

There's No Such Thing as Everlasting Love (According to Science)

By Emily Esfahani Smith

In her new book *Love 2.0: How Our Supreme Emotion Affects Everything We Feel, Think, Do, and Become*, the psychologist Barbara Fredrickson offers a radically new conception of love.

Fredrickson, a leading researcher of positive emotions at the University of North Carolina at Chapel Hill, presents scientific evidence to argue that love is not what we think it is. It is not a long-lasting, continually present emotion that sustains a marriage; it is not the yearning and passion that characterizes young love; and it is not the blood-tie of kinship.

Rather, it is what she calls a "micro-moment of positivity resonance." She means that love is a connection, characterized by a flood of positive emotions, which you share with another person—any other person—whom you happen to connect with in the course of your day. You can experience these micro-moments with your romantic partner, child, or close friend. But you can also fall in love, however momentarily, with less likely candidates, like a stranger on the street, a colleague at work, or an attendant at a grocery store. Louis Armstrong put it best in "It's a Wonderful World" when he sang, "I see friends shaking hands, sayin' 'how do you do?' / They're really sayin', 'I love you.'"

Fredrickson's unconventional ideas are important to think about at this time of year. With Valentine's Day around the corner, many Americans are facing a grim reality: They are love-starved. Rates of loneliness are on the rise as social supports are disintegrating. In 1985, when the General Social Survey polled Americans on the number of confidants they have in their lives, the most common response was three. In 2004, when the survey was given again, the most common response was zero.

According to the University of Chicago's John Cacioppo, an expert on loneliness, and his co-author William Patrick, "at any given time, roughly 20 percent of individuals—that would be 60 million people in the U.S. alone—feel sufficiently isolated for it to be a major source of unhappiness in their lives." For older

Americans, that number is closer to 35 percent. At the same time, rates of depression have been on the rise. In his 2011 book *Flourish*, the psychologist Martin Seligman notes that according to some estimates, depression is 10 times more prevalent now than it was five decades ago. Depression affects about 10 percent of the American population, according to the Centers for Disease Control.

A global poll taken last Valentine's Day showed that most married people—or those with a significant other—list their romantic partner as the greatest source of happiness in their lives. According to the same poll, nearly half of all single people are looking for a romantic partner, saying that finding a special person to love would contribute greatly to their happiness.

But to Fredrickson, these numbers reveal a "worldwide collapse of imagination," as she writes in her book. "Thinking of love purely as romance or commitment that you share with one special person—as it appears most on earth do—surely limits the health and happiness you derive" from love.

"My conception of love," she tells me, "gives hope to people who are single or divorced or widowed this Valentine's Day to find smaller ways to experience love."

You have to physically be with the person to experience the micro-moment. For example, if you and your significant other are not physically together—if you are reading this at work alone in your office—then you two are not in love. You may feel connected or bonded to your partner—you may long to be in his company—but your body is completely loveless.

To understand why, it's important to see how love works biologically. Like all emotions, love has a biochemical and physiological component. But unlike some of the other positive emotions, like joy or happiness, love cannot be kindled individually—it only exists in the physical connection between two people. Specifically, there are three players in the biological love system—mirror neurons, oxytocin, and vagal tone. Each involves connection and each contributes to those micro-moment of positivity resonance that Fredrickson calls love.

When you experience love, your brain mirrors the person's you are connecting with in a special way. Pioneering research by Princeton University's Uri Hasson

shows what happens inside the brains of two people who connect in conversation. Because brains are scanned inside of noisy fMRI machines, where carrying on a conversation is nearly impossible, Hasson's team had his subjects mimic a natural conversation in an ingenious way. They recorded a young woman telling a lively, long, and circuitous story about her high school prom. Then, they played the recording for the participants in the study, who were listening to it as their brains were being scanned. Next, the researchers asked each participant to recreate the story so they, the researchers, could determine who was listening well and who was not. Good listeners, the logic goes, would probably be the ones who clicked in a natural conversation with the story-teller.

What they found was remarkable. In some cases, the brain patterns of the listener mirrored those of the storyteller after a short time gap. The listener needed time to process the story after all. In other cases, the brain activity was almost perfectly synchronized; there was no time lag at all between the speaker and the listener. But in some rare cases, if the listener was particularly tuned in to the story—if he was hanging on to every word of the story and really got it—his brain activity actually anticipated the story-teller's in some cortical areas.

