

DOPAMINE SEROTONIN EPINEPHRINE
NOREPINEPHRINE PHENYLETHYLAMINE
OXYTOCIN VASOPRESSIN





The BRAIN and SEX

The SCIENCE of Love and Relationships

What happens in the brain when we are infatuated with someone or “fall in love?” Why are some people so willing to jeopardize their marriages for an affair? What’s different in the brains of the couple that has been happily married for 50 years? There are a variety of chemicals and chemical reactions that occur regularly in a person’s body that have an impact on his or her perception, as well as how he or she experiences significant relationships. An understanding of biochemistry and neuroscience can improve our relationships and even help prevent affairs. It can also help couples understand some of the mechanisms that may have led to an affair, which can then be utilized in the process of forgiveness and reconciliation.

The Chemicals of Infatuation

The limbic system or “mammalian brain” controls almost all bodily functions (emotions, desires, drives and impulses), including falling in and out of love... even lust. When we experience infatuation, the neurotransmitter, dopamine, fires up the brain and triggers feelings of pleasure, motivation and reward. It neurochemically activates your reward circuitry, whether it’s sex, eating, taking risks, or drinking water. Dopamine is the “craving” or the “I’ve got to have it” neurotransmitter. The more dopamine you release and the more the reward circuit is activated, the more “reward” you experience. If something really boosts your dopamine, then it can become potentially addictive for you. This is why

infatuation in the brain is similar to cocaine addiction—it impacts the same pleasure centers and reward circuitry. It’s also why some people seem “addicted to love” and are constantly looking for their next relational “fix.”

Infatuation also decreases brain levels of serotonin, the neurotransmitter responsible for mood and flexibility. Low serotonin means you can get stuck on ideas... you become obsessed. You can’t get that someone or something out of your head and are perpetually distracted. Low serotonin also accounts for the extremes of emotion that can take place in the early stages of a relationship or when a relationship ends.

Other chemicals involved during infatuation include epinephrine and norepinephrine. They are produced in the adrenal glands, spinal cord, and the brain and cause the “adrenaline rush” often associated with new love. Phenylethylamine is another adrenaline-like substance that functions to speed up the flow of information between nerve cells. It is triggered in the process of attraction to help us pay attention to the love feelings. This flood of chemicals combines to create the feelings of euphoria and infatuation when we are attracted to another person.

To make matters worse, while all this activity is firing up our limbic system, the prefrontal cortex (the part of the brain involved in judgment, impulse control, organization, planning, forethought, and learning from mistakes) begins to disengage, leaving us at great risk for impaired judgment and poor choices. We’re not suggesting that when someone “falls in love” or “in lust” that they can’t help themselves, but the chemical cascade created in our brains certainly puts us at risk for acting foolishly and increases our susceptibility to temptation.

This “falling in love” process can last from a few days up to around two years. Many couples mistake the fading of this intense passion with “falling out of love,” which can often cause problems in their marriage or encourage one partner to seek this passionate buzz with someone else. One cannot maintain the intensity of a passionate craving state

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indefinitely, so it may actually be necessary to “fall out of love” in order to discover “true love.”

The Chemicals of Commitment

For connected and lasting love relationships, couples must transition from the euphoric state of “falling in love” to the stability of companionate love (harmoniously suited) that involves a growing sense of trust and commitment. In the brain, the chemicals that facilitate commitment are serotonin, oxytocin, and vasopressin.

When serotonin levels are healthy (not too high and not too low), one experiences minimal anxiety, depression and aggressiveness. Moods are more even and emotionally we are more flexible. All in all, serotonin tends to make people nicer.

Vasopressin is a key thermoregulator because it limits the “overheating” of brain areas involved in sexual activity. It also appears to be involved in regulating sexual persistence, assertiveness, dominance, and territorial markings (there are higher levels in males). Recent genetic research suggests that vasopressin may make the difference between stay-at-home Dads and one-night-stand artists, as it is shown to assist in the regulation of sexual and social fidelity in men.

Oxytocin is a neuropeptide hormone that facilitates attraction, touch sensation, bonding, attachment and trust. It increases when you feel connected, empathic, in love, are touched, or when you touch someone. Interestingly, once a touching pattern is established, levels will increase in anticipation of being touched. Oxytocin spikes during orgasm for both men and women, but men experience a 500% surge. This surge may help explain why men often feel close as a result of making love and many women need to feel close in order to want to make love. Oxytocin also has a somewhat “valium-like” tranquilizing effect, which may be why men can go to sleep so quickly after lovemaking.

Maximizing the Benefits of Oxytocin

Couples who have developed companionate love regularly practice behaviors that maximize their sense of connection and marital bond. These couples know how to generate oxytocin and realize the impact this chemical has not only on how they feel about each other, but also on how they resolve conflicts.

Most hugs last no more than a few seconds, but try a longer hug and just hold each other. Set a timer and try hugging for three minutes (you will realize the benefit of oxytocin even if you only hug for one or two minutes, as the hormone begins to be released within 20-30 seconds). This isn't foreplay... it's just good for your relationship.

What happens when you have a disagreement with your spouse before bedtime? If you manage to go to bed together, you may sleep in separate time zones. Commit to allowing your bodies to touch during the night. What you will find is that the next morning the conflict is not as daunting because

the benefits of oxytocin have allowed your bodies to “make up” before you actually have verbally. To do this requires a disciplined relationship that recognizes the importance of touch and physical contact even when we don't feel like it. However, the touch allows us to feel like it.

Researchers at the University of Zurich found that couples given oxytocin (as a nasal spray) before a “conflict discussion” displayed more “positive communication behaviors,” such as eye contact and open body language, than couples given a placebo. Interestingly, they also had lower levels of the stress hormone, cortisol. How many times have you had an argument while holding hands? It's almost impossible to do. Touch may prevent a destructive escalation and allow for a creative solution to be forged.

Another strategy employed by couples who practice companionate love is taking the time to kiss. Often when couples say goodbye in the morning or greet in the evening they give each other the requisite peck on the lips. What if you extended this kiss to 10 full seconds? Again, this is not meant to be sexual foreplay, but it is certainly emotional foreplay. When we kiss passionately, we imprint positive images and memories of the person we are kissing in our brains, which we tend to review throughout the day.

The more oxytocin you produce, the more receptive you are to it. This is the opposite of dopamine. Addicts (love or otherwise) need more and more of a drug which, of course, actually means they need more and more dopamine. You don't need an ever-increasing “fix” of oxytocin to maintain the same positive feeling. In fact, your spouse just looks better and better to you.

There are obviously many more chemicals involved with sexual and relational chemistry than this article can adequately address. However, we can use the findings of neuroscience to help couples understand the “temporary insanity” of infatuation that influences extramarital affairs and “love addictions.” We can also help couples transition from the euphoric state of “falling in love” to the stability of companionate love that promotes trust and commitment. Realizing that we sometimes have to “fall out of love” to discover “true love” and by practicing the power of oxytocin, we can establish a lasting chemistry in relationships. ✦



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