

Understanding Addiction: Concepts and Misconceptions

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What is Addiction?

“Addiction is a primary, chronic disease of brain reward, motivation, memory and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations. This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviors.

Addiction is characterized by: inability to consistently abstain; impairment in behavioral control; craving; diminished recognition of significant problems with one’s behaviors and interpersonal relationships; and a dysfunctional emotional response. Like other chronic diseases, addiction often involves cycles of relapse and remission. Without treatment or engagement in recovery activities, addiction is progressive and can result in disability or premature death.”

- American Society of Addiction Medicine

What is Addiction?

“Addiction is any repeated behaviour - substance-related or not - in which a person feels compelled to persist, regardless of its negative impact on his life or the life of others. Addiction involves:

1. compulsive engagement with the behaviour - a preoccupation with it;
2. impaired control over the behaviour;
3. persistence or relapse, despite evidence of harm; and
4. dissatisfaction, irritability or intense craving when the object - be it a drug, activity or other goal - is not immediately available.”

- Gabor Mate, MD

In the Realm of Hungry Ghosts

- ▶ It is important to remember that not all addictions involves *substances of abuse*. Gambling Disorder is classified as an addiction (DSM-V) and other compulsive behavioural patterns (*process addictions*) are being considered.

A Common Misconception

“Addiction boils down to bad choices”

- ▶ The *Moral Model of Addiction* contends that:
 - ▶ Addiction is the result of personal choice, character flaws (lack of willpower) and/or spiritual corruption
 - ▶ As this model emphasizes **personal choice and self-determination (autonomy)**, it assumes that addicts persist in their behaviours because they want to. Alternately, the model also assumes that people can choose sobriety if they simply exercise sufficient willpower. From this perspective, any biological basis for addiction cannot negate individual responsibility. Instead, addicts should face the unmitigated consequences of their choices (disease, destitution, detention, death)
 - ▶ While this model has little to no therapeutic value for most clinicians and is not based on empirical evidence, it is still prominent in **legal, religious and political systems**

A Common Misconception

Problems with the Moral Model of Addiction:

- ▶ Current neurological research has upended our understanding of autonomy and self-determination. The concept of "*free will*" - our ability to choose a particular course of action regardless of consequences or contingencies - has been replaced by the idea of "*free won't*".
- ▶ The ideal neurological scenario describes a dynamic interconnected relationship where our *reward* ("feel good and feel better") and *motivational* ("I need and I want") systems are successfully regulated by our *rational* systems (the prefrontal cortical part of the brain that controls impulses and applies reason and logic)
- ▶ FACT: no one has an ideal neurological scenario. Everyone struggles to control their drives, desires and impulses. Sometimes we succeed, sometimes we don't.
- ▶ Addiction throws the ideal neurological scenario right out the window. In addiction, neurological studies have shown that the reward, motivational and rational systems of the brain have been pathologically altered

Ghosts and Gorillas: Conceptualizing Addiction

- ▶ To better understand addiction, one needs to have a basic conceptualization of the brain. While the brain is intricately complex and interconnected, it can be useful to simplify this wondrous organ into its three layers:
 - ▶ **Hindbrain**
 - ▶ Mainly Autonomic Functions
 - ▶ **Midbrain**
 - ▶ Sensory and Motor Processing
 - ▶ Includes the *Substantia Nigra* (Dopaminergic)
 - ▶ **Forebrain (“Primate Brain”)**
 - ▶ Contains the Diencephalon (“Monkey”), including the *Limbic System*
 - ▶ Regulating Emotions, Motivation, Reward & Pleasure, and Rule-Based Learning (Habits)
 - ▶ and the Telencephalon (“Human”), including the *Cortex & Cerebrum*
 - ▶ Multitasking and Cognitive Processing (AWARENESS or CONSCIOUSNESS)

Ghosts & Gorillas: Conceptualizing Addiction

- ▶ If we use the metaphor of driving a motor vehicle, your brain is the driver and your body is the car.
- ▶ Under normal circumstances, driving a motor vehicle (like most activities of living) is a combination of conscious actions and subconscious or paraconscious behaviours. For instance, the more novel the trip, the more conscious you become of what you're doing and where you're going. However, for the most part, we move through life in a state of **variable awareness**.

