

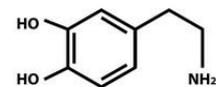


Liking and Wanting

The reward system exists to ensure we are able to find what we need to survive. Whatever brings us pleasure, from being smiled at to eating food or having sex, we will strive to seek out more of the same. It would appear that we are programmed to want.

In the brain, the chemicals that bring rewards are known as opioids (like morphine) and dopamine (the “pleasure” hormone). Historically it was believed that dopamine drove feelings of pleasure. All this changed when Dr Kent Berridge from the University of Michigan found that, far from being the pleasure chemical that everyone assumed, dopamine in fact drove desire and not pleasure. Indeed, the dopamine-desire system turns out to be large and dominant whereas the pleasure system driven by the opioids is much smaller, fragile and more difficult to activate.

Dopamine



Berridge determined that if a rat tastes something sweet, as with humans, there is a behavioural change in terms of its expression. A rat with no dopamine in the brain is not motivated to eat or drink itself, but can still taste sugar and shows the same expression response indicating pleasure, showing that dopamine drives motivation and not pleasure.

It is very easy to turn on desire because the brain systems we have for desire are so extensive. Interestingly though, while this can happen with pleasure, desires may just as easily be switched on without any pleasure. Thinking about life in general, intense pleasures are usually quite infrequent but intense desires can happen frequently and also last for a very long time.

Berridge has subsequently shown that specific areas of the brain (known as the nucleus accumbens and the ventral pallidum) are responsible for “liking”. This is confirmed in humans that have had accidental damage to the ventral pallidum during surgery who afterwards are unable to experience any pleasure. So, although pleasure and desire usually go hand-in-hand, it is perfectly possible to want something without liking it. This is well known in drug addiction that subjects having intense wanting for a drug, even when there is no joy in actually taking them. We might recall craving a certain food or even an ex-partner even though we no longer derive any pleasure from it.

By not getting what we want, the evidence is that we desire it more whilst simultaneously liking it less. Participants testing an online gaming and payments system were rewarded with prizes, but interestingly those that didn’t win any prizes were subsequently willing to pay more for them but were then more likely to trade them away when they actually obtained them. Perversely then, we may come to loathe what we lust after and want more what we like less.

This starts to make sense with food cravings. We can obsess about food without even liking it, so we eat it anyway but do not get the pleasure we expected. If we can’t have something we want it more, but probably like it less.

Consequently, things that increase dopamine signalling in the brain, such as stress or emotional excitement can cause us to behave irrationally for example, failing to end a disastrous relationship or eating that huge gateaux even though we know the opposite is best for us.

In addiction, addicts can crave drugs or alcohol years after total abstinence. Such addictive substances can permanently alter the dopamine system, causing the brain cells (neurons) to release more dopamine and also making them more susceptible to releasing dopamine. Such a change appears permanent even after the drug is no longer being taken. This appears true of all addictive substances including cocaine, amphetamine, heroin, alcohol, nicotine and even sugar.

The brain also becomes more sensitive to cues. As in the classic Pavlov's dogs experiment where dogs came to associate the ringing of a bell with food and would salivate even in the absence of food, we can end up wanting the cue more than the substance. For addicts the ritual of scoring a hit or going down the pub becomes part of the ritual, making the anticipation more pleasurable than the drug.

The condition of Parkinson's Disease is caused by dopamine-producing cells dying in the brain. Treatment is levodopa which essentially replaces the missing dopamine, but around 15% of patients experience Impulse Control Disorder as a side effect. Previously mild-mannered individuals can become gamblers, compulsive shoppers or sexually compulsive. When the dopamine system is stimulated everything and everyone appears brighter and more desirable. Think of the anticipation browsing on-line, Christmas Day or a long-awaited holiday. Even without the pleasure, the addiction is there.

We know some people are more likely to be addicted (to gambling, drugs, alcohol or whatever) than others and it would appear that around 30% of individuals are much more susceptible to the effects of dopamine than others. As well as pleasure rewards and their cues, novelty also acts particularly in these individuals to drive dopamine. This is how the market economy works, by intensifying the dopamine-desire since by constantly providing something new the consumer wants something all the time.

Many therapies have been tried for treating addiction such as cognitive-behavioural therapy. What appears to be effective (for some, but not for all) in managing dopamine desires is meditation, currently being practised in the West as mindfulness. It does not make the wanting go away but instead gives the cognitive brain a way of dealing with the urgency of the desires.