

**ROLE OF EMOTION REGULATION AND  
DRUG CARVING TRIGGERS IN  
PREDICTING RELAPSE PREVENTION**



**By  
SAJID RASHEED AWAN**

**SESSION 2019-2022**

**Department of Applied Psychology  
Faculty of Social sciences**

**NATIONAL UNIVERSITY OF MODREN LANGUAGE  
ISLAMABAD, PAKISTAN**

**ROLE OF EMOTION REGULATION AND DRUG  
CARVING TRIGGERS IN PREDICTING RELAPSE  
PREVENTION**

**By**

**SAJID RASHEED AWAN**

**Regd. No. 1835CMphil/Psy/F -19**

**SESSION 2019-2022**

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF  
THE REQUIREMENTS FOR THE DEGREE OF  
**MASTER OF PHILOSOPHY**  
**In Psychology**

DEPARTMENT OF PSYCHOLOGY  
FACULTY OF SOCIAL SCIENCES



**NATIONAL UNIVERSITY OF MODREN LANGUAGE  
ISLAMABAD, PAKISTAN**



## **THESIS APPROVAL CERTIFICATE**

It is certified that the thesis entitled **“Role of Emotion Regulation and Drug Carving Trigger In Predicting Relapse Prevention”** submitted by **Sajid Rasheed Awan** student of **Master of Philosophy in Psychology, Session 2019-22**, Department of Psychology National University of modern language Islamabad, has been approved in the partial fulfillment of requirement for the award of degree of Mphil in Psychology.

---

**Supervisor**  
**DR.SHAKIRA HUMA**  
**SIDDIQUI**

---

**External Examiner**

---

**Dean**  
**Faculty of Social Sciences**  
**NATIONAL UNIVERSITY OF MODREN LANGUAGE**  
**ISLAMABAD.**

**DEDICATION**

Dedicated to,

My loving and affectionate Parents, my supervisor

Who determined the destination and path for me and who always made things easy to handle and Possible to achieve.

My loving brothers and sisters whose prays and support enabled me to complete my studies.

---

Signature of  
Candidate

---

Name of  
Candidate

---

Date

## **ABSTRACT**

The present study was carried out to investigate the moderating role of Emotion Regulation and Drug Craving Triggers in predicting Risk of Relapse among drug addicts. The sample consists of three hundred males (N= 300), using Alcohol, Cannabis, Stimulants and Opioid were the participants of this study. Emotion Regulation Scale (Gross & John, 2003), AWARE (Advance Warning of Relapse) scale (Miller & Harris, 2000) and Core Belief related to Drug use and Craving Scale (Fred Wright, 1996) were used to collect data on study variables, moreover, information on following variables (age and gender, marital status, drug name, routes of drug, treatment time, and intensity of drug, drug duration and marital duration) was also obtained. Participants were indoor patients from rehabilitation centers of Rawalpindi and Islamabad. The data were analyzed for testing research hypotheses of the current research. Firstly, demographic characteristics of the sample were assessed. Secondly, the psychometric properties of the study measures were assessed through alpha reliability analysis and descriptive description in terms of mean, standard deviation, skewness and kurtosis. Thirdly, the trends of relationships among study variables were analyzed using Pearson correlation analysis. Moreover, regression analysis was conducted to find out the predictive properties of independent variables for dependent variable. Additionally, moderation analysis was conducted by using Process Macro, present study found moderating role of expressive suppression and cognitive reappraisal in the relationship between drug craving triggers and relapse risk among persons with drug dependence Findings of this study may guide the intervention strategies in rehabilitation centers. Further studies may be conducted on female population to test the hypotheses of this study. Moreover, longitudinal

research designs may be used to the outcomes of cognitive reappraisal and expressive suppression.

# TABLE OF CONTENTS

<b>THESIS APROVAL CERTIFICATE</b>	<b>III</b>
<b>ABSTRACT</b>	<b>V</b>
<b>TABLE OF CONTENTS</b>	<b>VII</b>
<b>LIST OF TABLES</b>	<b>XI</b>
<b>LIST OF FIGURES</b>	<b>XII</b>
<b>ACKNOWLEDGEMENT</b>	<b>XIV</b>
<b>CHAPTER 1</b>	<b>1</b>
<b>INTRODUCTION</b>	<b>1</b>
<b>1.1 Risk of Relapse</b>	<b>3</b>
<b>1.2 Drug craving</b>	<b>3</b>
<b>1.3 Drug Craving Triggers</b>	<b>7</b>
<b>1.4 Phenomenological Models of craving</b>	<b>9</b>
<b>1.5 Conditioning Theories</b>	<b>9</b>
<b>1.5.1 Conditioned withdrawal model</b>	<b>9</b>
<b>1.5.2 Conditioned opponent process model</b>	<b>9</b>
<b>1.5.3 Conditioned drug-like model</b>	<b>10</b>
<b>1.5.4 Two process theory</b>	<b>10</b>
<b>1.6 Incentive sensitization theory</b>	<b>11</b>
<b>1.6.1 Cue–reactivity model</b>	<b>11</b>
<b>1.7 Types of Drug Addiction</b>	<b>12</b>
<b>1.7.1 Marijuana</b>	<b>12</b>
<b>1.7.2 Heroin addiction</b>	<b>15</b>
<b>1.7.3 Cannabis/marijuana use disorder (Addictive disorder)</b>	<b>15</b>
<b>1.7.4 Marijuana/Cannabis withdrawal</b>	<b>18</b>
<b>1.7.5 Methamphetamine</b>	<b>18</b>

<b>1.8 Relapse after treatment</b>	<b>26</b>
<b>1.8.1 Drug habit</b>	<b>27</b>
<b>1.8.2 Reward</b>	<b>27</b>
<b>1.8.3 Drug-Dependent People Experience Troubles with Adapting In Unpleasant Circumstances</b>	<b>28</b>
<b>1.9 Relapse</b>	<b>29</b>
<b>1.9.1 Relapse prevention initially developed as a planned reaction to other therapies.</b>	<b>31</b>
<b>1.9.2 Body Mind Spirit (I-BMS) mediation</b>	<b>33</b>
<b>1.9.3 Primary prevention</b>	<b>36</b>
<b>1.9.4 Secondary prevention</b>	<b>36</b>
<b>1.9.5 Tertiary prevention</b>	<b>36</b>
<b>1.10 Administration of Relapse Therapy</b>	<b>36</b>
<b>1.10.1 Relapse prevention and management.</b>	<b>37</b>
<b>1.11 Models of Relapse Prevention</b>	<b>38</b>
<b>1.11.1 Cognitive model of drug addiction</b>	<b>38</b>
<b>1.11.2 Feelings Trigger Action</b>	<b>39</b>
<b>1.11.3 Social factors</b>	<b>41</b>
<b>1.11.4 Social implications of families</b>	<b>42</b>
<b>1.11.5 Outcome Expectancies</b>	<b>45</b>
<b>1.12 Marlatt's Relapse Prevention Model</b>	<b>45</b>
<b>1.12.1 Emotions</b>	<b>46</b>
<b>1.12.2 Environment</b>	<b>47</b>
<b>1.13 Theories of Emotion</b>	<b>47</b>
<b>1.13.1 James-Lange theory</b>	<b>47</b>
<b>1.13.2 Cannon-Bard theory</b>	<b>48</b>
<b>1.13.3 Schachter-Singer two-factor theory of emotion</b>	<b>48</b>



<b>1.14 Transactional model of stress and coping (TSC)</b>	<b>49</b>
<b>1.15 Coping</b>	<b>50</b>
<b>1.15.1 Avoidance coping</b>	<b>50</b>
<b>1.15.2 Affective model of drug motivation</b>	<b>51</b>
<b>1.16 Emotion Regulation and Persistent Treatment</b>	<b>51</b>
<b>1.17 Drug craving and Emotion Regulation</b>	<b>54</b>
<b>1.18 Types of emotion regulation</b>	<b>60</b>
<b>1.18.1 Cognitive reappraisal</b>	<b>60</b>
<b>1.18.2 Expressive suppression</b>	<b>61</b>
<b>1.19 Cognitive Appraisal Theory</b>	<b>63</b>
<b>1.20 Rationale of study</b>	<b>67</b>
<b>1.21 Conceptual framework</b>	<b>69</b>
<b>CHAPTER 2</b>	<b>70</b>
<b>RESEARCH METHODOLOGY</b>	<b>70</b>
<b>2.1 Objectives</b>	<b>70</b>
<b>2.2 Hypotheses</b>	<b>70</b>
<b>2.3 Conceptual definition</b>	<b>71</b>
<b>2.3.1 Emotion Regulation</b>	<b>71</b>
<b>2.3.2 Expressive suppression</b>	<b>71</b>
<b>2.3.3 Cognitive reappraisal</b>	<b>71</b>
<b>2.3.4 Drug Craving Triggers</b>	<b>71</b>
<b>2.3.5 Relapse</b>	<b>71</b>
<b>2.3.6 Relapse Prevention</b>	<b>72</b>
<b>2.4 Operational definitions</b>	<b>72</b>
<b>2.4.1 Emotion Regulation scale</b>	<b>72</b>
<b>2.4.2 Craving Belief Questionnaire (CBQ)</b>	<b>72</b>

<b>2.4.3 Advance Warning of Relapse (AWARE)</b>	<b>73</b>
<b>2.5 Demographic sheet</b>	<b>73</b>
<b>2.6 Sample and sampling technique</b>	<b>73</b>
<b>2.7 Design</b>	<b>74</b>
<b>2.8 Procedure</b>	<b>74</b>
<b>CHAPTER 3</b>	<b>76</b>
<b>RESULTS</b>	<b>76</b>
<b>CHAPTER 4</b>	<b>86</b>
<b>DISCUSSION, CONCLUSION, IMPLICATIONS, LIMITATIONS AND RECOMMENDATIONS</b>	<b>86</b>
<b>4.1 Discussion</b>	<b>86</b>
<b>4.2 Conclusion</b>	<b>91</b>
<b>4.3 Implications</b>	<b>91</b>
<b>4.4 Limitations and recommendations</b>	<b>92</b>
<b>REFERENCES</b>	<b>XIV</b>

## LIST OF TABLES

<b>Table 1: Demographic characteristics of the study sample (N=300).....</b>	<b>77</b>
<b>Table 2: Alpha reliability of the study measures (N=300). ....</b>	<b>79</b>
<b>Table 3: Pearson correlation among study variables (N=300). ....</b>	<b>80</b>
<b>Table 4: Regression Analysis of Drug Craving Triggers, Cognitive Reappraisal and Expressive Suppression for Relapse (N=300) .....</b>	<b>81</b>
<b>Table 5: Moderating Effect of Cognitive Reappraisal on Drug Craving Triggers and Relapse (N= 300) .....</b>	<b>82</b>
<b>Table 6: Moderating Effect of Expressive Suppression on Drug Craving Triggers and Relapse (N= 300) .....</b>	<b>84</b>

## LIST OF FIGURES

<b>Figure 1. Conceptual model showing the relationship among drug craving triggers Emotion regulation and Relapse prevention. ....</b>	<b>69</b>
<b>Figure 2. Showing the Moderating Effect of Cognitive Reappraisal on Drug Craving Triggers and Relapse.....</b>	<b>83</b>
<b>Figure 3. The Figure 2 showing the Moderating Effect of Expressive Suppression on Drug Craving Triggers and Relapse .....</b>	<b>85</b>



## **ACKNOWLEDGEMENT**

I would like to thank the most gracious and compassionate Almighty Allah, for his countless blessings that enabled me to achieve my target. Firstly, my deep gratitude is to my supervisor Dr. Shakira Huma Siddiqui, for her encouragement, support and generosity for giving me quality time and knowledge. I am thankful to her for her understanding and never ending help that motivated me to complete the research work. Her critical review on my work facilitated me to overcome different academic problems. I am thankful to my external and internal examiners, Dr. Anis ul Haque from NUML and Dr. Jamil Malik from, National Institute of Psychology, QAU.

