Current Approaches in Addiction Psychology

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Edited by

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This book first published 2023

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INTRODUCTION

Addiction is a hot topic nowadays. Chronologically, research on the use and effects of addictive substances has come to the fore, and then behavioural reflections of the addiction cycle have gained importance with the observation of changes in the daily life of the individual. In this sense, it should be clear that context/concept is expanding by representing much richer content and acquiring new variables. Thanks to scientific studies, this enrichment led us to review the old definitions and change and improve our ways of perceiving the research and professional applications done in addiction psychology. Consequently, scientific studies have paved the way for more scientific research and examination and led to a better understanding of addiction and addiction experiences.

The concept of addiction is open to research and specialization in many different fields. While it is possible to discuss the issue from a legal point of view, by evaluating the duration, forming the conditions of the sanctions, and examining the criminal responsibilities of dependent individuals, to make international comparisons, it is possible to focus on the medical side by leaving all these aside. The physical and biological experiences of addicted individuals, their bodily reactions to the phenomenon or substance they are addicted to, or the condition of the body affected by addiction, and the treatment methods and drug treatments that can be used are only a few topics that a specialist who plans to approach the subject from a medical point of view can focus on. In addition to legal and medical dimensions, it is out of the question to ignore sociological and psychological studies. In front of people working in these areas, there are options such as whether or not the treatment services provided for individuals with addiction problems should be limited to treatment centres. By making these people its focus, this study aims to examine the inner worlds, experiences, pasts, futures, feelings, and expectations of individuals who use addictive substances, their perceptions of the world and life they live in, their family life, educational life and social life at the individual level and to treat the information obtained use may be shown as other options. Looking at the subject from a broader perspective reveals that there are options such as identifying risk groups and putting forward preventive measures, examining a spouse, children, or society affected by a person's addiction, etc.

The literature states that the picture of addiction does not only consist of biological or behavioural parts. Rather, it is a more comprehensive, detailed, and vivid picture which also consists of psychological and social factors. As discussed above superficially, unfortunately, addiction, like many other psychological/psychiatric disorders, does not maintain itself but is seen as a multidimensional disorder. On the other hand, even if addiction is evaluated in one context, it has been seen that addiction forms comorbidity with other psychological disorders, and so its emergence often accompanies different problems. For this reason, when the issue of addiction is handled only in health, only in law, or only in the social dimension, it is insufficient to explain and understand the issue. Therefore, studies in the field of addiction psychology should not be designed in a linear dimension, but in a multidimensional way as a set of systems in which intertwined systems affect each other and are also affected by each other. In addition, this multidimensional approach is an approach that should be considered not only in the process of designing academic studies in the field but also in prevention and intervention studies and treatment programs planned and implemented by professionals. Studies conducted to date show us that problems related to addiction can be handled more efficiently with a multidimensional approach. To sum all this up in terms of psychology: it is possible to say that a multidimensional evaluation is important both for the effectiveness of prevention studies and for the planning of appropriate therapeutic approaches and the development of treatment strategies.

For all these purposes, it seems essential that academic addiction studies and application approaches are kept up to date. Because, as I mentioned at the beginning, the content of the concept of 'addiction', which by its nature gathers expertise from different fields, is expanding. During my time in the field, the dialogues and interactions I had with my colleagues, mental health workers, and my expert friends, such as doctors, nurses, lawyers, and police, who contributed to the field from different perspectives, provided me with ideas and motivation to contribute. As I mentioned above, many different perspectives can be used or paths you can follow when dealing with addiction. While the concept embodies so many things, it is unfortunately out of the question to present all these perspectives or to describe all the paths in a single book. While creating this book and its sections, I aimed that the subject of addiction psychology is discussed within the framework of psychology, health sciences and forensic sciences; and tried to move from the titles that need to be updated and compiled as much as possible. In line with this purpose, I applied for support from professionals, academics, and researchers from different fields in creating the book.

I would like to thank all authors for their cooperation with their knowledge and effort in this process. Especially, I am grateful to my colleague and friend, Asst. Professor Yasemin Sanal Özcan, for sharing her support and professional experiences from the beginning of this journey to the last step.

