There are three primary models that form the foundation of our views on many of the same underlying brain mechanisms found in drug and alcohol treated symptoms such as eating many more disorders and behaviors that are dubbed “mental illnesses” and dysfunction associated with the addiction. It is no secret that addiction is usually requires a total removal of control and alienates numerous addicts), the Current models provide a black-and-white approach to addiction etiology. A particularly helpful when examining addiction further.

- The Emotional Model2
- This model, best-known for its crucial role in Alcoholics Anonymous, posits that addiction is the result of complete loss of control. The addict has lost all freedom of will and must accept this and give up any remaining control in order to be ‘cured’.

- The Disease Model3,4
- - The Disease Model views addiction as an entirely physiological issue resulting from an imbalance of certain chemicals caused by the use of addictive substances. In order for an addict to cure the addictive substance intake must cease and be replaced by an alternative substance that blocks the pathways that result in addiction.

Problems with Current Models

Current models provide a black-and-white approach to addiction etiology. A person is either weak-willed or has no control, neither of these explanations is particularly helpful when examining addiction further. Addiction is not just about drugs and alcohol, nor is it limited to the wider definitions which include addictions of sex and gambling. Addiction is found in many more disorders and behaviors that are dubbed “mental illnesses” and treated as such. Mental illnesses and disorder symptoms such as eating disorders, self-harm, and obsessive compulsive disorder (OCD) all rely on many of the same underlying brain mechanisms found in drug and alcohol addictions. Research has shown that the same pathways affected by addictive drugs are also activated by food,5 supporting the idea that addictive patterns such as Binge Eating Disorder are closely related to drug addiction both causally and in the resulting neural patterns.

The Disease Model contains its own inherent problems. First, it frequently separates addiction from mental illness, treating it like a physiological condition: with medication. The disease model goes beyond the punitive responses to addiction used in the Moral Model. Unlike the Lack of Control Model (which requires a total removal of control and alienates numerous addicts), the Disease Model has the beneficial aspect of viewing addictions as though they were humans who possess some degree of agency. However, the treatment of addiction with pharmaceutical interventions ignores any underlying psychiatric dysfunction associated with the addiction. It is no secret that addiction is usually consensual with other mental illnesses; nearly three quarters of drug addicts having a diagnosable psychiatric disorder.6

What Has the Research Told Us?

Although the mechanisms of action may vary, all drugs of abuse have the same ultimate result: euphoria and reduction in pain and negative emotions. These effects result from one of two nervous system changes:

1. Flooding of the reward system with dopamine.7
2. Stimulating opioid receptors to enhance to effects of dopamine.8

However, the other psychiatric disorders and behaviors discussed also create the same result:

- Sex: Sex is well known to have a potentially euphoric effect, resulting from the release of dopamine in the brain.
- Gambling: Research shows that the same pathways in the brain (ventral striatum and orbitofrontal cortex) are activated for both gambling and cocaine addiction. Additionally, the “win” associated with gambling creates the same dopamine release seen in other addictive behaviors.9
- Eating Disorders: Research shows that success in achieving a starvation goal can result in the release of the bodies own endogenous opioids, mimicking the effects of heroin on the brain. Disordered eating behaviors result in highs and dependences similar to those seen in heroin and other drugs.5
- Self-Injury: When an individual inflicts pain and/or bodily harm on herself, the body releases natural opiates resulting in a heroin-like high.10
- OCD: PET studies of individuals with OCD show increased activity in the orbitofrontal cortex as is seen in the other addictive behaviors discussed. Dopamine is a key neurotransmitter in this system.11

While no one knows the specific causes for any of these disorders, a comparison of the literature suggests that there are significant similarities and co-morbidities between classical addictions and many other mental illnesses supporting a unifying theory and treatment model.

- Individuals with OCD are shown to behave like gambling addicts on decision-making tests.12
- Brain areas and neurotransmitters involved in drug addiction are implicated in all of the other potential addictions discussed herein.13
- Naltrexone – used to treat alcohol and heroin addicts by blocking opiate receptors in the brain – is currently serving as a treatment for sex addiction for the same reasons.13
- The types of craving behaviors seen with all of these behaviors are very similar and time-dependent, as with drug addiction. The longer it has been since the last “hit,” the more intense the cravings for the behavior become.
- Specific activity in the orbitofrontal cortex has been found to be associated with cravings for cocaine, alcohol, gambling, sex, and OCD.14
- There has been considerable comorbidity between eating disorders and substance-related disorders.8
- There is also significant comorbidity between eating disorders and self-injurious behavior.15

Discussion

As our knowledge and understanding of the brain expand, there is growing weight to the argument that humans have no free will. While this may be comforting to those who feel unable to control their own behaviors, it can also create a dangerous safety net that allows struggling individuals to “give up” on attempting to resolve their problems. Ethically, we cannot tell patients who suffer from any sort of mental illness that they have no free will or ability to change their condition. Not only would it be demoralizing and unlikely to result in a positive change,16-18 but it contradicts research that shows people do have the ability to change these addictive patterns.19,20 Logically, one could argue that if a person has no control over her addiction to a physically addictive drug then she would never be able to stop using it, which is not the case. More importantly, research has shown that certain mental illnesses and addictive behaviors often stem from a feeling of a lack of control over one’s life.21,22,23 Those affected need to regain this feeling of control to work on their problems, not take it away.

From differing perspectives, three disciplines—neuroscience, psychology, and neuroethics—all show that drug addiction is not an isolated disease, illness, or moral failing. It is a symptom of a much deeper issue. The public and medical and health professional must approach addiction treatment and punishment differently. The current societal impact of treating addiction as an individual failing is extremely significant and results in addicts not receiving adequate treatment or care.