Ghosts & Gorillas: Conceptualizing Addiction

- ▶ Much of what we experience as **awareness** is influenced and shaped by our subconscious or paraconscious (found in the midbrain and diencephalon). In other words, we live with “**ghosts**” - motivations, drives, desires, rules and habits that dwell underneath consciousness, but are often essential for physical and social survival (our “normal operating system”).
 - ▶ For instance, hunger is a “ghost” - its influence on our behaviour remains in the background until certain homeostatic thresholds have been crossed. Then, feelings of hunger begin to intrude upon awareness and assert more influence over behaviour.
 - ▶ Conscientiousness and morality are also “ghosts” as they develop from rule-based learning (classical/operant/social conditioning), which is directly influenced by processes in the midbrain and diencephalon.
- ▶ When it comes to our day-to-day living, many neuroscientists believe we do not exercise “free will”, but “**free-won't**” - our conscious ability to **reject** an action or behaviour (often proceeding from the subconscious or paraconscious). We Ctrl-Alt-Del from the normal operating system and choose to do something different.

Ghosts & Gorillas: Conceptualizing Addiction

- ▶ Tragically, addiction hijacks the midbrain and diencephalon. Substances and processes of addiction not only dramatically affect our motivations and drives (which are linked to survival), but also fundamentally change what we have learned and how we learn. So instead of “ghosts”, you are now driving with a “*gorilla*” - who is motivated by an intense desire to survive and a new set of “rules” on how to navigate and negotiate with the social world.
- ▶ Worse yet, the “*human*” - the thinking, reasonable person who exists in the cortex and cerebrum - may not even be driving the car. As addiction worsens, the human may be in the passenger seat, the back seat or even the trunk - with less and less control and influence on what the gorilla does. The gorilla is driving with its paw on the gas pedal and with no concept of the rules of the road
 - ▶ (Two men walking down the street see a gorilla driving a sports car. One man asks “Where is that gorilla in the sports car going?” The second man answers, “Anywhere it wants to.”)

Ghosts & Gorillas: Conceptualizing Addiction

- ▶ When you are working with a person struggling with addiction, you need to ask: *who's driving the car - the human or the gorilla?* The human can make all sorts of promises, but if the gorilla is driving, all bets are off.
- ▶ Addictions treatment is often a **dual approach** - subdue the gorilla and give the human the tools they need to keep the gorilla under control.
- ▶ What is also challenging is that when addiction starts, normal human development often stalls or stops. Because the normal processes of learning have been hijacked, the human may not have learned to drive or have driven the car for a very long time or maybe have not driven a car at all.

Awareness & Autonomy: Implications for Addictions

- ▶ The idea of the **split person** - the “human” and the “gorilla” - can challenge our notions of awareness, autonomy and self-control. These functions of higher consciousness are seated in the telencephalon (cortex and cerebrum) - a part of the brain that is effectively sidelined by the effects that addiction has on the brain as a whole. The “human” may be somewhat or entirely willing to change, but the “gorilla” has other priorities (mainly satiation and survival). The “human” is often aware of the damage that addiction is causing, but the “gorilla” keeps driving.
- ▶ The moral model assumes that the person struggling with addictions should be responsible for their choices (not matter how distant those choices are to present-day circumstances) and that they can marshal sufficient internal resources to overcome addiction’s debilitating effects. However, an increasing amount of neuroscientific evidence challenges these premises as the part of the brain where willpower and self-control reside often does not have as much influence over behaviour as we once thought.

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▶ Questions or Concerns?