Assoc. Prof. Eda Ermagan

CHAPTER I

THE ROLE OF EMOTIONS IN ADDICTIONS

SINEM SÖYLEMEZ

Addiction and emotions

Humans' vulnerability to addictions has a long historical background. To understand this vulnerability to addictions and how treatment strategies can be developed, the long history of addiction should be examined.

Emotions play a significant role in the development of addictions. They can direct behaviour and affect cognitive processes. Emotions inform the organism about what should be attended to, remembered, learned, and repeated. Substance-related dopamine release and positive emotions are highly effective in increasing the likelihood of organisms repeating their substance-taking activity. Thus, activation of emotional mechanisms at the moment of substance intake affects cognitive processes and directs the organism's future behaviours. The strong relationship between emotions and addictions stretches back to evolutionary history. Therefore, it is important to shed light on the role of emotions in addictions for a better understanding. In this way, several questions related to addiction can be dealt with more effectively. What makes all people vulnerable to addiction? Why do people continue to take substances despite the adverse consequences? How do substances influence cognitive processes? What is the role of the emotional mechanisms in these processes? Such an understanding can provide more useful answers to these questions and better options for treating addiction. This chapter considers substance addiction from an evolutionary perspective by emphasizing the role of emotions.

In this chapter, general information regarding the literature on emotion is provided for the reader. Next, addiction is explained in light of definitions in the literature, evolutionary accounts, and emotional approaches. After that, how addictions affect cognitive functions is evaluated by considering

emotional mechanisms. Finally, a short review concerning substance addiction in Turkey is provided, a summary of the chapter is given, and implications are discussed.

Emotion

When we look at the literature on this subject, we see that there is no common definition of emotion. Nevertheless, it is generally accepted that emotions emerge as a reaction to a specific stimulus. When addiction is discussed, understanding the functions of emotions can provide more insight than defining them.

Emotions are fundamentally the neural mechanisms that evolution has shaped to ensure survival (Nesse 1990). Panksepp (2011) suggests that emotions have resided on 'instinctual–behavioural neural networks that evolved long before humans appeared'. Emotions can supply information about the environment and motivate appropriate behaviour. The emotional aspect of a stimulus in the environment is related to its significance. Swift and accurate reactions to those significant stimuli or events are necessary for both survival and fitness success. LeDoux (2003) states that there is a 'fast and dirty' route conveying emotional information to the amygdala, which is the specific emotion-related area in the brain. This route provides an evolutionary advantage to react appropriately to significant events as rapidly as possible. Thus, emotions serve adaptive functions and enable a fast evaluation of threats and opportunities in the environment to motivate behaviour accordingly.

The literature contains different approaches to emotions. One approach is classical emotion theory, which suggests that emotions are innate and fundamentally serve survival functions. Darwin, a pioneer of classical emotion theory, emphasizes that not only physical functions but also mental processes have evolved (as cited in Plutchik 1970). Ekman and Friesen (1986) support classical emotion theory and list six basic emotions: anger, fear, happiness, disgust, surprise, and sadness. They claim that these emotions are biological tools that aid survival. In summary, the classical approach to emotion highlights the adaptive functions of emotions. Another prominent approach is the circumplex model of emotions (Russell 1980). This model does not specifically categorize emotion and it defines emotions based on two neurophysiological structures: arousal and valence. The intensity of an event is related to arousal, while its pleasantness is associated with valence. This model rejects the inference of classical emotion theories

that suggest emotions are orthogonal, and each has a specific neural circuit (Posner, Russell, and Peterson 2005). This model, in contrast, stresses the continuous nature of emotions. The motivational model of emotion, on the other hand, emphasizes the tendency to actions created by emotions (Lang and Bradley 2013; Eder, Elliot, and Harmon-Jones 2013). This model suggests that emotions create an approach or avoidance motivation according to the information available. Motivation is defined as a state that changes in response to arousal and guides behaviour concerning changes in the environment (Fattore and Diana 2016; Koob, 2015). Burghardt (2019) reports that motivational systems have served survival and reproduction functions since ancestral environments, and emotions, like motivational drives, cause appetitive search and avoidance. For example, a stimulus causing disgust motivates avoidance, whereas an appetitive dessert motivates an approach. Thus, the motivational model underlines the influences of emotions on actions.

In conclusion, there are a variety of approaches to emotion. Some are mentioned here to improve the clarity of the rest of this chapter since the role of emotions in addictions is discussed based on the main ideas of these approaches.