The mutual understanding and shared emotions, especially in that third category of listener, generated a micro-moment of love, which "is a single act, performed by two brains," as Fredrickson writes in her book.

Oxytocin, the so-called love and cuddle hormone, facilitates these moments of shared intimacy and is part of the mammalian "calm-and-connect" system (as opposed to the more stressful "fight-or-flight" system that closes us off to others). The hormone, which is released in huge quantities during sex, and in lesser amounts during other moments of intimate connection, works by making people feel more trusting and open to connection. This is the hormone of attachment and bonding that spikes during micro-moments of love. Researchers have found, for instance, that when a parent acts affectionately with his or her infant—through micro-moments of love like making eye contact, smiling, hugging, and playing—oxytocin levels in both the parent and the child rise in sync.

The final player is the vagus nerve, which connects your brain to your heart and subtly but sophisticatedly allows you to meaningfully experience love. As Fredrickson explains in her book, "Your vagus nerve stimulates tiny facial muscles

that better enable you to make eye contact and synchronize your facial expressions with another person. It even adjusts the miniscule muscles of your middle ear so you can better track her voice against any background noise."

The vagus nerve's potential for love can actually be measured by examining a person's heart rate in association with his breathing rate, what's called "vagal tone." Having a high vagal tone is good: People who have a high "vagal tone" can regulate their biological processes like their glucose levels better; they have more control over their emotions, behavior, and attention; they are socially adept and can kindle more positive connections with others; and, most importantly, they are more loving. In research from her lab, Fredrickson found that people with high vagal tone report more experiences of love in their days than those with a lower vagal tone.

Historically, vagal tone was considered stable from person to person. You either had a high one or you didn't; you either had a high potential for love or you didn't. Fredrickson's recent research has debunked that notion.

In a 2010 study from her lab, Fredrickson randomly assigned half of her participants to a "love" condition and half to a control condition. In the love condition, participants devoted about one hour of their weeks for several months to the ancient Buddhist practice of loving-kindness meditation. In loving-kindness meditation, you sit in silence for a period of time and cultivate feelings of tenderness, warmth, and compassion for another person by repeating a series of phrases to yourself wishing them love, peace, strength, and general well-being. Ultimately, the practice helps people step outside of themselves and become more aware of other people and their needs, desires, and struggles—something that can be difficult to do in our hyper individualistic culture.

Fredrickson measured the participants' vagal tone before and after the intervention. The results were so powerful that she was invited to present them before the Dalai Lama himself in 2010. Fredrickson and her team found that, contrary to the conventional wisdom, people could significantly increase their vagal tone by self-generating love through loving-kindness meditation. Since vagal tone mediates social connections and bonds, people whose vagal tones increased were suddenly capable of experiencing more micro-moments of love in their days. Beyond that, their growing capacity to love more will translate into health

benefits given that high vagal tone is associated with lowered risk of inflammation, cardiovascular disease, diabetes, and stroke.

Fredrickson likes to call love a nutrient. If you are getting enough of the nutrient, then the health benefits of love can dramatically alter your biochemistry in ways that perpetuate more micro-moments of love in your life, and which ultimately contribute to your health, well-being, and longevity.

Fredrickson's ideas about love are not exactly the stuff of romantic comedies. Describing love as a "micro-moment of positivity resonance" seems like a buzz-kill. But if love now seems less glamorous and mysterious than you thought it was, then good. Part of Fredrickson's project is to lower cultural expectations about love—expectations that are so misguidedly high today that they have inflated love into something that it isn't, and into something that no sane person could actually experience.

Jonathan Haidt, another psychologist, calls these unrealistic expectations "the love myth" in his 2006 book *The Happiness Hypothesis*:

True love is passionate love that never fades; if you are in true love, you should marry that person; if love ends, you should leave that person because it was not true love; and if you can find the right person, you will have true love forever. You might not believe this myth yourself, particularly if you are older than thirty; but many young people in Western nations are raised on it, and it acts as an ideal that they unconsciously carry with them even if they scoff at it... But if true love is defined as eternal passion, it is biologically impossible.

Love 2.0 is, by contrast, far humbler. Fredrickson tells me, "I love the idea that it lowers the bar of love. If you don't have a Valentine, that doesn't mean that you don't have love. It puts love much more in our reach everyday regardless of our relationship status."

Lonely people who are looking for love are making a mistake if they are sitting around and waiting for love in the form of the "love myth" to take hold of them. If they instead sought out love in little moments of connection that we all experience many times a day, perhaps their loneliness would begin to subside.