

Review Article

# The Connections of Different Forms of ‘Addiction’ in Psychological Perspective

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**Abstract** - This article depicts the concept of addiction and briefly reviews the key features of substance use addiction and behavioral addiction in recent literature. Based on the DSM-5, tobacco addiction and alcohol addiction in substance use disorder, gambling addiction and Internet gaming addiction in behavioral disorder are reviewed representatively. After that, the main connections between different forms of addiction are summarized. Finally, several suggestions for public consciousness, definitions, and interventions for addiction are proposed. More research on addiction is needed to improve our understanding of this field.

**Keywords** - Addiction, Substance use, Behavioral disorder, Behavioral addiction, Drug addiction.

## 1. The Concept of ‘Addiction.’

“A chronic disorder with biological, psychological, social and environmental factors influencing its development and maintenance. Genes affect the degree of reward individuals experience when initially using a substance (e.g., drugs) or engaging in certain behaviors (e.g., gambling) and how the body processes alcohol or other drugs. Heightened desire to re-experience use of the substance or behavior, potentially influenced by psychological (e.g., stress, history of trauma), social (e.g., family or friends’ use of a substance), and environmental factors (e.g., accessibility of a substance, low cost) can lead to regular use/exposure, with chronic use/exposure leading to brain changes” (American Psychological Association, 2017).

The above sentences are one of the most common ways to depict the rough sketch of the concept of ‘addiction.’ It needs to be stated that since the concept of ‘addiction’ emerged, there has been no consensus on its definition, or we can say its definition keeps evolving with our understanding of its nature. In the beginning, the concept of ‘addiction’ referred in particular to drug addiction; till DSM-5 (American Psychiatric Association, 2013), behavioral addiction was included in the classification.

## 2. Substance Addiction/Substance use Disorder

“A complex condition, a brain disease manifested by compulsive substance use despite harmful consequences. People with addiction (severe substance use disorder) have an intense focus on using a certain substance(s), such as alcohol or drugs, to the point that it takes over their life. They keep using alcohol or drugs even when they know they will cause problems. Yet some effective treatments are

available, and people can recover from addiction and lead normal, productive lives” (American Psychological Association, 2017). There are different definitions of a substance use disorder, and the above description from American Psychological Association may not be the best. Still, it could shed some light on the issue and make readers understand the key point of substance addiction disorder at first sight.

As the psychological disorders defined and confirmed earlier than behavioral addictions, substance addiction has been a worldwide public health problem, causing a great loss for social economy and security, regardless of the country’s socioeconomic status (WHO, 2020). Specifically, according to the Global Burden of Disease (GBD) study, substance abuse was responsible for at least 20 million disability-adjusted life years at the global level in 2010, and the economic loss is beyond the number (Degenhardt et al., 2013).

Substance addiction is not a single disease type. Instead, it involves some very complicated patterns. For instance, except for substance addiction itself, there are certain substance-related disorders listed in DSM-5 (American Psychiatric Association, 2013) and ICD 11 (International Classification of Diseases, 11<sup>th</sup> edition), which include cognitive, behavioral, and physiology symptoms with continuous use of certain substances (Saunders, 2017).

When comes the category of substance use disorders, based on some previous research, includes (1) Prescription drug abuse, e.g., tramadol, compound licorice tablets, compound difenoxate; (2) Opioid addiction, e.g., morphine, Demerol, methadone; (3) New drug addiction, e.g., ecstasy,



methamphetamine; (4) Traditional drug addiction, e.g., heroin, marijuana; (5) Sleeping drug addiction, e.g., diazepam, zolazepam, triazolam, alprazolam; (6) Addiction to alcohol and tobacco (nicotine) (National Institute on Drug Abuse, 2015; Potenza, 2008; Regier et al., 1990).