Addiction

Addiction is defined as a compulsive behavioural abnormality (Fattore and Diana 2016). Drugs give intense pleasure by activating the reward mechanisms and evoking positive emotions. People take substances generally to experience that pleasure and avoid pain, despite the detrimental results (Nesse 1994). That is, reinforcing effects of substances and compulsive substance-seeking despite the adverse consequences are the fundamental components of the substance addiction cycle (Bechara 2003; Huber, Nathaniel, Alcaro, and Panksepp 2011).

Research on addiction has widely focused on explanations of its components. It is often emphasized that there are genetic, developmental, and environmental processes underlying addiction (Huber et al. 2011; Lewis 2017). First, genetic factors have been reported to play an important role in addiction. Family and twin studies showed that about 50% of the variation in human susceptibility to addiction is due to genetic reasons (Bierut 2011). Furthermore, addiction changes brain reward mechanisms while influencing them. Because addiction creates changes in the brain reward system, genetic factors also affect addiction disposition via epigenetics

(Mews, Walker, and Nestler 2018). Second, developmental factors have also been reported to be involved in addiction development. For example, family unpredictability early on can increase risk-taking behaviours in later years (Chick 2002; Chick, Aschauer, and Hornik 2004; Saah 2005). One possible consequence of this unpredictability is that the future is viewed as uncertain, resulting in a preference for immediate rewards like substances over future ones. Furthermore, Mate (2020) emphasizes that early emotional disturbances create the desire for the relief provided by substances. Third, people's vulnerability to addiction is related to environmental factors. For example, it is suggested that people with fewer sources of pleasure in their daily lives are more vulnerable to addiction (Nesse 2002). Addictive substances can be replaced with natural rewards easily. Although these factors can give insights into addiction development, they are still not sufficient to explain why all people are vulnerable to addiction and why addiction is resistant to treatment.

Addiction has deep evolutionary roots and emotional characteristics. Understanding addiction from this perspective can provide more comprehensive explanations as to why people are vulnerable to it.

Evolutionary Background of Addiction

Humans' use of psychoactive substances goes back a long way. The mammalian brain and ancient psychotropic plants have co-evolved (Saah 2005) and psychoactive plants were part of our ancestors' diet (Sullivan and Hagen 2002). As a result, it might be expected that substances would not pose a risk to humans. Indeed, some types of addictions do not impede reproductive success; smoking, for instance, does not impair survival functions until after someone has reproduced (Hall 2002). Similarly, substance-related impulsive actions may result in harm, but these impulsive behaviours can also provide an opportunity to obtain food and mate in ancient environments (Gerald and Higley 2002). However, it is obvious that substance addiction is harmful. If the interaction between humans and substances is so old, why do substances negatively affect the brain and life?

The essential function of addictive plant alkaloids is as a defence system against herbivores (Nesse 2002). Mammals consumed plants and so they have long been exposed to these addictive alkaloids. Mammals might be expected to show a mechanism allowing them to adapt to these alkaloids. However, any adaptation to decrease human sensitivity to these alkaloids could also have side effects on reward perception, learning, and judgment

mechanisms (van Staaden and Huber 2018). Therefore, such a kind of adaptation would result in a loss rather than a profit. In addition, there was no need to develop this adaptation when we consider the environment our ancestors lived in. There was a limited amount of natural substance resources in ancient environments; therefore, an adaptive regulation within the cortico-mesolimbic system was not necessary (Lende and Smith 2002). In the modern environment, on the other hand, there are plentiful amounts of salient stimuli, and we have no internal control over them, which makes us vulnerable to addiction (Saah 2005). As Nesse (2002) stated, "substance addiction is a disease of civilization".

Recent studies on addiction have asserted that it is not only mammals who are vulnerable to addiction. Studies have been conducted on crayfish, which are invertebrates. Crayfish studies aim to show the underlying mechanisms of substance addiction, which even involve invertebrates. They examine the fundamental biological mechanisms of substance effects, the seeking tendencies, and the motivational and reward effects (van Staaden and Huber 2018). The results show that the compulsive components of addiction depend on motivational subcortical neural circuits with anatomical, neurochemical, and motivational similarities seen in all vertebrates (Huber et. al. 2011; Panksepp and Burgdorf 2000). They also indicate that administration of just a single dose of stimulant results in long-term behavioural sensitization in crayfish, and this provides evidence for the fundamental sensitivity of the neural substrates to addiction (Panksepp and Huber 2004). Thus, these studies demonstrate the deep origins of substance addiction. That is, it can be surmised that addiction is not human/mammal specific; instead, it originates from more fundamental biological mechanisms to do with learning and motivation (Staaden, Hall, and Huber 2018). Therefore, it can be reasoned that human substance abuse has a long history and it is not an issue limited to morality or abnormality.

