
- **Offer periodic reminders to focus on breathing.** Another way to help participants remain focused on their breath is to prompt them with a statement such as, “If your mind is wandering, notice that, and then let those thoughts go. Then bring the focus back to your breathing.” Additionally, if there are noises (participants moving, a bird chirping outside, etc.) have your participants take note of the sound and then “let it go” to again focus on the breath, memory, or feeling.
- **Transition out calmly.** It is important to remain calm, keep your voice soft, and take time when transitioning out of a mindful practice. You don’t want to abruptly end the participants’ relaxed state. Don’t turn on the lights immediately either; this could also abruptly end the participants’ relaxed state.

Web-based Resources:

- <http://marc.ucla.edu>
The Mindfulness Awareness Research Center at UCLA fosters mindfulness through education and research. Their website provides certification, free guided meditation, classes and events, research, and resources.
- www.umassmed.edu/cfm/index.aspx
University of Massachusetts’ Center for Mindfulness in Medicine, Health Care, and Society is leading the world in mind-body medicine. Their website provides resources, research and programs related to mindfulness practice.
- <https://goamra.org>.
The American Mindfulness Research Association is a professional resource for researchers, practitioners, and the broader public that provides a central location to find peer-reviewed research on mindfulness and to facilitate professional development through programs, grants, and discovery.

Additional Resources:

- **Kabat-Zinn, J. (2009) *Full Catastrophe Living*.** New York, NY: Random House, Inc.
Written by the man who developed Mindfulness Based Stress Reduction (MBSR), this book describes the background and basis of mindfulness. It also includes examples, new research, and an extensive reading list to help readers better understand mindfulness and its benefits.
- **Brantley, J. & Millstine, W. (2007) *Daily Meditations for Calming Your Anxious Mind*.** Oakland, CA: New Harbinger Publications.
This book uses the evidence-based practice of mindfulness to address the role of thoughts and emotions associated with anxiety. It focuses on awareness in the present moment to use tenderness towards oneself.
- **Magee, R. V. (2019). *The Inner Work of Racial Justice: Healing Ourselves and Transforming Our Communities Through Mindfulness*.** New York, NY: TarcherPerigee.
This book provides an invitation to address unconscious bias through the practice of embodied mindfulness—paying attention to thoughts, feelings, and physical sensations in an open, nonjudgmental way—to increase emotional resilience, recognize biases, and become less reactive.

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