



Episode 47 – Is Love a Drug?
Written and hosted by Lisa Dawn Hamilton
Music and audio by Jeremy Dahl

Note: This is the script used to create the episode with references added. It has typos. It is not a transcript, but the audio sticks pretty close to the writing.

Intro

Welcome to Do We Know Things? A podcast where we examine things we think we know about sex.

Content warning: This podcast will include discussions of infatuation, drug addiction, and obsessive-compulsive disorder.

Hi everyone! I am Dr. Lisa Dawn Hamilton, professor of psychology and sex educator. Today on Do We Know Things, why does falling in love feel so intense?

Infatuation. That intense, sometimes overwhelming feeling you might get when you start a new relationship with someone. Some might call it falling in love. Or maybe falling in lust. Lovestruck and limerence are other words used to describe this state. In the world of consensual nonmonogamy, a common term for this is NRE or new relationship energy. There are so many names for and ways to describe that intense rush that can happen early in a relationship, For ease of reference, I am going to mostly use infatuation to describe this state throughout the episode. There can be lots of good, exciting feelings, but also intense anxiety and distress as well, especially when you are apart from the object of your infatuation or when you are worried they may not feel the same way.

Over the years, I have heard a number of comparisons to the state of infatuation. I have heard it is similar to a drug where the other person is the substance. When you are with them, it feels amazing, similar to being high. When you aren't, you have cravings and withdrawal symptoms. I have also heard that our brain state in infatuation is similar to what happens in brains of people with Obsessive-Compulsive Disorder where we have intrusive, obsessive thoughts about the other person and perhaps engage in compulsive behavior related to the obsessions.

On this episode, I will delve into these ideas to see if they are myths or truths. I will get into brain chemistry, hormones, and even the stress response.

That's coming up on Do We Know Things!

But first!

New Relationship Energy vs. Stable relationship energy

Before I get to investigating the main questions about the links between OCD, drugs, and infatuation, let's talk first about why we have more intense cognitive and physiological reactions early in a relationship compared to later in a relationship. A big part of that is homeostasis! Let me explain. Homeostasis is the body's tendency to stay the same. Our bodies are finely tuned machines that are calibrated to certain set points (or set ranges) and our bodies work hard to get there. We have both biological and behavioral mechanisms that to return to our set points. For example, our body maintains a stable core temperature. If we start to heat up, we sweat to cool off or take off a layer of clothing. If we get a bit cold, we shiver to warm up or huddle up in a blanket. Our bodies do this kind of thing for all kinds of things like blood sugar levels, heart rate, etc. day in and day out.

Being in a state of infatuation is stressful. We often think of stress as a negative thing, but, physiologically, stress is anything where our body is pushed outside of homeostasis. There are all sorts of physiological changes that happen when we are in early love or infatuation. Often we are nervous! Aka stressed. Those butterflies in your stomach...stress. The heart pounding when you kiss...stress! It sometimes feels like you are on a roller coaster. Our bodies are pumping out adrenaline and related hormones. It can be exhilarating, but also exhausting! In the long run, it's just not sustainable.

Even if you love the exhilarating feeling of riding a roller coaster, if you rode it every day, your body would adapt and you wouldn't have the same response as the first time. Your adrenaline response would be much less on the 100th ride compared to the first. Similarly, in an ongoing, stable relationship, we adjust to the stressor that is our loved one (haha) and don't have the same physical reactions to them as we once did. The novelty decreases, our body adapts, and we can exist in the relationship without all the strong physical reactions. And that is totally normal!

That's also why a common recommendation from sex and relationship therapists is for people to engage in novel things together. That can push you out of the comfortable homeostasis that your body reverts to and activate some of the intensity of the early days. Also, with longer term relationships, there is a lot of reward in the comfort and commitment. The deep connection and intimacy that you have with someone you have been in a relationship with a long time is also very rewarding.

In consensually nonmonogamous relationships, when one partner starts a new relationship and is experiencing infatuation or new relationship energy, it can sometimes be challenging for longer term partners to see the person in the NRE state. And while long term relationships can't return to the NRE state, as I said previously, there are lots of rewarding aspects of long-term relationships. Of course, for some people, it's often delightful to see a partner be so happy in NRE and you can share in that excitement! And so that novelty can add to the excitement of the longer term relationships as well.

Drugs

Ok, so on to the first love rumour. Is love like a drug? Is infatuation similar to addiction? Pop culture is full of references of love as a drug, so clearly the sensations of being infatuated with someone as similar to being high resonates with people. And we even experience love and talk about love as being addictive – like Jake Gyllenhal in *Brokeback Mountain* – Clip: “I wish I knew how to quit you.”

But what does the research say?

Most of what we know about links between love and addiction comes from neuroscience studies that look at the two phenomena separately, but there are a few scientific papers written about the link between love and drugs.