Emotional background of addiction

No specific trait has been shaped by evolution to motivate substance abuse. Evolution, rather, has shaped emotions to regulate behaviours and substances act on these emotions (Nesse 1994). Understanding the functions of pleasure and pain can thus provide a better idea as to why people are vulnerable to substance addiction (Nesse 1994). As we detailed above, emotions are biological mechanisms that help organisms to survive. They are essentially the chemicals of the brain, and they signal the level of fitness (Buss 2000). Positively valenced emotions, such as euphoria and excitation,

signal an increase in gain and fitness, whereas negatively valenced emotions such as anxiety and pain signal a decrease (Saah 2005). As all organisms are motivated to increase fitness, activities resulting in positive emotions are more likely to be replicated. That is how emotions play a role in addictions.

Addiction and emotions are inseparably related and substances that are abused are associated with powerful emotional states. Therefore, explanations of substance addiction generally emphasize its emotional aspects. Robinson, Robinson, and Berridge (2013) describe addiction as a chronic relapsing disorder and list three main reasons for relapse. The role emotions play in addictions will be elaborated on based on those reasons. First, there is a desire to take substances of addiction to experience intense pleasure. Substances activate the nucleus accumbens and neural reward system and result in dopamine release (Nesse and Berridge 1997), which elicits intense pleasure and positive emotions. The organism's brain makes inferences based on dopamine-related positive emotions and interprets its intense positive state as an increase in fitness, which is incorrect. The activation that substances create in reward mechanisms is artificial and this kind of activation can normally be seen in a human in fitness (Nesse 2002). Although any substance-related fitness gain is illusionary, the organism cannot understand that the pleasure provided by those substances is artificial and unrelated to fitness. Once such powerful positive emotions are experienced, natural rewards (e.g., food, mates) lose their attractiveness. Thus, organisms' motivation to search for natural rewards is replaced with a compulsive search for substances. The organism becomes liable to repeat substance-taking actions to experience intense pleasure again, and the appetitive search starts. Appetitive search is the primary driver of behaviour to chase goals and obtain the resources necessary to meet their needs (van Staaden and Huber 2018). As substances impair reward mechanisms, this search is done for substances instead of natural rewards. In other words, when the brain becomes dependent on the chemical neural homeostatic circuitry that is altered by substances, substance use becomes an addiction (Panksepp, Knutson, and Burgdorf 2002). In conclusion, the intense pleasure provided by substances damages the reward mechanisms and turns appetitive search into addiction.

Another reason why relapse occurs is that substance-taking becomes a habit, and the organism makes false predictions about the rewards of substances (Robinson et al. 2013). As addictive substances interfere with reward-related brain circuits through repeated use, they result in the exaggeration of the inherent value of the substance and the underestimation of its associated risks (van Staaden and Huber 2018). As a consequence, the

organism continues to take substances compulsively despite the adverse effects. However, it is claimed that addicts do not continue taking a substance because they experience pleasure from it. Robinson and colleagues (2013) state that there is no clear relationship between subjective pleasure and addiction. That is, there are two types of motivation for addiction, namely 'like' and 'want' (Nesse and Berridge 1997), and the literature on addiction highlights the differences between them. Liking and wanting are dissociable both psychologically and neurobiologically (Berridge, Robinson, and Aldridge 2009). The fundamental distinction between them depends on the fact that people still 'want' the addictive substance, even if they do not like it. The mammalian brain causes a 'like' at first, which turns into a 'want' as the addiction progresses (Saah 2005). That is, people do not continue substance abuse because they experience intense pleasure; rather they just "want" it. The 'wanting' motivation corresponds to Panksepp and Biven's (2002) 'SEEKING' emotion, which is a set of brain mechanisms responsible for anticipation, excitement, and curiosity. Addicts are just in a seeking mood for substances and feel they must meet this need. Thus the 'wanting' mechanism impels the organism to compulsively search. The pathological feeling of 'wanting' and the motivation to take the substance is also described as craving (Robinson et al. 2013).