Most previous research on substance use disorders is focused on illegal drugs, exploring in detail the dose of drugs that would make people addicted; the exact cognitive, emotional, and behavioral symptoms after continuous use of certain drugs; the effects of the physical, psychological and psychiatric interventions on the addicts and so on. However, there have not been sufficient studies into the relevant areas for the addicts on the most common substances that lead to addiction: tobacco and alcohol. Besides those illegal drugs, substance addictions to tobacco and alcohol are more common and have more far-reaching impacts on individuals and society.

### **2.1. Tobacco Addiction/ Tobacco use Disorder**

Tobacco use has been a severe public health issue for many years. It is responsible for almost 90% of all lung cancers and vastly influences the life span of nearly half of its users. World Health Organization (2012) stated that cigarette smoking had been the largest cause of preventable death worldwide, killing one person every 6 seconds. Although there have been certain policies toward the decline in the prevalence of cigarette use, the number of tobacco users is still at the top of all substance abuse addicts. Compared to other forms of drug addiction, it is fair to say tobacco addiction has caused more harm to public health. Tobacco use not only influences the users themselves but also makes the surroundings suffer from the threat of second-hand smoke.

The main component responsible for tobacco's addictive effect is nicotine, which is why earlier research in this field mainly treats nicotine intake as the whole story of tobacco use disorder. To some degree, it makes sense, as nicotine was identified as the primary compound to keep users smoking (Henningfield et al., 1985). However, this may work when there is only one cigarette product; in the tobacco markets, there have been more and more relevant products.

There have been at least nine popular products in the market, including normal cigarettes, e-cigarettes, hookah, traditional cigars, filtered cigars, snus, smokeless tobacco, pipes, and cigarillos. People may choose these products for different reasons. Still, one of the alarming reasons which are worth noting is that some people would choose one tobacco product because they believe this tobacco product is far less harmful than normal cigarettes, which would make them increase the likelihood of using the product, this way easier to get addicted or overdose (Fong, Elton-Marshall, & Driezen, 2019). O'Connor and his colleagues (2007) conducted a longitude study from 2002-2004 in a nationally

representative survey. They found that across the adult sample of 13322 smokers in the U.S., 22.2% of the participants reported that they believed that some combusted tobacco products would be less harmful than others, and this would influence their decisions towards tobacco use. However, individuals' perceptions of the harmfulness of tobacco products could be inaccurately affected by the factors like social media or tobacco advertising, and miscalculate the levels of toxicants in tobacco products shown by the evidence that combustible tobacco products are more harmful to long-term users than non-combustible tobacco products in general (Zeller & Hatsukami, 2009).

Among these tobacco products, there are quite variations in the nicotine content, and some tobacco products do not have nicotine. However, still causes related to substance use disorder. Considering this phenomenon, tobacco users with diagnosed disorders could be categorized in either one of the two classification systems, which are the set of symptoms marked as 'dependence syndrome' or 'nicotine dependence' from the International Classification of Diseases (ICD, 10<sup>th</sup> edition), and the recent classification system, naming the term 'substance use disorder,' or 'tobacco use disorder,' stated by the American Psychiatric Association, the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). The former classification focuses on the psychoactive effects of nicotine. In contrast, the latter noticed that tobacco use disorders might include other effective components, which seem more appropriate based on the current circumstances.

### **2.2. Alcohol Addiction/ Alcohol use Disorder**

According to the Diagnostic and Statistical Manual of Mental Disorders 5th edition, alcohol use disorder, or alcohol addiction, is a collection of brain function impairment and uncontrolled behavior, including tolerance development, withdrawal, increasing intake, and craving for alcohol. It significantly affects around 4% of the adult population (Rehm et al., 2009). Like tobacco addiction, alcohol addiction has been a major risk factor for individuals' disability and death.

People with alcohol addiction are usually correlated with common psychological illnesses, like anxiety and depression, and liver diseases, like alcoholic hepatitis and liver cirrhosis, leading to disability and death worldwide (Gilpin & Koob, 2008). At the same time, alcohol addicts usually suffer from alcohol intoxication, leading to cognitive function impairment and behavioral changes. In the long run, some alcohol addicts may experience permanent intellectual functional impairment even after sobriety (Victor, Adams, & Collins, 1971). Compared to tobacco addicts making others suffer from second-hand smoke, alcohol addicts are usually correlated with impulsive crime and domestic violence (American Psychiatric Association, DSM-5, 2013).

