


# Chapter 1

# Neurobiological Mechanisms and Therapeutic Interventions in Behavioral Addictions

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## ABSTRACT

*Behavioral addictions, including gambling, internet/gaming, and food addiction, profoundly affect individuals and society. This chapter examines their neurobiological underpinnings, highlighting dopaminergic pathways, neurotransmitter imbalances, and the neural circuits involved in reward processing and impulse control.*

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*It covers diagnostic methods, psychometric tools, and neuroimaging, and reviews treatments such as Cognitive Behavioral Therapy, mindfulness, and pharmacological interventions. Stigma, comorbidities, and relapse risks are addressed, alongside prevention strategies emphasizing education, community support, and regulation. Future directions focus on personalized medicine, genetic and epigenetic research, and digital tools for intervention. By integrating neuroscience, clinical practice, and public health, this chapter offers a comprehensive foundation for understanding and managing behavioral addictions.*

## **1. INTRODUCTION**

Behavioral addictions, also known as non-substance addictions, refer to compulsive engagement in certain behaviors that can lead to significant impairment or distress. These behaviors activate the brain's reward system in ways similar to substance-based addictions, resulting in a cycle of craving, reinforcement, and loss of control (Jawad et al., 2019; Grant et al., 2010). The distinction between behavioral and substance-based addictions is a topic of ongoing research and debate. While both share core characteristics, including impaired control, continued engagement despite adverse effects, and withdrawal symptoms, the primary difference lies in the consumption of psychoactive substances, such as alcohol or drugs in substance-based addictions (American Psychiatric Association, 2013). In contrast, behavioral addictions revolve around activities that can be engaging and rewarding, such as gambling, internet use, gaming, or excessive shopping (Potenza, 2014; Ricciutti et al., 2024).

The scope of behavioral addictions is broad and multifaceted, raising important questions regarding diagnosis, treatment, and societal impact. As technology evolves and digital behaviors proliferate, concerns over conditions such as internet gaming disorder and social media addiction have come to the forefront of clinical and public health discussions (Lemmens et al., 2023). Understanding the definition and scope of behavioral addictions is crucial for developing effective therapeutic approaches and for promoting awareness among individuals, families, and professionals. Recent research has begun to explore the neurobiological underpinnings common to both substance abuse and behavioral addictions, revealing similar pathways in the brain that reinforce compulsive behavior (Uhl et al., 2019; İzci et al., 2022; Su et al., 2024). While both types of addictions share common features, including neurobiological pathways and psychological triggers, their assessment, progression, and recovery processes may differ significantly (Chen et al., 2017).

Research suggests that behavioral addictions affect millions of people worldwide, with a recent study estimating that approximately 1.5 billion individuals engage in addictive behaviors (Kuss & Griffiths, 2017). Behavioral addictions, such as internet

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