I wish to express my sincere gratitude to my lovely parents for always believing and supporting me in every step of life, it is undoubtedly their prayers and efforts that brought me to the present position. I would like to acknowledge the continuous backing and motivation they provided to me throughout my life. I would like to acknowledge my family members and friends for helping and encouraging me at every moment of life.

I also wish to express my gratitude to all teachers for their appreciation and motivation during course work. I would like to thank the CEOs of all the rehabilitations centers I collected my data from. I am also indebted to all the participants of present study who made this research work possible.

**Sajid Rasheed Awan**

# CHAPTER 1

## INTRODUCTION

Drug addiction is defined as the psychological and physical inability to stop using drugs not withstanding their harmful effects (Auriacombe, et al. 2018). High risk situations include unfavorable feelings, peer pressure, and interpersonal problems (Svanberg, 2018), which cause drug users to relapse (Rahman, et al. 2016) and raises the chance of relapsing. Addiction is a maladaptive pattern of substance use that can appear at any point during the course of a year and causes clinically substantial harm or suffering. Its outer signs include tolerance, withdrawal, and other symptoms (DSM 5, 2013).

Drug addiction has been described as a serious issue (Alatawi et al. 2022), a complex and chronic relapsing mental disorder characterized by compulsive drug seeking, an inability to control consumption, the emergence of a withdrawal syndrome during cessation, and continued use in spite of knowledge of the negative effects (Gupta & Kulhara, 2007).

There are several psychopathic drugs in use, but methamphetamine is the most common. Addiction impacts not just the addict but also their family and the entire community. Any addiction causes a person to lose control over their actions, which can lead to them committing a number of crimes like murder, sexual assault, and theft. They might commit suicide (Alatawi et al., 2022).

According to the 2018 World Drug Report, 275 million people took drugs at least once globally, which poses a serious threat to public safety and health. Drug addiction is a severe issue in Pakistan, where 6.5 million individuals are addicted to

drugs (United Nations Office on Drugs and Crime (UNODC, 2013)). According to Mathers et al. (2008), China, America, and Russia have the highest concentrations of drug injectors at 15.9 million (Mathers et al. 2008). In accordance with data from 2013 on drug usage in Pakistan, the country has a 3.6% annual prevalence of cannabis use, 2.4% of opiates, 1.4% of tranquilizers, 0.08% of amphetamines, 0.03% of solvents, and 0.01% of cocaine (UNODC, 2013) Vienna. According to the Narcotics and Pakistan Consultative Sessions on the Draft Anti-Narcotics Policy (2010), Punjab has the highest rate of intravenous drug abuse of any province. As to the 2010 Narcotics and Pakistan Consultative Sessions on the Draft Anti-Narcotics Policy, a significant portion of addicts in Lahore use heroin and opium concurrently.

The American Society of Addiction Medicine (ASAM) describes addiction as a primary chronic disease of the brain's reward, motivation, memory, and related circuits. It is characterized by the inability to consistently refrain from using drugs or alcohol, behavioral control issues, cravings, a reduced ability to recognize serious behavioral issues and interpersonal relationship issues, as well as emotional response problems. Similar to other chronic illnesses, addiction frequently goes through periods of remission and relapse. Addiction is a progressive disease that can cause disability or early death if it is not treated or treated without participation in recovery programs. Usually, addiction is a syndrome characterized by a particular pattern of behavior related to the use of a drug or a class of drugs that are psychoactive, with the primary behaviors being drug acquisition and consumption. As the disorder progresses, the compulsive behavior becomes more pronounced. An overpowering want to undertake certain activities that the person cannot refuse without achieving inner peace is the hallmark of the behavioral condition known as compulsion. Drugs are typically thought of as illicit substances or substances that have been diverted from their



intended uses; nevertheless, some specialists do not hesitate to refer to drugs as other substances or products (such as alcohol, tobacco), which are legal and socially integrated to a reasonable extent. Any substance that affects cognition, behavior, perception, or movement is considered a psychoactive substance (Gupta & Kulhara 2007).

## **1.1 Risk of Relapse**

The largest risk associated with addiction is the danger of relapse, or returning to previous drug use after treatment (Milhorn, 2018). According to research from Donovan & Marlatt (2005) and the National Institute on Drug Abuse (2016), there is a significant risk of relapse even years after treatment. Studies show that relapse has occurred in 70% of Pakistani users (Masood & Sahar, 2014). Relapse prevention is therefore essential, and early identification of relapse warning signs can be successfully addressed to lower the chance of relapse (Brandon, et al. 2007). However, psychological variables are the main contributors to relapse (Kristenson & Nilsson, 2010). Numerous psychological factors have been linked to relapse, including a person's own choice (Svanberg, 2018), inadequate self-efficacy (Azmi, et al. 2018), emotional instability (Bukhtawer et al. 2014), and unpleasant feelings like anger, frustration, despair, and resentment. Furthermore, it has been discovered that the likelihood of relapsing after treatment is correlated with one of the key components of the Personal Growth Initiative: willingness to change addictive behavior (Hendershot, et al., 2011; Hartney, 2019). The Pakistani researchers also conducted in-depth investigation into a few demographic factors related to the relapse condition. Jabeen et al. (2017) hypothesized that a variety of demographic factors, including young ages at which addiction begins, low literacy rates, and kind of occupation, and would contribute to drug addiction. Additionally, studies have shown

that drug use typically begins around the age of 18 and is more prevalent in lower-class and lower-middle society (Malik et al., 2012). In addition, a study was carried out (Aslam et al. 2011) to look into the demographics and etiological factors that contribute to drug addiction. According to the findings, factors including low levels of education, unemployment, and economic discontent may be behind Pakistan's rising drug use.

## **1.2 Drug craving**

It is widely known that when someone uses a substance frequently and becomes dependent on it, it is easy to develop a drug desire and accompanying urge behavior. Drug craving refers to a drug user's or addict's subjective desire for the effects of the drug, as well as their inner aspirations for a pleasurable experience, the relief of withdrawal symptoms and the unfavorable emotions that drugs bring about, and their unintentional over-attention to drug-related stimuli (Field et al., 2009; Washton, 1986).

Environmental drug-related stimuli, such as drug paraphernalia, associated thoughts, such as thinking about a buddy who takes drugs, physiological withdrawal symptoms, anticipatory behaviors, such as salivation, and unfavorable moods can all cause drug cravings. Negative mood is intimately tied to desiring and may become more significant as addiction progresses and drug shortage is increasingly linked to it. Drug or alcohol addiction is a persistent issue. To manage the side effects of withdrawal, get over reliance, and control the impulse to use, it takes time. Drug desire is a key therapy target to lower the risk of relapse and enhance patients' quality of life because it is closely tied to patients using drugs again. Drug use after experiencing drug cravings is connected (Robinson et al., 2011).

Contrary to urge, which is characterized as the behavioral intention to use a substance, craving is characterized as a cognitive experience focusing on the desire to use a substance and is frequently linked to anticipation for the intended impact of the drug. Interoceptive or exteroceptive cues, contextual elements associated with previous binge drinking, or the psychological and physiological aftereffects of recent withdrawal episodes can all trigger cravings. Concomitantly, the phenomena of loss of control can cause people to start drinking even though wishes can also do so, making relapse simpler. Loss of control is a behavioral condition marked by a relative inability to react to either internal or external stimuli that limit alcohol use. When referring to craving and related constructs, terms such as wanting, urges, motivated behavior, incentive motivation, and others with slightly different meanings that vary from study to study and sub discipline to sub discipline have all been used to refer to phenomena that are more similar than dissimilar. Despite the fact that there are several stimuli that people may desire, study has primarily focused on two of them: food and drugs (such as nicotine and cocaine). The similarities between cravings for food and drugs are up for debate. Though the underlying neurobiology is clearly similar (Blum et al., 2011; Volkow et al., 2012), psychological models of food craving are not always transferable to models of drug craving (Elston & Weingarten, 1990). The two types of compounds can be separated from one another by the substances' notable qualitative differences. For instance, taking drugs is not vital to maintain life while eating food is (Hill, 2007).

Because it teaches contextual cues that are regularly connected with drug use to have incentive-motivational value, associative learning is crucial for seeking and relapse (Weiss 2005). This causes anticipation of drug availability and memories of previous drug bliss. Drug users appear to be encouraged to take drugs or relapse more

frequently in environments associated with prior drug use. Using the cue-reactivity paradigm, which monitors their responses to various drug-related stimuli, this connection has been studied. Need for a drug is triggered by stimuli, although responding to cues does not always mean relapse (Carter & Tiffany, 1999).

The significant phenomenon of craving plays a big role in why some people become dependent on drugs. The idea of substance dependence now includes craving behaviors. Cravings are frequently described as a strong need or need to eat. One of the notions that are most highly debated in the literature on addiction is craving. The term "craving" continues to have separate definitions for numerous fields despite attempts by various authorities to limit physicians' use of it (Kozlowski & Wilkinson, 1987), which results in a variety of operational criteria (Drummond et al., 2000; Shiffman, 2000).

Due to its association with thoughts, feelings, images, and desires after substance use as well as the fact that it is a subjective experience, cravings can only be assessed using self-report measures (Shiffman, 2000). It may be challenging to assess how a drug user's craving corresponds to feelings for a distinct physiological or psychological state if one only considers the intensity, frequency, or duration of a need, according to Rosenberg (Rosenberg, 2009). Numerous behavioral traits are linked to cravings. Predicting different kinds of outcomes can be aided by evaluating various psychological components of need (Sinha et al., 2006).

