

HOW TO UNDERSTAND CRAVING

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Koob and Le Moal's (2008) model of addiction involves three cycles: (1) binge/intoxication (i.e., the acute reinforcing stage), (2) withdrawal/negative affect (i.e., coming down), and preoccupation/anticipation (i.e., craving, obsessing, having urges). Koob and Le Moal provide this definition of addiction: "Drug addiction is a chronically relapsing disorder that is defined by two major characteristics: a compulsion to take the drug with a narrowing of the behavioral repertoire toward excessive drug intake, and a loss of control in limiting intake" (Koob & Le Moal, 2001, p. 97; underline added).

Based on George Koob's¹ model of allostasis,² "Drug Addiction (and Alcoholism) is conceptualized as a chronic relapsing syndrome that moves from an impulse control disorder involving positive reinforcement to a compulsive disorder involving negative reinforcement." In other words, the transition from abuse to addiction reflects a shift from impulsive behavior (maintained by positive reinforcement) to compulsive behavior (maintained by negative reinforcement). Once the alcoholic or addict crosses the wall between abuse and addiction, the substance is no longer used to feel good (i.e., positive reinforcement) but to avoid feeling bad (i.e., negative reinforcement).

Craving

According to DSM-5 (APA, 2013, p. 483), "Craving (Criterion 4) is manifested by an intense desire or urge for the drug that may occur at any time but is more likely when in an environment where the drug previously was obtained or used. Craving has also been shown to involve classical conditioning and is associated with activation of specific reward structures in the brain. Craving is queried by asking if there has ever been a time when they had such strong urges to take the drug that they could not think of anything else. Current craving is often used as a treatment outcome measure because it may be a signal of impending relapse."³

Obsessing

According to DSM-5 (APA, 2013, p. 826), obsessions are defined as "Recurrent and persistent thoughts, urges, or images that are experienced, at some time during the disturbance, as intrusive and unwanted and that in most individuals cause marked anxiety or distress. The individual attempts to ignore or suppress such thoughts, urges, or images, or to neutralize them with some other thought or action (i.e., by performing a compulsion)."

There has been considerable discussion about whether it is craving, obsessing, or both factors that leads to relapse.⁴

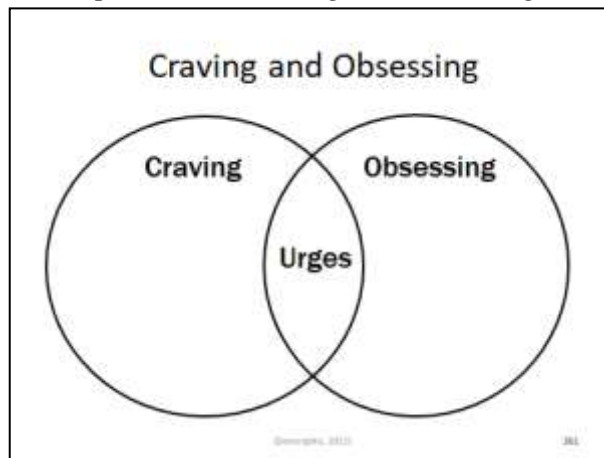
Table 1
Similarities and Differences Between Craving and Obsessing

	Craving	Obsessing
Similarities	<p>Symptoms are triggered by internal or external cues (i.e., discriminative stimuli).</p> <p>Symptoms include urges, which may lead to compulsive response.</p>	<p>Symptoms are triggered by internal or external cues (i.e., discriminative stimuli).</p> <p>Symptoms include urges, which may lead to compulsive response.</p>
Differences	<p>Etiology is based on classical conditioning (i.e., conditioned response).</p> <p>Physiological symptoms are primary and cognitive response is secondary.</p>	<p>Maintenance is based on operant conditioning (i.e., negative reinforcement).</p> <p>Cognitive symptoms are primary and physiological response is secondary.</p>

Note. Adapted from Doverspike (2011, Slide 260)

For conceptual purposes, Figure 1 is a Venn diagram showing an overlap between concepts of craving and obsessing. It is important to remember the adage of British statistician George Box, Ph.D. (1953, *Mathematics Genealogy*, University of London) who wrote the famous line: “All models are wrong, some are useful.” His point was that we should focus more on whether something can be applied to everyday life in a useful manner rather than debating endlessly if an answer is correct in all cases.

Figure 1
Overlap Between Craving and Obsessing



Note. Adapted from Doverspike (2011, Slide 261)

Notes

1. George F. Koob, Ph.D. (b. 1947; Ph.D. 1972, Ph.D. in Behavioral Physiology from the Johns Hopkins Bloomberg School of Public Health) is an internationally-recognized expert on alcohol and stress, and the neurobiology of alcohol and drug addiction. He has published over 750 scientific papers and has received continuous funding for his research from the National Institutes of Health, including the National Institute on Drug Abuse and the National Institute on Alcohol Abuse and Alcoholism. Since 2014, he has been the Director of the National Institute on Alcohol Abuse and Alcoholism. He is co-author of *The Neurobiology of Addiction* (Koob & Le Moal, 2005), a comprehensive textbook reviewing the most critical research conducted in the field of the neurobiology of addiction conducted over the past 50 years.

2. There are three concepts important for a basic understanding of the neurobiology of addiction: *Allostasis* refers to the process of achieving homeostasis, or stability, through physiological or behavioral change. *Homeostasis* (also spelled homoeostasis or homœostasis) is the property of a system in which variables are regulated so that internal conditions remain stable and relatively constant. *Neuroplasticity* refers to the brain's ability to reorganize itself by forming new neural connections. Neuroplasticity, which involves synaptic pathways, is important to understanding the etiology of addiction, mechanisms underlying relapse, and the process of maintaining recovery through relapse prevention.

3. In classical conditioning terms, a trigger is a Conditioned Stimulus (CS). In operant conditioning, a trigger is a discriminative stimulus (SD).

4. Silkworth mentions the word seven times in the Doctor's Opinion [of the Big Book of Alcoholics Anonymous]. Obviously the concept was the key to his understanding of alcoholism. Silkworth's understanding of craving, being physical, no longer exists after the body is clean of the physical substance that originated the craving. Say, 30 days. Afterwards, it's the obsession that leads to relapse. In a nutshell, the AA physical definition of craving results is the explanation why the first drink gets one drunk (G. Neidhardt, personal communication, February 13, 2024).

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