We know that both love and drugs involve the dopamine reward pathway. I have talked about the reward pathway before on *Do We Know Things?* because it is such a fundamental component of mammalian behavior. The reward system signals to us things that feel good. From an evolutionary perspective, those signals are tell us something is important for our survival or the survival of the species and these signals work to reinforce behaviors. The more something activates the reward system, the more likely we are to repeat the behavior.

High calorie foods...important for survival in our evolutionary past! Orgasms...important for reproduction and survival of the species! Love and pair-bonding...also very rewarding. Cocaine – maybe not important for our evolution and survival, but it does activate the same pathway – very intensely! Other drugs do that too, to varying degrees. Essentially, drugs that feel good are co-opting the motivational systems that evolved to get us to focus on, be attracted to, and fall in love with other people.

Reward activation can involve several brain areas and several neurotransmitters, including endorphins, which are our own brain opioids, like morphine. Here I am mostly going to talk about the dopamine reward system includes the ventral tegmental area, an area rich in dopamine-producing neurons and the nucleus accumbens, an area rich in dopamine receptors. We can study response to drugs in great detail in nonhuman animal models, so we know a lot about what happens in response to drugs and we know which of the specific dopamine receptors are linked to what behaviors. For concepts like infatuation, we can't really assess that in animals, so we know less about it. (Also, there is a lot less research funding to study love compared to studying drugs.) In both human and animal research, though, there is overlap between activation of brain areas in response to drugs and bonding (Burkett & Young, 2012; Cacioppo et al., 2012; Fisher et al., 2016). There are other systems involved too, like opioids, oxytocin, and vasopressin (Leonti & Casu, 2018). And those areas also seem to show overlaps between drugs and infatuation.

In humans, research generally relies on neuroimaging, like MRI to look at areas of the brain active in response to drugs and infatuation. And so we can't drill down into the neurotransmitters, but we can look at those brain areas. So we see overlap in the dopamine reward pathway, the basal ganglia, and also areas involved in emotion, like the insula.

The behavioral aspects of the overlap between drug use and love has also been shown in some interesting studies. For example, research has also shown that falling in love can reduce cravings for cigarettes (Xu et al., 2012). That explains why my heaving smoking grandfather quit smoking at the beginning of his relationship with the woman who became my step-grandmother. Her name was Grace and my family called her “Amazing Grace” because it was amazing that he quit smoking. This happened in 1988 and I truly had not thought about this link until now! He did start smoking again after a while, perhaps when the infatuation phase wore off. But, I distinctly remember that the infatuation phase lasted quite a while and nothing can remove from my child brain the tiger print underwear she bought him because her pet name for him was Tiger.

So, yes, it seems that love is like a drug in that it activates the same parts of the brain, and yes, we can experience withdrawal symptoms when we are away from a partner or when we go through a break up. And as with many drugs we habituate to the stimuli the more we are exposed to it. For cocaine, we need more cocaine to get the same high as before, but with love, many people are just fine when the initial intense highs subside. We still see reward system activation in long term relationships – at least in ones where they describe themselves as still being intensely in love (Acevedo et al., 2012). As long as we have our substance (loved one) around, the dopamine reward system adapts and is less reactive. We also see more activation in bonding and attachment-related brain areas. And that feels good, too!

As to whether or not love can be an addiction similar to what we see with certain drugs, that is something that is still hotly debated in academic research!

OCD

What about the belief that infatuation or early love has similar symptoms to Obsessive-Compulsive-Disorder (OCD)? In everyday language, OCD often gets used very flippantly to describe things related to neatness and cleanliness, but actual OCD is a debilitating disorder with clearly defined symptoms. It is not my intent to be flippant about OCD when linking it with infatuation and there is legitimate research that demonstrates the overlap, which I will get into in a minute.

OCD is defined in the DSM, which is the diagnostic manual for the American Psychiatric Association by the following criteria. Obsessions are “recurring and persistent thoughts, urges, or images.” This means ongoing ruminations on specific things and thoughts that often feel intrusive and uncontrollable (American Psychiatric Association, 2013). OCD is often represented in the popular culture as thoughts about germs and cleanliness, which is a category of obsessions, but obsessive thoughts can be very wide ranging and include literally anything. Some not well and include intrusive thoughts about harming the self or others. People with OCD are not at risk of harming others because of those thoughts, but the fear that they might.

Compulsions are repetitive behaviors that people engage in as a way to calm the anxiety and distress caused by the obsessive thoughts. Compulsions can also be mental, such as praying or counting in your head (American Psychiatric Association, 2013). I think there is a lot of misunderstanding about what OCD is, so I wanted to clarify before launching into the links with infatuation.