The development and causes of drug craving is the subject of numerous hypotheses. Tiffany (1999) proposed four cognitive theories for desire: the dual-affect model, the outcome expectancy model, the cognitive labeling model, and the cognitive processing model. The type of craving behavior, viewpoints towards cravings, and impacts of craving that are connected to beliefs may all contribute to the

maintenance of substance use disorders. The majority of addicts have trouble managing their cravings, and they tend to have attitudes toward substance use that make it simpler for them to relapse. The cycle of addiction is triggered by high-risk events and involves drug-related attitudes, automatic thoughts, urges and cravings, enabling beliefs, and substance use actions (Mitcheson et al., 2010).

### **1.3 Drug Craving Triggers**

The term "craving" describes a strong need or desire to use drugs. Another definition offered (Preston et al., 2009) is a conscious, observable urge. Drug craving can be described in a variety of ways, but it is commonly thought of as the desire to ingest a substance. Since awareness of a want is necessary for yearning, most people think that it is a subjective experience (Kassel & Shiffman, 1992; Niaura et al., 1988).

Drug cravings are a significant treatment goal to reduce the risk of relapse and improve patients' quality of life because they are closely linked to people taking drugs again. Drug craving is linked to subsequent drug usage (Allen et al., 2008; Robinson et al., 2011). Studies have demonstrated in particular that desire is a strong predictor of drug use and/or relapse following abstinence (Berlin et al., 2013; Sweitzer, et al., 2012), Tsui, et al. 2014).

Though this perspective has been challenged (e.g., Gass, & Tiffany, 2013; Perkins, 2009; Tiffany, 1990), the recent inclusion of desire as a diagnostic criterion in DSM-5 (APA, 2013) establishes it as a distinguishing feature of addiction. Numerous lines of research have linked drug appetite to drug use across a spectrum of drugs. It follows that desires are a highly common phenomenon. Lack of self-control when it comes to cravings can have terrible consequences, such as the use of dangerous medications, when it comes to substance use disorders.

Environmental cues connected to drugs can cause drug cravings. (For instance, drug paraphernalia), concurrent thoughts (for instance, considering a buddy who uses drugs), physiological withdrawal symptoms, anticipatory behaviors like salivation, and sad mood. Negative mood is closely related to desire and may become more important as addiction develops and the availability of drugs becomes more and more dependent on it. Drug craving is the subjective desire for drug effects felt by drug users or addicts, as well as their inner aspirations for a joyful experience, the relief of withdrawal symptoms and the negative feelings that drugs produce, and their unintentional over-attention to drug-related cues (Field et al., 2009; Washton, 1986). A review study found that, by controlling certain neurotransmitters and chemicals, adequate physical activity can successfully lessen psychological cravings experienced by addicts as well as the relapsing behavior that goes along with them (Zhao et al., 2018).

Similar to how unpleasant hedonistic mood states are recognized as signs of a depressive illness, cravings are thought to be a signal of an underlying addiction issue. Based on his clinical observations, (Isbell 1955) distinguished between bodily (or "non-symbolic") and "symbolic" need. While the latter is a catalyst for relapse over a protracted period of abstinence, long after physiological withdrawal has faded, the former is predominantly a sign of drug withdrawal. More recently, (Modell et al 1992) have drawn attention to the symptomatic parallels between addiction and obsessive compulsive disorder. Since subjective desire for alcohol or drugs has been characterized as having obsessive qualities, substance use in this model may imply compulsive behavior in addicts. Further point out potential similarities in the underpinning brain circuits associated with each disorder to further hint that the two disorders may have a same genesis (Modell et al., 1992).

## **1.4 Phenomenological Models of craving**

Phenomenological model of craving are developed from clinical addict groups that have been interviewed and observed, and they are primarily descriptive rather than explanatory. The introduction presented various examples, and these models have had a long existence in the area (Edwards & Gross, 1976; Jellinek, 1960).

The strength of phenomenological models is the emphasis they concentrate on the human experience. The ease with which an addiction "symptom" (such as a craving) can be easily elicited and used as the basis for or a component of a diagnostic interview may be partially responsible for their widespread use in the field.

## **1.5 Conditioning Theories**

### **1.5.1 Conditioned withdrawal model**

Wikler, (1948) proposed the concept of craving—or, more specifically, relapse—based on the principle of conditioning. He proposed that neutral environmental signals could induce conditioned reactions by conditioned learning over the course of repeated pairings with drug usage. He believed that the conditioned responses triggered by stimuli (such the sight of a needle and syringe or a place where drugs had previously been injected) would resemble drug withdrawal. This conditioned withdrawal would ultimately lead to the addict relapsing and resuming drug usage because they wanted to escape the unpleasant sensations of it.

### **1.5.2 Conditioned opponent process model**

Corbitt and Solomon, (1974) and Siegel, (1989), who both employed the opponent process theory, have put out conditioning models with a similar premise. Drinking causes the body to build homeostatic defensive systems that counteract the

drug's effects. If a drug causes a positive hedonic state (pleasure) or negative hedonic state (displeasure), the homeostatic response is therefore a negative hedonic state. Combining the two produces what is effectively a change from a hedonic positive state to a neutral one. According to Siegel, (1989), the opposing process grows and lengthens over time, which might account for the development of drug tolerance since it will attempt to 'balance out' and counteract the effects of the treatment. Dysphoria (withdrawal) does worsen with continued usage, but only after the initial effects of the drug have worn off because the opponent process takes longer to initiate and lasts longer than the drug effect.

### **1.5.3 Conditioned drug-like model**

Eikelboom and Stewart, (1984) outline an alternative to the first two conditioning models. They make the point that cravings for stimulants like amphetamines, in particular, can frequently be pleasurable rather than withdrawal-like. After being regularly combined with drug usage and the pleasurable (unconditioned) effects of the drug, they proposed that environmental cues might begin to elicit drug-like CRs. These favorably hedonic CRs (including desire) then prepare the individual to use more drugs through a process of positive reinforcement.

### **1.5.4 Two process theory**

Glautier and Remington (1995) list some of the shortcomings of such "monistic" models of the CR shape. Models that suggest CRs to drug signals will be unidirectional, for example. They show that it is difficult to determine whether a drug-like or a withdrawal-like response would take place based on the empirical facts. Additionally, they emphasize that one cannot draw conclusions about the motivational worth of signals or responses to cues based solely on their presumed affective valence



by using a larger body of training work to support their argument. For instance, assuming that a wanting state that is conditioned to be positive or negative will always result in drug use is inaccurate (Glautier & Remington, 1995).

## **1.6 Incentive sensitization theory**

The initial version of the incentive sensitization hypothesis was created by Robinson and Berridge in 1993, and it serves as more of a model for addiction and addictive behavior than it does for craving in general. This model does, however, have relevance to theories of craving because it makes some assertions about the characteristics of need. In contrast to those systems that mediate the pleasurable effects of drugs, this one is in charge of providing rewards, incentives, and motivation. Robinson and Berridge make a distinction between "liking" and "wanting" drugs as a result. According to them, "wanting" is connected to the sensitized incentive motivating system, unlike "liking," which is akin to yearning. They also emphasize the fact that desiring isn't always conscious, which means relapse might occur without conscious awareness (Berridge & Robinson, 2001).

### **1.6.1 Cue-reactivity model**

In response to the conflicting findings of empirical investigations examining the nature and importance of CRs to drug cues, (Drummond, et al., 1995) created a cue-reactivity model as a means of conceptualizing and investigating responsively to drug cues. According to this theory, cue-reactivity might take the form of behavior, cognitive-symbolic responses (like subjective craving) or autonomic responses (like increased skin conductance, pulse rate, or salivation) (for example, drug-seeking behavior). In the cue-drug-seeking interaction, the model does not consider the autonomic or subjective desire responses to drug signals to be intervening elements.

To put it another way, cue-elicited craving is not regarded to be necessary for drug use, either initially or when someone relapses. In addition, it has been suggested that cue reactivity may represent an orienting response, frustration, or generalized arousal rather than being a conditioned response (Drummond et al., 2000). Researching desire and other cue-elicited phenomena and their relevance to drug seeking and relapse requires the cue-reactivity paradigm. Participants in this paradigm are presented with drug-relevant signals in an experimental setting.

## **Types of Drug Addiction**

### **1.7.1 Marijuana**

What does it feel like to be high? Is a question that is frequently posed by those who are curious about marijuana use or who have friends or family who use the drug? Although each person's experience differs (the marijuana high is one of the most unpredictable intoxicating effects of all substances), there are a number of effects that the majority of marijuana users feel when they smoke or ingest marijuana, whether they use it topically or orally. When someone uses marijuana, factors that are less directly related to the drug and more directly related to the user's sensitivity to their surroundings and feelings toward the people they are with have a substantial impact on how they feel while high. The environment in which marijuana is consumed and the user's mental state both have an impact on the effects. Most persons who are high detect changes in their sensory perceptions. While hallucinogens like LSD and marijuana don't frequently create real hallucinations, people do tend to interpret their surroundings differently while they are high. Colors may appear more vibrant, aesthetic appreciation may be enhanced, familiar people and objects may seem strange or unfamiliar, usually in a hilarious way, and a person's attitude may

reflect on everything around them. When the surroundings are viewed favorably, this can be enjoyable. But it can also go wrong, making the world seem depressing and unpleasant (Foo, et.al, 2012).

Cannabis typically has the most effects on taste and hearing. People who use marijuana frequently claim to like music more and may even listen to music nonstop. An increase in flavor might cause the "munchies," a specific type of binge eating when more portions of food may be consumed than usual. People who are high may also eat foods that make strange combinations, like chocolate and pickles. Although the way marijuana affects mood varies significantly from person to person, in general, emotions are intensified in a way similar to how alcohol intoxication impacts emotions. Situations that are normally neutrally emotional can come off as silly or humorous, or they can look threatening and upsetting. The emotional sensations that marijuana users experience while high are frequently attempted to be limited, however this isn't always successful. Situations involving real or imagined conflict might be more upsetting and lead to extreme paranoia while under the influence of marijuana. It's unclear exactly how marijuana affects our ability to unwind. While marijuana's initial relaxing effects are a big part of why many individuals become addicted to it, the drug's rebound effect typically makes users more agitated. Chronic anxiety disorders are a problem for some people, and in an effort to cope, some turn to marijuana as a self-medication (Fogel & Osborne, 2008).

People frequently feel confused or slow while high on marijuana, but to the person experiencing it, this is frequently not alarming and may even seem hilarious. Rarely does marijuana increase one's intelligence. It is not clear whether people with novel ideas seek out marijuana or whether the drug itself increases the number of novel ideas, despite the fact that some people believe that marijuana stimulates

creativity and there is some evidence to support this claim. Furthermore, research has shown that lower doses are more conducive to creativity than higher levels. One study found no discernible changes in creativity between those who consumed low amounts of THC and those who weren't at all high (Killinger, 2006).