Most people start to drink alcohol to feel relaxed. However, as alcohol tolerance develops because of the desensitization of GABA receptors and liver enzyme activation, people tend to drink and overdose, leading to alcohol dependence in the long run. Like most drug addictions, one of the most remarkable features of alcohol is that the alcohol directly adversely influences brain functioning, involving various neurotransmitters and their receptors in the brain, like dopamine, serotonin, opioid peptides, glutamate, and so on.

### 3. Behavioral Addiction

The term 'behavioral addiction' emphasizes individuals' dependence on a specific behavior or the feeling brought about by the behavior, which differs from substance use disorder (Alavi et al., 2012).

Current behavioral addictions include various aspects, like pathological gambling, eating addiction, shopping addiction, sex addiction, internet addiction, and so on (Haagsma, Pieterse, & Peters, 2012; Kim & Seo, 2013; Lee et al., 2012; Longabaugh & Magill, 2011; Morris & Voon, 2016). However, according to American Psychological Association (2013), DSM-5 only recognized gambling disorder as one of the classified behavioral addictions, while the other forms of behavioral addictions, including compulsive overeating, problematic sexual behavior, and excessive Internet gaming, were considered, and required more concrete studies to identify.

#### 3.1. Gambling Addiction

Gambling addiction is usually defined as a recognized mental health condition characterized by persistent and recurrent maladaptive gambling behavior patterns, leading to 'substantial functional impairment and reduced quality of life' (Hodgins, Stea, & Grant, 2011; Bowden-Jones, 2017). In the U.S., gambling addiction impacts 0.4%-2% of individuals across their lifetime (Petry et al., 2014).

As the type of behavior that would cause detrimental effects on the financial, social, and occupational areas of the individuals, their families, and even the whole society, most governments across the world have been banning gambling activities or at least strictly restricted the venue and participants of these activities (Grant & Chamberlain, 2016). However, with the development of online technology, individuals no longer necessary to go to casinos to gamble; instead, staying wherever they can have access to the internet, which has been bringing about greater risks for individuals getting addicted to gambling (Neal, Delfabbro, & O'Neil, 2005).

Similar to some substance use disorders, individuals with certain mental illnesses, such as mood disorders,

impulse control disorders, and attention-deficit/hyperactivity disorders, are more likely to become addicted to gambling (Dowling et al., 2015; Lorains, Cowlshaw, & Thomas, 2011). Studies have shown that individuals with gambling addiction usually do not seek help for gambling. Instead, they are usually identified during other screening, like the tests for mental health, secondary healthcare settings, and physical problems, which increases the difficulties of conducting the relevant research (Cowlshaw et al., 2017; Roberts et al., 2019).

#### 3.2. Internet Gaming Addiction

The concerns about disordered gaming could trace back to the 1980s, when the evidence showed that excessive gaming could lead to psychiatric disorders, such as anxiety, depression, and aggressive behaviors (Ross, Finestone, & Lavin, 1982; Soper & Miller, 1983). Lately, Pontes and colleagues (2022) conducted a large-scale study of 123262 gamers, showing the alarming data that their weekly gaming time reached 34.53 to 40.13 hours.

Actually, during the research into disordered gaming, researchers have debated. As a way of entertainment that does not seem to cause detrimental effects instead of time-consuming, some scholars held against the opinion that gaming addiction should be identified (Griffiths, Kuss, & Pontes, 2016; Maraz, Kiraly, & Demetrovics, 2015). As a condition for further study, Till's Internet gaming disorder was included in Section III of DSM-5 (American Psychological Association, 2013). More research has been conducted in this field.