The other reason for relapse is to avoid the negative emotions related to withdrawal (Robinson et al. 2013). Withdrawal can be described as the feeling of intense negative emotions. Just a single administration of a psychostimulant causes activations in reward mechanisms and this response becomes stronger with repeated administrations; as a result, withdrawal symptoms emerge and craving starts (Robinson and Berridge 1993). Thus, the stress systems of the brain work in accordance with the negative reinforcement principle and create a powerful motivation to reengage in substance taking and seeking (Koob 2015). As a result, the appetitive search is motivated to eliminate these negative emotions. However, Koob and Le Moal (2001) report that substances do not cause homeostasis of reward/stress function, but rather result in allostasis-like dysfunction, and that drive the addiction. *The allostatic state* is described as a decrease in the brain reward systems and activation of the brain stress system leads to a negative emotional state (Koob 2015). According to this approach, the chronic decrease in reward system function induces substance seeking and loss of control over intake. That is, the only way to stimulate reward mechanisms and avoid negative emotions is to create a 'change', which requires a constant substance intake loop. On the other hand, these negative emotions that addicts want to escape can provide significant benefits for the

organism. Since negative emotions prompt avoidance of danger and threats, they are adaptive defence mechanisms ensuring survival. For example, shame and guilt are negative social emotions and they motivate appropriate behaviour in society (Söylemez, Koyuncu, and Amado 2018). Furthermore, the inability to experience negatively arousing situations is associated with behavioural impulsivity, which can lead to risky decision-making (Bechara and Damasio 2002), i.e., negative emotions can inhibit risky decision-making. Another function of negative emotions is that they act as an alarm system to engage with an excessive amount of positive emotional states (Koob 2015). Because substances decrease the feeling of negative emotions, they interfere with these adaptive functions.

In conclusion, emotions are involved in addiction processes and strengthen them in various ways. As a result, they impede recovery. In addition, the relationship of emotions with addiction also occurs through brain mechanisms and cognitive functions. These processes are discussed in the following section.

Addiction and cognitive functions

Addiction is fundamentally characterized by disruptions to reward systems (Koob 2015). Reward mechanisms are involved in many cognitive functions. Because these mechanisms affect many cognitive processes, their relation to addiction has consequences for cognition as well. Volkow, Koob, and McLellan (2016) state that substance addiction leads to 'tissue damage' in the brain, resulting in reduced emotional function and cognitive control. Thus, addiction leads to changes in reward-related brain systems that are responsible for perception, memory, and higher-order executive functions (Lewis 2017). Specifically, the prefrontal cortex is an important brain area for substance addiction because dopamine is essential for prefrontal working memory functions (Fattore and Diana 2016). It is involved in several executive functions, such as inhibitory control, decision-making, emotional regulation, motivation, and salience attribution. Impairment of the prefrontal cortex and thus these cognitive functions increase vulnerability to addictions (Volkow, Wang, Fowler, and Tomasi 2015).

Because substances affect emotional systems, it might be expected that the brains of addicts function differently from those of others. However, self-report measurements do not yield differentiative results (İyilikçi 2021). This might be explained by the low self-awareness of participants about their inner motivations. For that reason, the automaticity of cognitive biases

can provide more accurate results than self-report measurements (Berridge et al. 2009; McCusker 2001). In this section, substance addiction is elaborated on its relation to learning, attention, memory, and decision-making cognitive functions in light of theories and research.

Learning mechanisms play an important role in the relationship between addiction and emotion (Volkow, Wang, Fowler, and Tomasi 2010). Emotions are powerful behaviour regulators (Nesse and Berridge 1997). Because substances of addiction elicit strong emotions, learning happens faster. Emotions indicate what needs to be learned to display the appropriate behaviour in the future. Consequently, current events continuously result in recalibration with respect to their motivational value to regulate future behaviours, but substances interfere with this calibrated learning system (Robbins, Ersche and Everitt 2008). Learning is primarily the establishment of associations between a cue and its consequence, but when substances are taken, reward mechanisms misattribute the fitness success to the substances and related cues. It is also suggested that addiction is a neural disorder causing breaks in non-associative and associative learning-related neural mechanisms (van Staaden and Huber 2018). Disruptive effects of substances on learning mechanisms prevent future adaptive behaviours. As a result, substances 'hijack' the motivational systems and that impairs long-term survival and reproduction success (Chick 2002). Moreover, substances make it more difficult to reverse those association learning. That is, the association established between a cue and substance is resistant to behavioural interventions (van Staaden and Huber 2018).