High quantities of THC may be ingested or smoked by users of hash oil made from marijuana plants that contains THC NIDA (2017). The average marijuana extract contains more than 50% THC, while some samples have more than 80%, according to NIDA (2017). NIDA (2015) reported that marijuana is the illegal substance used most frequently in auto fatalities. NIDA (2015) reported that marijuana is frequently combined with alcohol or other substances in the blood of the 14 percent of drivers who die in car accidents. Marijuana affects skills required for safe driving: - alertness - concentration - coordination - reaction time NIDA (2015). The term “medical marijuana” refers to using the whole unprocessed marijuana plant or its basic extracts to treat a disease or symptom NIDA (2015). The U.S. Food and Drug Administration (FDA) has not recognized or approved the marijuana plant as medicine. However, two FDA-approved medications contain cannabinoid chemicals in pill form NIDA (2015). The FDA requires properly executed clinical trials involving hundreds to thousands of human people in order to assess the advantages and disadvantages of a potential drug. For people it is intended to treat, there have not yet been enough large-scale scientific trials to demonstrate that the marijuana plant's advantages (as opposed to its cannabinoid components) outweigh its disadvantages NIDA (2015).

Tetrahydrocannabinol (THC), a substance in marijuana that alters consciousness, enters the bloodstream when it is smoked. After then, blood transports the chemical to the brain and other bodily organs. After 30 to 60 minutes, the user

typically starts to experience the effects, which include mood changes, impaired physical mobility, difficulties thinking and solving problems, and poor memory. Reduced thinking, memory, and learning abilities are possible long-term consequences of marijuana usage when it first starts in adolescence (NIDA 2016).

### **1.7.2 Heroin addiction**

Ma et al. (2019), the problem of heroin addiction stems from the brain circuits' maladaptive plasticity and results in significant mental deficiencies. Even after significant breakthroughs in therapy to maintain mental balance and medication for heroin addiction and compulsion, successful drugs for drug names like heroin use jumble are still causing deficiencies. In contrast to mental illnesses associated with ongoing drug use, growing preclinical research shows that heroin desire behavior persists after withdrawal and poses a significant risk for relapse and habit formation. Mental enhancers may be used to increase therapy efficacy and drive patients to complete their regimens. The motivation for this audit, which tries to frame the text that displays the mental deficiencies throughout the course of heroin fixation and withdrawal process, is a few features that emphasize the possibility of mental boosters for heroin use difficulties. The possible uses and pharmacological components of mental stimulants that act via inhibitory cholinergic, excitatory glutamatergic, dopaminergic, or adrenergic pathways are then examined after the review. They also investigate the detrimental effects of combinations that alter the drug resistant systems using a creature model of heroin relapse. New knowledge on the chemical components of heroin addiction is revealed by the momentum group of study, and they strongly believe that mental stimulants are a more persistent and effective method of treating heroin use disorder.

### **1.7.3 Cannabis/marijuana use disorder (Addictive disorder)**

The DSM-5 Cannabis Use Disorder (Addictive Disorder) has 11 criteria, at least two of which must be satisfied throughout a 12-month period, in order to identify a problematic pattern of cannabis use that results in clinically severe impairment or suffering. Criteria 1 through 9 indicate the behavioral patterns of marijuana addiction. A persistent pattern of problematic cannabis use and a loss of control over marijuana use with long-term unfavorable repercussions are these behavioral prerequisites. Criteria 10 and 11 indicate the pharmacological phenomena of tolerance and dependency.

Cannabis use disorders fall within the diagnostic category of "Addictive Disorders" even though the DSM does not use the word "addiction" in its specific diagnoses. Additionally, a recognized definition of addiction incorporates the 11 criteria for Cannabis Use Disorder in order to conceptualize marijuana addiction: A pattern of losing control or an inability to resist relapsing or experiencing the same negative consequences from drug use again is a sign of 1) an obsession with obtaining the drug or substance, 2) compulsive usage, which is the continuation of use despite negative effects, and 3) an obsession with obtaining the drug or substance. Despite undesirable or unfavorable outcomes, a diminished or loss of control affects all three criteria. The DSM-5 criteria for cannabis use disorders, including substance-related and addictive disorders, are built around these principles. The following criteria represent impairment or loss of control: 1, 2, 3, 4, social impairment (resulting from loss of control), 5, 6, 7, high-risk use (also resulting from loss of control), 8, 9, and pharmacological tolerance and dependence (resulting from loss of control), 10, 11.

Anxiety, sadness, schizophrenia, and psychotic symptoms are all linked to cannabis use. Young individuals who started using cannabis at age 15 or younger are twice as likely to acquire a psychotic condition and four times more likely to exhibit delusional symptoms than those who have never used the drug. The possibility that the association was caused by unmeasured genetic or environmental factors was decreased because this pattern remained in a research looking at sibling pairings. There was evidence of a dose–response connection, meaning that the longer it had been since the first cannabis usage, the greater the chance of outcomes connected to psychosis McGrath et al. (2010). Cannabis usage and psychotic symptoms are linked in general population surveys, and the link holds even after controlling for confounding factors, according to Room et al. (2010). Large representative cohort longitudinal studies provide the strongest support for the possibility that these correlations may be causal (Room et al., 2010). The most frequent associations are between cannabis use and psychosis, and there is enough evidence to imply that, depending on a patient's genetic composition, age at first use, and other circumstances, cannabis usage may be causal in the development of psychosis in certain cases. Naturally, it is challenging to show causation because many cannabis users also consume other drugs (large et.al 2011).

Cannabis use typically starts in adolescence and peaks in the early to mid-20s. A number of negative drug-related impacts are possible for teenagers who use cannabis, and larger deficits can be attributed to higher doses and earlier onset ages of usage. Teens that use cannabis exhibit impaired short-term memory as well as delayed recall of both verbal and visual information. Cannabis users do not significantly improve their short-term memory even after six weeks of abstinence. Importantly, other drug-using teens did not exhibit comparable deficiencies, indicating that

cannabis has a special effect on memory and learning. According to Brown, Schweinsburg and Tapert (2008), teens who continue to use cannabis heavily have poorer complex attention functioning, slower psychomotor speed, worsened sequencing skills, and issues with verbal story recall. Other research indicates that long-term heavy cannabis users do experience memory and concentration deficits that persist after the intoxication stage and get worse with more years of frequent cannabis usage (Solowij, et al., 2002).

#### **1.7.4 Marijuana/Cannabis withdrawal**

The existence of cannabis withdrawal, particularly in regular and frequent users, can be demonstrated with proper attribution of the drug's causal effects, even though the actuality of it is up for debate. Once more, it is important to consider withdrawal symptoms from using other medications at the same time as a "syndrome". More than 50% of heavy users are experiencing withdrawal. Common marijuana withdrawal symptoms include anxiety, melancholy, and loss of appetite, headaches, insomnia, irritability, muscle tension, nausea, nightmares, and unpleasant vivid dreams.

#### **1.7.5 Methamphetamine**

The "methamphetamine intoxication" high that users experience is typically the main driving force for drug use. People who regularly use methamphetamine, those who are just starting to develop a methamphetamine addiction, and those who are experimenting with the drug are typically searching for the advantages the drug offers. Like most addictive substances, methamphetamine can provide users an excessively high level of pleasure, assurance, and vitality. Despite this, the medicine may have unfavorable, hazardous short- and long-term effects. The effects of



methamphetamine on both the brain and the nervous system cause a number of physical and psychological changes that are a component of the "meth high," which includes both of these. Users of methamphetamine may experience some of these effects, but not necessarily all of them. Euphoria is the most seductive feeling that most methamphetamine addicts begin to long for. Methamphetamine users get a joyful feeling that makes them want to consume the drug again since it stimulates the brain. On the other hand, some people find that meth "blunts" their emotions, causing them to become less aware of their feelings. This might inspire people who want to move past upsetting memories or trying circumstances in their lives (Rawson et.al, 2000).

The reality of methamphetamine addiction is that some users tend to consume more of the drug to numb their uncomfortable emotions. The feeling of not caring can provide some temporary relief for someone who is overburdened with stress and concern. As a methamphetamine user develops an addiction, their lives may quickly become more disorganized and confused. Meth usage can eventually interfere with daily tasks and make it difficult for people to take good care of themselves. They may not be aware of how they appear to others, and in rare occasions they may even quit taking basic care of one, like brushing their teeth. Severe teeth decay, popularly known as "meth mouth," is common in meth users. "Relationships with spouses and children, that healthy individual's value can be hampered by emotional blunting (or carelessness). Methamphetamine users may cease going to job, school, or paying their expenses if they take the drug frequently. Research indicates that treatment outcomes for methamphetamine users are similar to those of other drug users, including cocaine users (Luchansky, 2003) ; Rawson et.al 2000) In the year following discharge from treatment, no differences in treatment outcomes, such as treatment readmission,

arrests, convictions, and employment, have been found between methamphetamine users and users of other substances (Luchansky, 2003).

Methamphetamine users appear to respond to treatment in the same way cocaine users respond, and many continue to show improvements with increasing length of abstinence (Obert et.al 2000). The treatment response to a multi-component outpatient program has been found to be very similar for users of all stimulant drugs, including methamphetamine (Rawson et.al 2000). Relapse rates for methamphetamine users are similar to those for other drugs. A study of substance users who were treated in publicly-funded residential or outpatient treatment programs in Los Angeles County found a 50% relapse rate for methamphetamine users, with 36% of relapses occurring within six months of completing treatment and an additional 15% within seven to 19 months after treatment (Brecht e.al 2000). The California Drug and Alcohol Treatment Assessment (CALDATA) study, which included residential and outpatient treatment modalities, found that 60% of methamphetamine users had relapsed at 12 months, which was similar to users of heroin and cocaine concurrently and marijuana abusers, better than heroin abusers, and less successful than cocaine or crack users Bishop, S. (1999). A third study, the Los Angeles Target Cities Treatment Enhancement Project (TCTEP), showed that 35% of outpatient methamphetamine users had relapsed at 12 months compared to 23% of other outpatient drug users, a nonsignificant difference in rates (Bishop, 1999). In examining gender differences in treatment outcomes, recent study of former clients of a large publicly 4-17-06 13 funded treatment system found no differences in relapse rates among male and female methamphetamine users (Brecht et.al 2004). Treatment completion rates for methamphetamine users appear to be similar or somewhat lower to that of other drug users (Hawke, et.al 2000). One study found that 23.3% of methamphetamine users

completed treatment, a rate similar to that for users of other drugs throughout California (Anglin, Chao, & Maglione, 2000).