According to DSM-5 (American Psychological Association, 2013), Internet gaming disorder can be defined as 'persistent and recurring internet use to play games, usually with other people, which results in clinically significant impairment or distress as indicated by at least five of the following nine criteria within a 12-month period: (1) preoccupation with video games, (2) withdrawal symptoms in the absence of gaming, (3) tolerance as indicated by increasing amounts of time spent engaging in gaming, (4) unsuccessful attempts to control participation in gaming, (5) loss of interest in previous hobbies/entertainment due to (and with the exception of) gaming, (6) continued excessive use of video games despite knowledge of psychosocial problems, (7) deceiving family members, therapists, or others about the amount of gaming undertaken, (8) use of video games in order to escape or relieve negative moods, and (9) jeopardising or losing a significant relationship, job, or educational or career opportunity because of participation in video games.' As we can see, compared to substance use addiction, Internet gaming disorder symptoms could be more subtle and subjective, similar to other behavioral disorders.

#### **4. The Connections of Different Forms of ‘Addiction.’**

To clarify, more and more researchers tend to believe substance addiction and behavioral addiction come from the same brain mechanism. However, there could be different diagnostic symptoms between these different disorders clinically (American Psychological Association, DSM-5). Specifically, the reward circuit and ventral tegmental area–nucleus accumbens (VTA–NAc) circuit could be the structural basis of both substance use addiction and behavior addiction (Kim et al., 2016; Koob and Volkow, 2016). Also, lots of research have established that substance use addiction and behavioral addiction share similarities towards  $\Delta$ FosB, dopamine, and opioid expression; impaired control over the behavior; neglect of relationships and role obligations; and continued problematic behavior in the face of negative health outcomes (Konkolý et al., 2015; Olsen, 2012).

In the above, it has been mentioned that individuals with certain mental health conditions, such as mood disorders, impulse control disorders, and attention-deficit/hyperactivity disorders, are more likely to get addicted to substances or behaviors. Some researchers have found that compared to the generous population, individuals with diagnosed mental disorders are more likely to use tobacco (Centers for Disease Control and Prevention [CDC], 2013; Jamal et al., 2014). Or vice versa, we can say the addiction could lead to certain mental illnesses. In this case, the significant correlations between addiction and many studies have established other mental illnesses. However, the direction of the influences and the causality studies are still short (Dowling et al., 2015; Lorains, Cowlshaw, & Thomas, 2011).

At the same time, Dowling and their colleagues (2015) conducted a meta-analysis and systematic review, indicating that among those treatment-seeking addicts, 75% of them had one or more comorbidities, including both substance use and behavioral addictions. In previous research, when it comes to substance-related disorders, there are two types which are substance use disorders and substance-induced disorders (Maruf, Khan, & Jahan, 2016). The latter form of substance induces disorders could also indicate the strong connections between substance use addictions and behavioral addictions.

Besides the connections between substance use and behavioral addiction, the correlations between various behavioral addictions have been explored. Griffiths (1991) proposed that gaming and gambling share many addictive similarities. Furthermore there are factors of gambling in all kinds of games, which could be in the form of random purchases known as ‘loot boxes, which would provide random in-game rewards on a chance basis (Yokomitsu et al., 2021). Some researchers have found that the loot box might aggregate the symptoms of gambling addicts (Zendle & Cairns, 2018).

#### **5. How to Develop the Field of Addiction in the Future?**

##### **5.1. Public Consciousness towards Addiction**

Where is the line between an innocent hobby and a disastrous addiction disorder? The former enlightens our boring daily life, and no one should put the finger on this personal issue. In contrast, the latter erodes the very foundation of our order of life and requires certain degrees of intervention.

Some researchers propose that any hobby, no matter behavioral ones, like fishing, shopping, or cooking, or the ones involving taking in substances, like eating hamburgers, chicken wings, or whatever would stimulate you to be ‘addictive,’ has the potential to lead to a relative addictive disorder, whenever it changes into an obligation (Widyanto & McMurrin, 2004).