There is actually a theory about the existence of OCD that directly links it to romantic love (Feygin et al., 2006; Leckman & Mayes, 1999). In evolutionary theory, mating and creating offspring is a core driver for many species. The theory is that in order to mate and have offspring survive, our brains needed to be able to fixate and focus on another person in order to pair-bond. This rumination and fixation and intense need to be with the other person is similar to the obsessive thoughts someone with OCD might have. Also, and there might compulsive behaviors you might engage in like repetitively checking your phone to see if they have texted. Or looking up their social media profile just to see them. Or driving past their house 10 times when you are 17 and just got your driver's license. Not that I have ever done anything like that.

The theory is that this necessary system to get people to obsess about someone so they can bond, mate, and care for offspring together can also malfunction. This type of reaction can be functional in some contexts, like when falling in love, but the same system can go awry in others, resulting in OCD. This is theorized to be an explanation for many psychological disorders: a functional system that has just gone to an extreme and becomes dysfunctional. Of course, this is just one theory, and there are other explanations as well.

At a behavioral and cognitive level, we know the thought patterns that happen for many people during the infatuation phase do resemble the obsessive thought patterns of people with OCD. These obsessions can be positive – constantly thinking of the loved one, but they are often also intrusive – they can interfere with attention on other important things. Just ask anyone who has to sit through an important work meeting while infatuated: those intrusive thoughts are no joke! In some cases, the obsessive thoughts can be distressing, like worrying about the person being harmed or worrying about them abandoning you.

There has also been some work on the neuroscience of both OCD and infatuation. One similarity that may exist is low levels of serotonin in both people who are infatuated and people who have OCD. Serotonin has a number of functions, but we know that when we increase serotonin availability through using anti-depressant/anti-anxiety drugs called selective serotonin reuptake inhibitors (SSRIs), there is generally a decrease in rumination and obsessive thoughts. One study found that people in the early stages of love and people with OCD have lower levels of serotonin transporters in their blood than a control group (Marazziti et al., 1999). Another study compared serotonin in blood for people who were in love and those who weren't. They found mixed results depending on sex of the participant and whether they looked at the serum vs. plasma part of the blood (Langeslag et al., 2012). However, just having more or less serotonin or serotonin transporters in your blood doesn't necessarily mean anything since serotonin has to bind to receptors to have an effect. And like dopamine there are different subtypes of serotonin receptors that do different things. I think we need to take this research with a grain of salt, since we don't have data on what is actually happening with the serotonin receptors in the brains of infatuated people. And this is something that can't really be studied in animal models, since we can't get at whether they are infatuated or having obsessive thoughts.

There is also some evidence that being in that infatuation state can trigger OCD episodes. This is also pretty speculative. There was one case study of a patient who experiences severe OCD whenever he "falls in love" (Marazziti & Stahl, 2018). A larger study of almost 1000 people with

diagnosed OCD asked participants if they had their first episode of OCD while “in love” and 10% said yes (McLauchlan et al., 2021). I don’t know how convincing that is, and it could just be a coincidence, but we need more research to find out.

So, there does seem to be similarities between OCD and infatuation, but whether the brain systems are the same is still unknown. And the role of serotonin is still not overly convincing from my perspective. I would say it is possible, but not confirmed!

A big issue with any of this research is that it is hard to get funding to study something like love. Organizations that pay for research usually want to try to solve a problem, and its harder to get funding for more basic research, particularly on topics people might not see as important.

Conclusion

So it seems that infatuation might really be like both a drug and a disorder. The reward system in the brain is pretty convincingly the same for many rewarding things, like love and drugs. However, for something to be a disorder, it does need to cause distress or result in harm to others. If you are enjoying intrusive and obsessive thoughts about a person who also has those same thoughts about you, that likely won’t be too distressing.

There is also a dark side to the link between obsessions and infatuation. When the feelings aren’t reciprocated, obsessive thoughts and compulsions can lead to behaviors that harm the self or others. I think that is one reason why we need to more about the physiology of love. Of course, even if we have urges, we can choose not to act on them, but I do think this is why we need more funding to understand the cognitive and physiological components of infatuation.

Also, it’s important to note that both the feelings and physiology of love are both more complicated than just a few neurotransmitters and brain areas. There is so much more complexity involved that I really don’t think we have a good handle on yet. Hopefully more love research happens in the future!

If you want to hear more real life examples of this, I did an interview with Jeremie and Bryde on [Turn Me On Podcast – It’s episode 166 – The Neuroscience of Love](#). We talk about the science and our personal experiences being in early love. I will put a link in the show notes!

That’s all for this episode. If you have any feedback or peer review of this episode, I am always excited to hear from you. You can send me a voice memo recorded on your phone or just a written email to doweknowthings@gmail.com.

You can find a script for this episode with references and extra info on the website at doweknowthings.com.

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Script Assistance by Matt Tunnacliffe

I am Lisa Dawn Hamilton. You can find me on Twitter and Instagram @doweknowthings and you can email me at doweknowthings@gmail.com

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Of course, I would love it if you could subscribe and rate and review the podcast on iTunes. Thanks for listening. I will talk to you next time on Do We Know Things?

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