Methamphetamine users experienced somewhat greater difficulty in completing their programs than users of other drugs, and were marginally more likely to leave treatment prior to its completion (Bishop, 1999). Several types of methamphetamine users were found to be significantly more likely to complete treatment: those who were over 40 years old, those who had less severe drug use patterns (did not use every day or did not inject), and those who were ordered into treatment by the criminal justice system (Anglin, Chao, & Maglione, 2000). Methamphetamine users who did not complete their treatment program either relapsed and did not return to the program or were asked to leave (Bishop, 1999).

Methamphetamine appears to cause long-term structural damage to the regions of the brain that control memory and motor coordination. These effects may be related to the length of time that methamphetamine remains in the user's system (Anglin et.al 2000). Compared to cocaine and other drugs, methamphetamine remains active in the body much longer, and a greater percentage of the drug remains unchanged in the body National Institute on Drug Abuse [NIDA] (2002). Smoking cocaine produces a high that lasts 20-30 minutes, while smoking methamphetamine produces a high that lasts 8-24 hours. It takes one hour for 50% of a specified amount of cocaine to be removed from the body, while it takes twelve hours for 50% of the same amount of methamphetamine to be removed. For these reasons, methamphetamine remains in the brain longer, producing prolonged stimulant effects that may permanently damage blood vessels in the brain (Ernst, et.al 2000). Methamphetamine use produces abnormal brain chemistry in all areas of the brain, and users with the greatest cumulative lifetime use have the strongest indications of cell damage (Ernst, et .al

2000). A significant effect of methamphetamine use is the loss of dopamine transporters in the brain (McCann et.al 1998); Sui, et al. 2004); Volkow, et.al 2001); Wilson et.al 1996). Dopamine is a brain chemical that facilitates critical brain functions. Methamphetamine triggers the release of large amounts of dopamine in areas of the brain that regulate feelings of pleasure and body movement (Simon,et.al 2000). Dopamine transporters are structures on the neurons that clear dopamine from the space between neurons. Earlier studies speculated that the loss of dopamine transporters represented irreversible degeneration in the brain McCann & Ricaurte, (1992). However, Volkow, et.al (2001) found that the number of dopamine transporters increased significantly after 12 and 17 months of abstinence, they also found that motor skills and memory did not improve at the same rate that dopamine transporters increased, within the 12- and 17-month periods of abstinence. However, in a study involving longer periods of abstinence, (Johanson,et.al 2006), found no deficits in motor function, memory, learning, attention, or executive function in methamphetamine users after four years of abstinence. Methamphetamine use does cause brain damage, but protracted abstinence appears to reverse at least some of that damage. The degree of recovery is related to the length of time that the methamphetamine user remains abstinent (Johanson, et.al 2006); Sedler, et al. 2001).

According to data from the 2017 National Survey on Drug Use and Health (NSDUH), over 14.7 million people (5.4 percent of the population) have tried methamphetamine at least once. NSDUH also reports that almost 1.6 million people used methamphetamine in the year leading up to the survey, The RAND Corporation (2013), and it remains one of the most commonly misused stimulant drugs in the world Chomchai et.al (2015). Methamphetamine is a powerful, highly addictive stimulant that affects the central nervous system. It takes the form of a white,

odorless, bitter-tasting crystalline powder that easily dissolves in water or alcohol  
National Forensic Laboratory Information System (NFLIS) 2015 Annual Report  
(2016) &Chomchai et.al (2015).

Methamphetamine was developed early in the 20th century from its parent drug, amphetamine, and was used originally in nasal decongestants and bronchial inhalers. Like amphetamine, methamphetamine causes increased activity and talkativeness, decreased appetite, and a pleasurable sense of well-being or euphoria. However, methamphetamine differs from amphetamine in that, at comparable doses, much greater amounts of the drug get into the brain, making it a more potent stimulant (Panenka et.al 2013), and it also has longer-lasting and more harmful effects on the central nervous system (Moszczynska 2016).

In addition to being addicted to methamphetamine, people who use methamphetamine long term may exhibit symptoms that can include significant anxiety, confusion, insomnia, mood disturbances, and violent behavior (Rusyniak 2013), they also may display a number of psychotic features, including paranoia, visual and auditory hallucinations, and delusions (for example, the sensation of insects creeping under the skin) (Akindipe,et.al 2014). Psychotic symptoms can sometimes last for months or years after a person has quit using methamphetamine, and stress has been shown to precipitate spontaneous recurrence of methamphetamine psychosis in people who use methamphetamine and have previously experienced psychosis Glasner-Edwards (Mooney 2014). These and other problems reflect significant changes in the brain caused by misuse of methamphetamine. Neuroimaging studies have demonstrated alterations in the activity of the dopamine system that are associated with reduced motor speed and impaired verbal learning

(NIDA 2013; Volkow, et.al 2001). Studies in chronic methamphetamine users have also revealed severe structural and functional changes in areas of the brain associated with emotion and memory, which may account for many of the emotional and cognitive problems observed in these individuals (Berman, et.al 2004; Chang et.al 2007; Thompson, et.al 2004).

People may feel more capable and productive than they actually are while using meth, creating this illusion. Although this experience may feel fantastic at the time, it can lead to issues later on. Meth can make people feel more confident, talkative, and outgoing in social situations, but it can also make them act strangely. Positive social relationships often erode people's connections to them. Many persons who use meth eventually lose contact with everyone but other methamphetamine users because they are unaware that they come off as silly to others. Another side effect of methamphetamine is hallucination. Their hold on reality deteriorates or perhaps shifts. In addition to feeling superior to or superior to other people (a trait known as grandiosity), they may also exhibit anxiety, paranoia, and aggression (Panenka et.al 2013).

People who are meth-high also experience physical changes. Methamphetamine can alter a person's respiration or heart rhythm in addition to giving them an overall feeling of arousal. Sweating, extreme feelings of heat or cold, as well as nausea and vomiting, can all be experienced by drug users. Even though some of these meth-related symptoms can be unpleasant, frequent usage of the drug makes the brain link these symptoms to the enjoyable meth high. Amphetamine and amphetamine-type stimulants are defined as substances with a substituted-phenyl ethylamine structure, including amphetamine, dextroamphetamine, and

methamphetamine. Other medications with different structures but the same effects are also included, such as methylphenidate (Chang et.al 2007).

Lorenz et al (2022) study that in Zambia, drug was used demonized and access to treatment is impeded. One-fourth of Lusaka's homeless teenagers report using drugs, and there are more than 30,000 people living in poverty there. Recently, Zambia's Health ministry developed strategies concentrating on beverage, purposing Chainama, the primary mental health facility, provide therapy. Combine, they supported preparing the educational program concentrated on in this paper. They speculated preparing Zambian experts would work on their impression of substance clients and treatment. They were investigated in the event that treatment utilizing the educational program, as conveyed to clients via preparing members, would urge client inspiration to change, cooperation in gatherings, and lessen substance use recurrence.

Ramsewak, et al (2020) gives the alliance with morbidity or fatality with depressibility figure around the world, particularly Mauritius; use chaos (SUD) has a substantial impact on cultural and wellbeing frameworks. Illegal drugs serve as a positive supplement or augmentation and revitalize habit through their happiness and joy-seeking effects. They focused on identifying the gambling elements that led to SUD in male friends of Mauritius and evaluating the contribution of those variables to the reduction of SUD. The focus was also on determining the frequency of backsliding and the causes behind it. A survey was conducted to gather information about many topics, including risk factors, confidence, and peer pressure. Clients showed a significant amount of relapse throughout the starting year of forbearance. The large number of people who responded came from atomic or uni-parent families (either with father or mother) and they were refused enough support from society because of their relationship status. Many people who participated had a favorable

generational history of SUD. Marijuana was the drug that was handled the most frequently, to the addicts who had some prior interest in drugs. Results that were translated using the Gateway Drug Theory revealed a regular progression for male friends from mild to strong prescriptions, a behavior that was related to writing. Finally, a fictitious plan was formed on the basis of significant evidence for the relationship between automaticity and diminished perspectives prior to backsliding. Information revealed increased impulsivity, which is a typical trait in complete disregard for other people and marginal behavioral condition, as being generally responsible for backsliding. Their analysis was flourished in identifying the very well-known hazards for SUDs that are associated with poor financial standing. The main barrier to effective reduction was cited as the failure of drug users to go on with their treatment given the hazardous 92 percent rate of getting ill or worsen health. To aid with recovery, programs such as backslide counteraction must be used during the first year of forbearance.

## **1.8 Relapse after treatment**

Milivojevic et al (2018) find High rates of relapse after treatment and the variability of clinical symptomatology distinguish use problems (SUDs). Here, they depict in-depth focal pressure reactions and fringe reactions linked with the physiopathology of SUDs. They figure prospective pressure reaction estimate, such as autonomic reactions, focused primary and utilitarian mind modifications, nerve center pituitary-adrenal hub indicators that may be used as speculative carcinogenesis in SUDs. They contend that pressure reactions can predict both the development of SUDs and their propensity for rapid relapse. They consider their capability as emerging pro drugs as well as the added situations in designing and executing their requests for the detection and medical care or attention of SUDs.



### **1.8.1 Drug Addiction**

Sampedro, et. al., (2019) look at that Drug habit is an ongoing and backsliding jumbles wherein rehashed drug openness compromises cerebrum brain adaptability. Mind regions typically engaged with learning and objective coordinated ways of behaving become ruined, which might prompt mental shortfalls that coincide with other enslavement side effects and foresee a more terrible treatment result. New opportunities for growth that are not roused by medications might work on both mental shortfalls and medication prompted side effects by advancing versatile neuroplastic changes that could ease or converse those associated with dependence. The current survey will zero in on whether potentiating sound mental capability, each by formal mental preparation or non-drug related natural encounters, could apply valuable impacts in the therapeutics of compulsion. Albeit extra examinations are required, the accessible clinical and preclinical proof proposes that mental excitement might give important adjuvant mediation in illicit drug use.

### **1.8.2 Reward**

Sazhin et. al., (2020) introduced a report to portray a continuous award that investigates the connections between characteristic prize responsiveness, element use, and brain reactions to social and personal award. Although prior studies has indicated a link between typical reward response and compensatory brain activity and drug use, it is unclear that either this connection is also affected by how people interpret sociological benefits. Using individual distinction estimates that examine the relationship between drug use, social knowledge and detail, and quality prize responsiveness with tasks that action results expectation, key behavioral patterns, social award use, and the impact of social context on remuneration handling, they

were handling these questions through a neurological study with school-going participants. They believe that drug usage will be linked to clear signs of striatal breakdown. Reward very many sensitive individuals will, in particular, have dulled striatal reactions to social and personal rewards and improved network with the orbital in front cortex; in comparison, reward easily substantia reactions to social and non-social rewards and dulled availability with the orbitofrontal cortex. They will also examine the relationship between drug use, substantial responses to social reward, and self-announced reward responsiveness. They predict that individuals with the highest levels of drug use will exhibit inflated striatal responses to social reward and social context, separate of self-revealed reward awareness. With the goal of establishing the relationship between monetary responsiveness, social context, and drug use as well as providing a base for comprehending risk factors and separating neurocognitive components that might be the focus of interceding, cortical and striatal responses to monetary handling will be examined.