It sounds neat and rational, but it could lack practical operability when applying this rule to our real life. Anything that would make a hobby could potentially make people indulge in it to some extent. At the same time, due to the great stress in life, there are various reasons for people to hide behind those hobbies and even feel obligated to continue the pattern to feel better. During this time, people could somehow recognize this kind of inducement and even joke that they were addicted to certain substances or behaviors. However, it is a different story when you tell them that you think their ‘hobbies’ could be harmful to their normal lives and would have changed into a mental disorder, which needs to be intervened clinically. At this point, most people return to the safety line and claim it is just a little hobby.

Many people would not be inclined to admit that they have an addiction disorder. Instead, they would claim that their ‘hobbies’ are just a way of letting off the pressure; for instance, clinically diagnosed alcoholics seldomly admit they have a problem to solve in the first place (Rehm et al., 2009). Also, this is why most of the interventions towards the addicts begin with letting them admit that they have a problem to envisage, like the first step of 12 steps towards the sober is to admit that alcohol drinking has become a major problem for you, which leads to the mess in your life and you need professional help.

Thus, it is crucial to tell whether routine substance taking or behavior should raise the alarm of addiction. To make this happen, public awareness and consciousness should reach a consensus on the clear diagnostic standards of all addictions. Nevertheless, although different addictions do not always share the same pathogenesis, clinical symptoms, and correlated characteristics, many addictions, like shopping addiction, have not been formally recognized by DSM-5 (American Psychiatric Association). More relevant

addictions, which have already impacted a huge number of people in real life, only have a name, still short of continuous tracking studies and ‘official certification’ that it is an addictive disorder, like internet social addiction. In this case, how do we expect the patients suffering from actual addictive disorders to recognize the issue and attain enough help?

### 5.2. Unambiguous Definition of Addiction

The problem is that researchers in this field have found that it is not easy to define the concept of addiction, and even the term itself could be controversial. The term ‘addiction’ is not tricky to be understood but difficult to define appropriately.

Some researchers think that the central to the definition of addiction is dependence, no matter the substance or a certain behavior. Following this trace, addiction is a process of continuous change, which means the initial harmless hobby or manner could change into a dangerous addiction disorder through certain development, like internet browsing changing from a habit into obligatory behavior (Alavi et al., 2011). To make it easy to substitute, it is like depression patients may experience various physical and psychological changes before they get diagnosed clinically. At the very beginning of their symptoms, depression patients experience some depressed mood like normal people, and the subsequent progression of the disorder relies on the variations of physical and psychological changes.

Simultaneously, the definition of behavioral addiction could be more tricky than substance use addiction. After all, based on the psychological and psychiatric point of view,

behavioral addictions are usually correlated with a variety of other disorders, for instance, depression, anxiety, withdrawal and isolationism, obsessive thoughts, and so on (Alavi et al., 2011). The withdrawal reaction of behavioral addictions could involve excessive fatigue, lifestyle changes, significantly reduced physical activity, deprivation and changes in sleep patterns, impatience, sexual deviations, violence, eating disorders, and so on (Alavi et al., 2011). As discussed above, the correlations between these symptoms and behavioral addictions can be bidirectional, in which case not all of those symptoms are essential to the addiction. Thus, clearer and unambiguous definitions are necessary to improve our understanding of addiction.

### 5.3. Interventions for Addiction

The current interventions or treatments for different kinds of addiction are far from satisfactory. Using tobacco addicts as an example, though most tobacco addicts know the harms of smoking and subjectively have a strong will to quit, most attempts to quit smoking fail. More disappointedly, in previous research, only 55% of the participants successfully quit for a day; 7% of the participants sustained the quit for six months, but still 45% of those ended in relapse (Babb et al., 2017).

When it comes to the treatment of addiction, it is important to let addicts understand that both substance use addiction and behavioral addiction could involve a chronic, relapsing process, which may cause great pain to individuals’ bodies and minds, which would require great patience and will of the addicts to follow the process. Also, more publicity and education on addiction-related knowledge should be given to adolescents.

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