Extinction is an associative learning that suppresses previous conditioned learning. The prefrontal cortex plays an important role in extinction (Dunsmoor, Kroes, Li, Daw, Simpson, and Phelps 2019). Evidence suggests that human addicts show similarity to patients with prefrontal cortex lesions in terms of cognitive inhibitory control (Bechara, 2005). As addiction damages the prefrontal cortex, addiction-related learnings become resistant to extinction (Peters, Kalivas, and Quirk 2009). Thus, the changes substances create in the brain also distort extinction learning.

Incentive sensitization theory (Robinson and Berridge 1993) sheds light on how learning mechanisms play a role in addiction. This theory suggests that when a neutral cue is associated with the reward system, it becomes an *incentive stimulus* and attracts attention. Thus, pairing with a resource makes neutral stimuli gain incentive salience and this effect is strengthened by the reward mechanisms (Koob 2015). Incentive salience is mediated by

more subcortical neural systems including mesolimbic dopamine projections (Berridge et al. 2009). It is related to the "wanting" motivation of addiction, which can be easily elicited by substance-related cues. While novel stimuli (substance) elicit dopamine release upon the initial exposure, repeated exposure reduces dopamine release as a response to the reward (substance) itself and increases it in response to substance-related cues (Schultz, Dayan, and Montague 1997). Incentive stimuli become more significant than the substance itself. Thus, dopamine release occurs in response to predictive incentive stimuli rather than the reward itself. Incentive stimuli control the behaviours and sustain the motivation to take the substances. Consequently, they cause compulsive searching and generate motivation to receive the reward the instant it is wanted (Lewis 2017; Volkow et al. 2012). In this way, the incentive sensitization system makes substance-related learning more resistant to extinction.

Drugs also impair cognitive functions other than learning mechanisms. As mentioned above, psychoactive substances impair a wide range of cognitive functions including attention, affect, cognition, decision-making, and behaviour (Lewis 2017; van Staaden et al. 2018; van Staaden and Huber 2018). Cognitive systems fundamentally work based on survival principles. Natural rewards satisfying human needs automatically attract attention to increase fitness. Cues that acquired incentive significance via Pavlovian Conditioning also attract attention (Franselow and Wassum 2016). When neutral stimuli acquire incentive salience by pairing with the substance, an organism's attention can become biased towards them. Substances motivate appetitive search and incentive stimuli strongly draw attention with the goal of experiencing pleasure. Because addiction-related cues bias the attentional resources (Jones, Bruce, Livingstone, and Reed 2006), they cause addictions to last (İyilikçi 2021). Drugs affect memory processes as well. It is suggested that addiction is a type of memory disorder (Kelley 2004; Peters et al. 2009). All propositions and expectancies motivating behaviours are located in the memory (McCusker 2001). Hence, past experiences motivate specific behaviours in current situations. Emotion signals what to remember. That is, emotional events are experienced differently than neutral ones and they are also stored in the memory differently (Mather 2007; Mather and Sutherland 2011). Because of the reward-related nature of addiction, substances bias the memory and related experiences are remembered better (Hyman 2005; Hyman, Malenka, and Nestler 2006). Moreover, learning and attention mechanisms contribute to better remembrance of substances and related cues.

Lastly, substance addiction also leads to biases in decision-making. The somatic-marker hypothesis of decision-making is suggested by Damasio (1994), and it claims that decision-making is an emotion-guided process. Verdejo-Garcia, Pérez-Garcia and Bechara (2006) adapted the somatic-marker model to addiction. They claim that addiction impairs the prefrontal cortex, resulting in disturbances in decision-making cognitive function. This theory can account for the hypersensitivity to immediate reward and insensitivity to delayed punishment following prefrontal cortex damage in addicts.

In conclusion, there is a relation between substance addiction, emotion, and cognitive processes and it is not one-way. These processes affect each other mutually. This is another reason the addiction loop is difficult to break.