### **1.8.3 Drug-Dependent People Experience Troubles with Adapting In Unpleasant Circumstances**

Yigitoglu, et al (2019) proposed that Dysfunctional convictions are accepted to meaningfully affect substance misuse. Drug-dependent people experience troubles with adapting in unpleasant circumstances and accordingly, begin reusing these medications. Their review was led to decide the connection between broken convictions and stress ways of dealing with especially difficult times in drug-dependent patients.

Multiple factors are predictors of relapse; present study is investigating factors that help in relapse prevention.

## 1.9 Relapse

When problematic behaviours have been stopped or minimized, relapse prevention (RP) is a strategy for reducing the likelihood and severity of relapse (Marlatt & Witkiewitz, 2005).

The first recurrence of problematic behaviour following a stop attempt is known as a "lapse," which could potentially result in further recurrences to a level similar to before quitting and is known as a "relapse. Another effect of a lapse is that the client might be able to refrain, continuing on the path of constructive transformation, or "prolapse." (Marlatt & Witkiewitz, 2005). Many researches attempt to characterise the elements causing relapse because they view relapse as a process rather than as a singular occurrence (Steckler et al. 2013).

Relapse prevention (RP) is a cognitive-behavioral strategy that aims to help people maintain desired behavioral improvements by detecting and addressing high-risk conditions for relapse. RP has two distinct objectives:

- a. Eliminating a first lapse and maintaining harm reduction or abstinence treatment objectives.
- b. Providing lapse treatment in the case of a lapse so that subsequent relapses can be avoided (Marlatt & Witkiewitz, 2005)

Initially, relapse prevention developed as a planned reaction to other therapies' longer-term treatment failure. The premise of RP is that it is problematic to anticipate that a treatment's effects, which are intended to reduce or stop an unwanted behaviour, will last after the therapy has ended. The old environment that aroused and supported the issue behaviour is another cause to suspect a problem may recur. For example,

losing the skills, strategies, and knowledge provided during therapy and decreasing desire.

The biggest risk of addiction is relapse, which is when drug abusers resume their prior behaviour after receiving treatment (Milhorn, 2018). This risk persists for many years following therapy (Donovan & Marlatt, 2005; National Institute on Drug Abuse [NIDA], 2016). Relapse No of the degree of care, prevention is an essential component of treatment for adolescents with mental health disorders. Any teenager taking medication for a documented condition runs the risk of relapsing if they don't consistently adhere to their treatment plan. Teens with psychiatric problems sometimes struggle with poor medication compliance. Teenagers may purposefully forget to take their medications or fail to take them as directed. The teen's symptoms typically return since the condition is not routinely addressed. This is the reason that every adolescent, even those who have mental health problems, needs relapse prevention plan in their discharge plan and home contract. Regular daily marijuana use makes it easy to identify relapse or an inability to abstain. Marijuana usage can also be more sporadic with negative effects, which would also point to a relapse tendency. Addiction is the inability to refrain from marijuana use, especially in social, professional, and legal circumstances, which raises the risk of adverse effects and disability (Milhorn, 2018).

It takes time to overcome a drug or alcohol addiction. Dealing with withdrawal symptoms, getting over reliance, and stifling the impulse to use all take time. Relapsing is the act of using again after a period of abstinence. When you're attempting to heal, it's a constant threat. According to the National Institute on Drug Abuse, 40 to 60 percent of former drug addicts will eventually relapse. You can avoid

relapsing by being aware of the stages of relapse and developing a strategy to cope with them.

The idea of addiction as a recurring brain condition is prevalent today. More than 75% of participants relapsed within a year of receiving treatment, according to Miller and Hester, who examined more than 500 studies on the effects of alcoholism. According to a research by Hunt and colleagues, relapse rates for nicotine, heroin, and alcohol after a year were very similar. Within the first year following treatment, a considerable number of patients with alcohol use disorders experience at least one "lapse," although only 20% of patients return to their pre-treatment alcohol consumption levels.

### **1.9.1 Relapse prevention initially developed as a planned reaction to other therapies.**

Relapse prevention initially developed as a planned reaction to other therapies' longer-term treatment failures. Relapse prevention works under the premise that it is unwise to anticipate that a therapy that aims to reduce or stop a negative behaviour will continue to have an impact after it has ended. The old environment that prompted and supported the issue behaviour is another cause to suspect a problem may recur. For example, losing the skills, strategies, and knowledge provided during therapy and decreasing motivation. Substance use problems among doctors are a severe and ongoing problem. There is a lot of debate about whether using big doses of opioids is associated with a higher risk of relapsing than using alcohol and other drugs, especially among anesthesiologists. Additionally, unknown are the risk factors for relapse with existing therapies and monitoring methods (Talbot & Earley, 2015).

75.6% of young persons under the age of 18 in the United States alone have acknowledged to using addictive substances (including cigarettes, alcohol, marijuana, and/or cocaine) at least once. Teenagers in Taiwan are abusing drugs more frequently now than ever before, with ketamine, ecstasy, and methamphetamine being the most widely used illegal substances. The preceding study describes the possible outcomes of a 10-week treatment programmer for patients in Taiwan who are underage substance users and their careers possible predictor of drug use relapse over the next five years may be found in changes in patients' behavioral issues during the treatment programmer. Furthermore, there were two characteristics linked to increased relapse rates: living in single-parent families and using methamphetamine or 3,4-methylenedioxy-methamphetamine. Family ties are crucial to the process of getting over an addiction. Support from family and worry for one's own health rank as the two most important motivational factors for quitting using (Glob, 2014), but socialising with the same peer groups and easy access to drugs are the main triggers for recurrence. (Golestan, Abdullah. (2010). only 11.2% of drug users who require treatment actually do so, according to Pakistan's National Institute on Drug Abuse (Drug facts Treatment statistics, 2011).

Ekendahl, et .al., (2022) recommended concerns how hankering is drawn closer and taken care of, the way things are 'made up', in the act of purported backslide anticipation (RP) for habit issues. A deficiency of investigation of what RP generally speaking, and yearning especially, "is" and may become in certain circumstances. They analysed how hankering is approved in set of instructions and preparation stuff related to the mediation, as well as in interviews with professionals in the treatment framework by Swedens, by drawing on science and innovation studies (STS) and fundamental habit experiments. They examine various deposits of

hankering establishments in RP, looking for suspicions that bring about what John Law alludes to as 'security real factors'. They distinguished three real factors: 1) 'The emergence of hankering'; 2) 'the amazing quality of the individual' and 3) 'The converging of treatment and regular day to day existence' The information show that the mind, comprehension, feelings and conduct are authorized in RP. In areas where intercessions offer neoliberal administration of the powerless and where craving is brought closer as a constant item that may be successfully treated, they review the relevance and usefulness of compulsion treatment actual components.

### **1.9.2 Body Mind Spirit (I-BMS) mediation**

Raccanello, et. al., (2022) examined the effectiveness of Integrative Body Mind Spirit (I-BMS) mediation in those who are drug dependent. Using a 2-bunch uni-visually impaired RCT setup, I-BMS and therapy to everyone's surprise (TAU) were compared for drinking and mental outcomes. Individuals who were found to have a condition related to alcohol were randomly assigned to attend integrated body mind spirit or TAU sessions. An enrolled nurturing who was confused by the exploratory plan made estimates using a normalized poll on wealth, status to alter, craving, amount, and recurrence of drinking before and for up to a half year following the intervention. Regarding inside-group impacts, the I-BMS group showed important improvement in all consequential aspects with a significant impact size. I-BMS participants demonstrated lower backslide speed and drinking amounts at 3-month treatment compared to TAU, as well as a decline in wanting and drinking days at 2-month treatment process Members of the I-BMS group informed a significant improvement in prosperity and inspiration instead of TAU at the halfway point. The results of parallel computed relapse demonstrated how many prior initiatives and

residing in a metropolitan area strongly predicted members at half-year follow-up. The findings suggest that I-BMS really merits more adequacy testing. Overall, it is possible to conduct I-BMS mediation for those who are alcohol dependent.

(Yamada et al., 2021) used jumble (SUD) is a main supporter of the worldwide weight of infection. The availability of legal and authorized medication for SUD in Indonesia failed to reach of the desired inclusion. Although there was a lack of evidence-based information nationwide, a standardized remedial option for SUD that had the potential for widespread use was needed. In this study, a group telemedicine model based on cognitive behavioral therapy (CBT) was promoted. A multicenter randomized controlled experiment will be used to investigate the model's feasibility and implementation capability. An all-out of 220 members will be enrolled from the interpersonal organizations of eight destinations in Indonesia: three clinics, two essential medical services communities and three restoration habitats. The Indonesia Drug Addiction Relapse Prevention Program (Indo-DARPP), a freshly grown 12-week module which has the basis on CBT and persuasive meetings created in the circumstances and conditions of Indonesia, is a back slide prevention programme that the mediation arm will participate in. By using video conferencing in a group therapy setting, a medical services provider and a friend facilitator will provide their programme as an addition to the participants' regular treatments. The control arm will proceed with treatment to no one's surprise. Their essential result will be the rate expansion in long stretches of restraint from the fundamentally involved substance in the beyond 28 days.

Dorison, et al., (2020) explored the connection between close to home variables (like positive and pessimistic impacts, feeling guideline, feeling guideline techniques, profound handling, profound excitement, regard for profound boosts,



close to home division, and close to home reaction) with utilization hankering. All patients who depends on opium drug residing in middlings or medium sized convenience centre (camps) in Zahedan, Iran in any case, to foresee drug carvings and wants, more profound factors (close to home excitement, profound handling, love, feeling guideline, and close to home division) were placed into the situation along with a 0.156 percent chance of medication cutting, according to the data. Cultural influences play a considerable role in the expression of emotion, thus considering them in the context of medication prevention is important. The biological, mental, and social factors all need to have been taken into account simultaneously. Additionally, concurrent therapy may lead to an integrated, multidisciplinary effort.