Substance addiction in Turkey

Substance use and drug misuse are significant concerns in Turkey and their prevalence is 28.3% and 10.5% relatively (İlhan et. al. 2016). This situation continues to increase over the years. According to Turkey Substance Report (TUBIM, 2019), substance use causing security incidents show a 22.23% increment from 2017 to 2018. Changing the social structure and technological factors can be effective in this fast increase. Population movements from rural to urban areas, malicious use of the internet, and weakening social ties can direct the young to substance abuse (Albayrak and Balcı 2014). In addition, it is found that young people's knowledge and beliefs about the negative consequences of addiction, legal sanctions on substance abuse, and the effectiveness of addiction treatments are wrong (Sanal Özcan, Hamzaoğlu, and Türk 2020). Consequently, substance addiction is an important issue that should be addressed in Turkey.

Summary

All people are vulnerable to addiction and can easily develop it. However, it affects life negatively and harms people's health. It is difficult to explain why people continue to take substances despite the adverse consequences. Understanding the historical background of addiction and the role of emotions in this process can provide better answers to this kind of confusion. Considering how the environment has changed since ancient times and the influences of emotions on cognitive processes can help reach better explanations. In this way, addiction can be discussed in terms other than morality and behavioural abnormality.

Emotions provide information for organisms about their surroundings, and they have survival functions. Positive emotions signal an increase in fitness. Because substances elicit dopamine release and therefore positive emotions, the human brain misinterprets this situation as a fitness-related success. People are motivated to seek these resources to experience intense pleasure and escape from withdrawal-related negative feelings. The modern environment offers unlimited sources of substances, and people do not have any inner control mechanism over it. Addiction creates changes in the brain's reward system. The motivation to take more substances and experience positive emotions also affects cognitive processes. Intense positive emotions from the use of substances bias learning, attention, memory, and decision-making processes. Consequently, repeated use strengthens this cycle and addiction becomes resistant to recovery. That can cause users not to believe they can quit.

Drug addiction should be evaluated from a deeper perspective to see what to do for successful recovery. Treatment strategies can yield enduring results only if they consider the evolutionary and emotional aspects of addictions. Increasing the awareness of addicts about the underlying processes of addictions can help recovery. In this way, their belief to quit the substances can be restored. Cognitive therapies can be used to increase patients' awareness of negative feelings and to restructure their belief systems (McCusker 2001). Moreover, investigations of the brain mechanisms responsible for substance addiction can provide beneficial information for pharmacotherapies and behavioural interventions (Fattore and Diana 2016). Neurological studies can provide useful explanations at that point. Addictions are not easy to quit, and emotions also make them resistant to recovery. As mentioned above, substances do not only affect the brain but also change it. However, the brain always can repair itself. Plasticity is a fundamental property of this organ (Doidge 2007). Increasing the awareness of patients about their emotions and strengthening their beliefs about recovery can provide better treatment.

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Chapter II

The Integrated Metatheoretical Model of Addiction

Guy du Plessis

Addictions have beleaguered society since human beings first discovered they could alter their consciousness by ingesting certain psychoactive substances.[1] How society views and understands addiction has great significance for addicted individuals seeking treatment. Although our explanation of addiction has become more sophisticated, there are still serious shortcomings in our understanding of it (West 2005; Du Plessis 2014, 2017). Many scholars agree that two of the foremost problems in the field of addiction science and addiction treatment are definitional confusion (Shaffer 1997; Shaffer et al. 2004; White 1998) and the ineffectiveness of treatment (Alexander 2010; Shaffer et al. 2004; White 1998). Consequently, there are those who suggest that a paradigm shift is urgently needed; because there are such an abundance and diversity of addiction theories that the field of addictionology is in "conceptual chaos" (Hill 2010; Shaffer 1997; Shaffer et al. 2004; White 1998).

The "conceptual chaos" that prevails in the field of addiction contributes to the general ineffectiveness of addiction treatment. Although there are a number of diverse options for treatment, there is an ostensibly low efficacy rate for the treatment of the condition (Alexander 2008). "Large population analyses indicate relapse rates following treatment of alcohol dependence orders to be between 70% and 90% and success in treating illicit drugs is even more discouraging, with recidivism rates exceeding 90% in many demographics" (Hill 2010, 4). In *Slaying the dragon: the history of addiction recovery in America,* addiction, and recovery researcher William White (1998) stated: "With our two centuries of accumulated knowledge

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[1] In this chapter I use the terms 'addiction' and 'substance use disorder' (as defined by the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, DSM-5, American Psychiatric Society, 2013) interchangeably.

and the best available treatments, there still exist[s] no cure for addiction, and only a minority of addicted clients achieves sustained recovery following our intervention in their lives" (342).

It is significant to mention that the inefficacy of treatment is not to be attributed to a shortage of attention or an absence of authentic efforts from concerned parties (Flores 1995; White 1998). Because of the advances in concerns of public health such as emergency medicine, epidemiology, sanitation, and drug therapies, the hope that many diseases could be successfully treated has been raised (Hoffman and Goldfrank 1990; Maxmen and Ward 1995). It is unfortunate that the advances made in public health have not been reproduced in the treatment of addiction (Field 1998; Ray and Ksir 2004; White 1998). Bruce Alexander (2010, 2) proposes that "A paradigm shift is urgently needed in the field of addiction because, while the institutions of global health have expended vast resources over the past couple of centuries to control addiction to drugs, alcohol, and hundreds of other habits and pursuits, the flood of addiction has continued to deepen and spread."

In a recent publication, *The Routledge Handbook of Philosophy and Science of Addiction,* Robert West and colleagues highlight an additional research challenge for more clarity and unity within the field of addiction studies. They argue that "The science of addiction is being hampered by confusion in concepts and terms, and a multiplicity of models and theoretical approaches that make little reference to each other" (West et al. 2018, 160). They further state "that a general theory of addiction has yet to be developed, but a key requirement for such a theory is that it should recognize and accommodate multiple viewpoints on addiction, and not be limited to a single viewpoint such as the 'medical model' (construing addiction in term of a mental disorder, disease or disease process)" (163). West and colleagues (West et al. 2018) propose that ontology is the most viable way to solve this challenge. I partly agree with West, from the point of view that ontology is indispensable in trying to solve the challenge, but ontology alone will not be adequate. Instead, in this chapter, I will argue that an understanding of the triadic relationship between ontological, epistemological, and methodological pluralism is needed to find a more unified view.

In this chapter, I provide the conceptual building blocks or architectonic of a metatheory of addiction, referred to as the Integrated Metatheoretical

Model of Addiction (IMMA).[2] I do not present the IMMA as a conclusive metatheoretical framework, but rather as an exploratory attempt at providing the architectonic of an integrative and comprehensive metatheory of addiction, that may potentially provide the conceptual scaffolding in developing a general theory of addiction.

Why integral metatheory?

In developing the IMMA I will apply American philosopher Ken Wilber's integral metatheory as a primary conceptual resource.[3] Wilber's integral metatheory is often referred to as the AQAL model, with AQAL representing all quadrants, all levels, all lines, all states, and all types, with these five elements signifying some of the most basic repeating patterns of reality (Wilber 2000, 2006). Integral scholars believe that including all these elements increases one's capacity to ensure that no major part of any solution is left out or neglected (Esbjörn-Hargens 2009). Integral metatheory is both "complexifying", in the sense that it includes and integrates more of reality, and simplifying, "in that it brings order to the cacophony of disparate dimensions of humans with great parsimony" (Marquis 2009, 38). The strength of integral metatheory is its ability to integrate vast fields of knowledge and, according to Marquis (2008), provides a "meta-theoretical framework that simultaneously honours the important contributions of a broad spectrum of epistemological outlooks while also acknowledging the parochial limitations and misconceptions of these perspectives" (24).

In the next section, I am going to briefly discuss the five major conceptual lenses of integral metatheory (quadrants, lines, levels, states, and types) and how this can inform our view of addiction. These five conceptual lenses form the basic building blocks of my proposed integrative metatheory of addiction.

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[2] The IMMA represents a culmination of all my previous research on the topic (see Du Plessis 2012b, 2013, 2014, 2017).
[3] Metatheory can simply be understood as referring to a type of super-theory built from overarching constructs that organize and subsume more local, discipline-specific theories and concepts (Edwards, 2008b). In short, whereas a theory within a discipline typically takes the world as data, meta-theory typically takes other theories as data.