Joseph, et al., (2020) openness to medications of misuse prompts serious changes in mesocratic columbic dopamine hardware profoundly ensnared in substance use issues. Notwithstanding significant endeavors, not many prescriptions to diminish backslide rates are presently accessible. To address this issue, specialists were uncovering helpful open doors presented toward the end cannabinoid framework. The cannabinoid receptor type 1 (CB1R) and its autogenic molecules are involved in the organizations of push- and prompt-set-off events that lead to the acquisition of therapeutic and non-therapeutic benefits. Here, they examine the evidence in favor of using allosteric modulators, aberrant agonists, multi-target drugs, and neutral CB1R antagonists as improved alternatives to traditional CB1R antagonists. They explored that certain substrates involved in end cannabinoid flagging, such as peroxisome proliferator-activated receptors, would have therapeutic value. In general, a large body of pre-clinical evidence supports cutting-edge pharmaceutical approaches that interact with the end cannabinoid framework as

therapeutically practicable up-and-comers prepared to impede or prevent drug-induced dopamine dissension or discordance that increase the danger of fatality.

### **1.9.3 Primary prevention**

Depending on the goal for each primary preventive activity, there are three categories that can be made. Any member of a population can be the target of universal policies. Selective methods focus on specific groups of people who have a higher chance of getting a certain condition as a result of their exposure to environmental or personal risk factors. The recommended tactics concentrate on those who are only beginning to exhibit a few, very mild symptoms of a certain disease.

### **1.9.4 Secondary prevention**

Secondary prevention is yet another form of protection. The goal of secondary prevention is to stop an existing ailment from getting worse or developing consequences. It emphasizes high-quality medical care.

### **1.9.5 Tertiary prevention**

Tertiary prevention attempts to prevent a condition from impairing or limiting people's lives. It focuses on rehabilitation techniques and altering societal norms to enable those affected by a condition to continue living happy, meaningful lives.

## **1.10 Administration of Relapse Therapy**

Outpatient and residential treatment (RTC) programmes can both use the Relapse Prevention (including IOP and PHP). Individual or group therapy for RP is provided to patients. Relapse Prevention is typically a focus of weekly group sessions in teen recovery facilities. Teenagers can learn from and support each other's recovery journeys in a group setting. The exchange of ideas is also made possible by the group

environment. The other group members learn to take into account those triggers in their own personal lives as well as the vulnerabilities of the kids and the conditions and settings in their life that could (or have in the past) caused relapse.

### **1.10.1 Relapse prevention and management.**

The fundamental objective while attempting to minimize or stop drug use is relapse prevention and management; nevertheless, no one can claim that the journey through the stages of transformation is easy for a young person. However, there are a variety of relapse management and prevention techniques available. Relapse is a well-known concept, and it is employed in this lesson. But the term "lapse" is frequently employed. Relapse connotes a complete return to abusing drugs heavily and a sense of failure. Lapse emphasizes the commonality of tripping up when attempting to change behavior and has less negative overtones. There may be small, fleeting lapses. Relapse management is the process of working with a young person to stop or decrease the effects of a "lapse" before serious drug use resumes. It is likely that a young person will come across circumstances that support drug use, even if they are really eager to change their lifestyle and drug usage. This could be the outcome of how people are experiencing (bad mood, anxiety, drug cravings), as well as external variables that support drug usage. (For instance, friends pressuring them to use, stress in personal or professional relationships (Allsop, 1990).

## **1.11 Models of Relapse Prevention**

Following are the factors (proposed in different models) affecting relapse.

### **1.11.1 Cognitive model of drug addiction**

According to the cognitive model of drug addiction, there is a direct connection between one's thinking and their addiction. (Beck, Newman Liese, Wright, 1999, modification of the beliefs and cognitive distortions that mediate the processes of recovering from drug addiction is a crucial treatment objective (Graña, 1994). The goal of treatment is to change the fundamental ideas that underlie the want to take drugs, as well as the actions that are directly related to drug use and the patient's lifestyle, and to demonstrate to the patient various types of control (Beck et al., 1999).

Central meanings that are challenging to access and that can qualify reality underlie instinctive thoughts. The fact that the person typically accepts irrational views as normal makes it one of the most challenging things to identify these underlying notions. These more fundamental ideas, also known as core beliefs, are more metaphysical and reflect an implicit understanding of reality. The goal of therapy is to help the patient access and consider the deeper significance of these thoughts, creating the opportunity to access their more fundamental and symbolic meanings. These fundamental ideas serve as a foundation for all other concepts in a person (Vázquez, 2003). It has been established that the core beliefs associated with addiction are linked to the history of addiction, and as a result, people connect more with these ideas the longer it has been since they first started using drugs. This relationship has not been discovered with attitudes about craving, which have a direct role in coping mechanisms for the want to consume (Martínez-González & Verdejo, 2011). In other words, having a lengthy toxicological history does not exclude

utilizing cognitive coping mechanisms to manage craving from the start of treatment. As a risk factor for relapse, a predictor of relapse, and a measure of treatment success, craving has emerged as a key target in the treatment of addictions (American Psychiatric Association, 2013).

Donnell et al (2018) look at the past Maladaptive Schema (EMS) were self-convictions with respect to our own self, others and the world, created in adolescence as the aftereffect of combined decreasing encounters (Young, 1993). Elevated degrees of EMS are available in the narcotic utilizing populace alongside elevated degrees of close to home dysregulation and maladaptive adapting close by characteristics of flexibility. Goals: The review investigated the relationship between EMS corresponding to profound dysregulation, maladaptive adapting, versatile adapting and flexibility between a clinical gathering made out of narcotic ward poly drug clients going to an office for narcotic replacement treatment and a solid correlation bunch. A Tran's version plan was utilized to look at bunch contrasts utilizing manovas, and different relapse investigation recognized relationship among EMS and close to home dysregulation, adapting and strength. Results: They bunch altogether varied corresponding to close to home dysegulation, maladaptive adapting, versatile adapting and flexibility. Explicit EMS was huge autonomous indicators with respect to high close to home dysregulation, maladaptive adapting, versatile adapting and strength. End: EMS seem to essentially affect profound dysregulation, adapting and flexibility. Clinical ramifications propose that EMS ought to be tended to while treating narcotic ward poly drug clients.

### **1.11.2 Feelings Trigger Action**

Johnson et al., (2017) developing experimental writing shows that feeling related impulsivity (contrasted with impulsivity that is inconsequential to feeling) was

especially pertinent for grasping an expansive scope of psychopathologies. Late work, notwithstanding, had separated two types of feeling connected impulsivity: An element named Pervasive Influence of Feelings catches propensities for feelings (generally gloomy feelings) to rapidly mold considerations, and a variable named Feelings Trigger Action catches inclinations for good and pessimistic feelings to rapidly and reflexively significantly impact conduct and discourse. They used manner showing to think about connections between impulsivity and a wide range of pathologies, both linked to an unrelated to emotion. Students self-reported their levels of impulsivity, melancholy, stress, aggression, and adverse consequences from substance use. An approach model demonstrated the explicitness of various impulsivity kinds. Unavoidable Influence of Feelings was linked to anxiety and discouragement, whereas Feelings Trigger Action and impulsivity unrelated to feelings were linked to hostility and drug abuse. Their findings from this study suggest that treating people with a variety of psychopathologies with a focus on treating feelings of relevant impulsivity. Two forms of impulsivity-related feelings have been differentiated by late work. They focus on testing a multivariate model linking impulsivity and several psychopathologies in a way that is both feeling- and non-feeling-related. Rash decisions made in the context of negative emotions were associated with anxiety and despair. Violent behaviour and substance use were linked to impulsivity and rash actions unrelated to feelings. The review's reliance on self-reported levels of impulsivity and psychopathology was constrained. It is essential to do longitudinal research on how these impulsivity types predict the onset and progression of psychopathology.

Docherty et al., (2022) was to examine the connections between eyewitness evaluated abilities connected with close to home and mental guideline post-

confirmation and before-discharge in a solid office and office details of adolescent crime relapse as long as 1 year after discharge. Model showed that decreased recidivism was fundamentally linked to both beginning degree of profound guideline skills and development in experiencing guideline abilities while incarcerated. While adjusting for other factors, including duration of stay, their example of discoveries persisted. Follow-up tests revealed that monitoring internal and external triggers may be the primary driver of results for experiencing guideline skills. Extra exploration ought to examine the association between feeling guideline abilities and adolescent recidivism, with a unique spotlight on trigger observing and how to work on those abilities.

### **1.11.3 Social factors**

Hong et al., (2021) takes a lot of time and effort to help substance abusers overcome their drug dependence and sustain long-term recovery, and the provocation of drug recovery is a key factor in this process. The aesthetic meaning of family as a vehicle for encouraging substance abusers to modify their behaviour hasn't been fully explored up to this point. The provocation for medicine recuperation is energized under the knowledge, information and limitation of family ethics based on commitment and management, that is importantly showed in the longitudinal multigenerations or cross generation management, according to findings from comprehensive and thorough interviews with 15 medicine recoverers or resettlers, of whom 7 women and 8 men made up the sample. On the one hand, unfavorable effects including character harm and intergenerational responsibility deficiencies prompt drug users to consider moral principles. Whereas, disciplines like multigenerational duty and management and community support can remedy the factual geste of stuff or material addicts in moral and social behaviour. The provocation for medicine

recovery in china have more importance or value on their identity and part as family members and correlating liabilities, in comparison to Western countries which focus on exterior or exotic environmental factors such as family gatherings, family connections, and family assistance, which provides relief for enhancement of social work services for material abusers from family creative or inspired ethics.

#### **1.11.4 Social implications of families**

Zeng et al., (2017) Assisting substance clients to recuperate from the way of behaving of chronic drug use and keep up with long haul recovery is a long and confounded process, wherein the inspiration to go through drug restoration assumes an unequivocal part. The social implications of families and their role as a catalyst for behaviour change in drug users have not yet been fully analyzed. The motivation for drug recovery is observed to be animated under the direction and limitation of family morals in light of commitment and obligation, which is primarily reflected in the longitudinal intergenerational obligation, through top to bottom meetings with 15 medication rehabilitants, among whom there were 7 ladies and 8 men. From one viewpoint, adverse results, for example, intergenerational obligation shortfall and notoriety harm lead substance clients to ponder moral qualities. Then again, trains, for example, intergenerational obligation and commitment and shared help can address the genuine way of behaving of substance clients in moral practice. The inspiration for detoxification from drugs in China places more importance or stress on people's personalities and jobs as relatives than it does in Western countries, which places more emphasis on external natural factors like family capability, family connections, and family support. This provides motivation for increasing social work administrations for drug users based on personal social standards.



Liu et al., (2020) makes sense of that Long-term recuperation from illicit drug use is a volitional interaction. As of recently, no action has been accessible for evaluation of chief working limit in this cycle. Their review expects to distinguish a volitional interaction for chronic drug use restoration and to foster the Volitional Components Inventory for Drug Rehabilitation (VCI-DR). A thing pool was built, in view of hypothesis development, individual-and gathering centered meetings, and master criticism. Consequences of exploratory and corroborative component examinations recommended a design with five variables: inspiration control, motivation control, excitement control, self-control, and activity the board. The VCI-DR shown promising joined and discriminant legitimacy with hypothetically anticipated rule factors (feeling of control, hesitation, indiscretion, inspiration of illicit drug use recovery, and feeling guideline). Moreover, results showed great test-retest dependability, with amazing inward textures. Taken together, this examination offers promising help for the vci-dr, possibly progressing both essential and applied habit research.

Any event where a person's attempt to refrain from a certain behaviour is threatened is referred to as a high-risk situation. They frequently appear out of nowhere. While analyzing high-risk scenarios, the client is required to come up with a list of low-risk scenarios and identify the features that set them apart from the high-risk scenarios. An examination of prior transgressions and reports of instances in which the client felt or felt "tempted" are used to identify high-risk circumstances. The actions that avoid high-risk circumstances or promote adaptive reactions are considered appropriate responses. SIDs (seemingly irrelevant decisions) is actions that a client does before making a decision that puts them in a dangerous scenario. For example, accepting to meet in the afternoon at a place that sells alcohol if the client is

aware of drinking during the daytime leads to binges would be a SID (Brunswick et al., 2002).

The process of relapse is also influenced by a number of less evident elements. These hidden antecedents include lifestyle elements like general stress levels, psychological traits like temperament and personality, and cognitive elements. These could be used to prepare for a relapse, for instance, by utilizing justification, denial, or a need for instant pleasure. The hidden antecedents thought to be most strongly correlated with the probability of recurrence are lifestyle factors. It refers to the degree of harmony between activities that a person finds personally rewarding or delightful and perceived external responsibilities in their life. Additionally, significant are urges and cravings brought on by psychological or environmental triggers (Larimer et al., 1999).

The idea of the Abstinence Violation Effect (AVE) which describes a person's reaction to a relapse in which the client frequently places the blame on themselves and experiences a subsequent loss of perceived control is a crucial component of RP. It happens when the client believes that there is no transitional period between a lapse and a relapse, meaning that because they have broken the abstinence rule, "they may get the most out" of the lapse. These issues need to be addressed during RP. People who blame themselves for the mistake are more likely to feel guilty and depressed, which might make them drink more to try to deal with or get rid of their feelings of failure or guilt (Daley et al., 2011).

Another potential aspect is the Problem of Immediate Gratification, in which the client opts for shorter-term gains without thinking about more serious long-term negative effects if they falter. The therapist can assist the client in identifying unreasonable outcome expectations by helping them create a decisional matrix where

the advantages and drawbacks of continuing the behavior versus abstaining are listed out for both shorter and longer time periods (Brunswick, et al., 2002).

Based on clinical data, (Marlatt, 2005) provides categories of relapse determinants that aid in the creation of a thorough taxonomy of high-risk circumstances. These elements include intrapersonal factors, where a person's response is physical or psychological, and interpersonal effects by other people or social networks.

### **1.11.5 Outcome Expectancies**

A person's expectation or conviction about how a conduct would affect future experiences is known as an individual's outcome expectancies. The actual effects felt after using a medicine may not always match the intended results. According to operant conditioning, a certain outcome's expected positive or negative reinforcement value in a given scenario serves as the motivation to act in that situation. Positive and negative expectancies both increase the likelihood of relapse, with positive expectancies acting as a risk factor. Negative expectancies operate as a preventative against recurrence (Marlatt & Witkiewitz, 2005). The likelihood that someone may experience alcohol's benefits increases the more they drink. The person expects alcohol to assist him or her deal with unpleasant feelings or conflict in high-risk settings (i.e., when drinking acts as "self-medication"). Direct and indirect experiences both influence expectations (such as how peers and the media perceive the drug) (Steckler et al. 2013).

## **1.12 Marlatt's Relapse Prevention Model**

The RP model created by Marlatt offers a conceptual framework for comprehending relapse as well as a set of therapeutic techniques intended to reduce the likelihood and severity of relapse (Gordon & Marlatt 1980) RP is based on the

cognitive-behavioral model of relapse and was first envisioned as an expansion and augmentation of traditional behavioural techniques to examining and treating addictions. With the emergence of cognitive-behavioral theories of substance use, many of which deviated from traditional (e.g., disease-based) models of addiction, the idea of relapse underwent major alteration. For instance, compared to traditional models, cognitive-behavioral theories give higher weight to contextual elements (such as environmental cues and cognitive processes) as proximal relapse precursors. Traditional theories usually interpret cravings or withdrawal as indications of an underlying illness state and blame them for relapse. One of the most important aspects of the model is the thorough taxonomy of factors or situations that can lead to or assist in relapse episodes. According to the RP model, these components can be separated into two categories: covert antecedents and immediate determinants. Examples of immediate determinants include high-risk situations, coping mechanisms, result expectations, and the abstinence violation effect (e.g., lifestyle imbalances and urges and cravings).

### **1.12.1 Emotions**

According to study, teenagers are more likely to relapse when they are experiencing unpleasant emotions. According to research, experiencing loneliness, depression, rage, and stress are all associated with relapse. For instance, a kid who suffers a significant breakup or rejection at school could feel the temptation to utilize old medications they used to take to soothe the pain. Relapse prevention techniques are used in therapy to teach patients how to identify these emotional states and how to control them before they turn into their former goal behaviors (Seyedfatemi et al., 2014).

### **1.12.2 Environment**

The environment also serves as a trigger for relapse. A former addict may experience triggers when they observe friends using drugs, see a syringe or an advertisement for alcohol, or pass by a location that brings back bad memories of drug usage. (However, socializing with friends who don't use drugs or alcohol actually lowers the risk of relapsing!) Together with their therapist, the patient develops a Relapse Prevention Plan in advance to deal with these possible events. Plans could include removing potentially dangerous contacts from a person's phone and avoiding locations and persons that could serve as reminders of their old behaviors. It also offers abilities that one can use to deal with these circumstances if they should arise. Relapse Prevention Plans aid the patient in developing coping mechanisms and approaches to deal with these high-risk circumstances while they are in treatment.

### **1.13 Theories of Emotion**

Combinations of physiological arousal, psychological evaluation, and subjective experiences make up our emotional states. These are collectively referred to as the elements of emotion. These evaluations are influenced by our histories, upbringings, and civilizations. Therefore, even when confronted with same conditions, various persons may have diverse emotional experiences.

#### **1.13.1 James-Lange theory**

According to the James-Lange hypothesis of emotion, physiologic arousal is the source of emotion. Recall everything you studied about our fight-or-flight reaction to threats and the sympathetic nervous system. Your sympathetic nervous system would cause significant physiological arousal if you came into contact with a threat in

your surroundings, such as a poisonous snake in your lawn. This would cause your heart to beat faster and your breathing rate to rise. The James-Lange hypothesis of emotion states that you wouldn't feel terror until this physiological arousal had occurred. Additionally, various sentiments would be connected to various arousal patterns.

### **1.13.2 Cannon-Bard theory**

However, other thinkers questioned whether the physiological arousal associated with various emotions is distinct enough to account for the large range of emotions we experience. The Cannon-Bard theory of emotion was created as a result. This perspective holds that physiological stimulation and emotional experience happen concurrently but independently (Lang, 1995). This means that when you see the poisonous snake, you experience terror at the exact same time that your body prepares for a fight or flight response. Despite the fact that they co-occur, this emotional response would be distinct from and independent from the physiological arousal.

### **1.13.3 Schachter-Singer two-factor theory of emotion**

Maraon, a Spanish physician, developed a model for the feeling of emotion by researching the psychological impacts of adrenaline. Before Schachter's two-factor or arousal-cognition theory of emotion, there was Maraon's model (Cornelius, 1991). Another explanation of emotions that considers both physiological arousal and the emotional experience is the Schachter-Singer two-factor theory of emotion. This theory holds that emotions are made up of two components: physiology and cognition. In other words, the emotional experience is produced by contextual interpretation of physiological arousal. Recalling our earlier example of the poisonous

snake in your backyard, the two-factor theory contends that the snake causes sympathetic nervous system activity, which is characterized as fear in the particular situation, and that this results in our sense of fear. You would have felt joy if you had assigned the sympathetic nervous system activation label "joy." The cognitive evaluation process of identifying the physiological experience is necessary for the Schachter-Singer two-factor theory to work.

### **1.14 Transactional model of stress and coping (TSC)**

The TSC (Folkman & Lazarus, 1984) proposes that two prototypical states challenge and threat arise from cognitive judgments of the meaning of a situation and one's ability to respond to the situation. In the TSC, primary appraisal refers to the judgment of a situation as being benign or stressful. Benign situations are judged as requiring no instrumental action on the part of the individual to facilitate a positive outcome, whereas stressful situations are judged to require specific action(s). Stressful situations themselves fall into two categories; they can be challenging or threatening. Challenging situations are those perceived to offer the potential for growth, mastery, and gain (e.g., performing well at exams). Threatening situations are those perceived to potentially result in harm or loss (e.g., performing poorly at exams).

The perception of challenge or threat is determined in a secondary appraisal of one's ability to cope with, and respond to, the stressful situation. Challenge results from the judgment that one has the necessary resources to cope (e.g., I know this exam is important but I have belief in my ability), and threat from the judgment that one does not (e.g., I know this exam is important but I do not think I have the skills to pass it). Although the implication of primary appraisal is that judgments of relevance or importance of a situation precede judgments of coping, this need not be the case. Secondary appraisals may, for instance, determine the initial relevance of a situation

(e.g., Blascovich & Mendes, 2010) For instance, a fear appeal stating that effort may be required to avoid failure could be judged as irrelevant by a student who seems to find a subject naturally easy and seems to achieve high grades with little effort.

## **1.15 Coping**

The ability to use efficient coping mechanisms in high-risk settings is one of the most important indicators of relapse. The attitudes and behaviors used to manage the internal and external stresses of stressful situations are referred to as coping. A person is less likely to relapse than someone who lacks the ability to use appropriate coping mechanisms (such as behavioral ones like leaving the situation or cognitive ones like using positive self-talk). Additionally, it is believed that those who have handled risky circumstances effectively have a higher feeling of self-efficacy (Marlatt & Witkiewitz, 2005).

There are numerous categories of coping that are claim that utilizing substances as a response to life stress can either diminish negative affect or increase positive affect. This is known as stress coping. They distinguish between stress coping techniques, which are responses designed to manage with everyday stress, and temptation coping techniques, which are coping mechanisms specific to situations where there are drug temptations that could result in relapse (Wagner et al. 1999).

### **1.15.1 Avoidance coping**

While avoidance coping may involve distracting from indications or indulging in other activities, approach coping may involve making an effort to accept, face, or reinterpret the situation. Participants who are more approach-oriented may hold themselves more accountable for their decisions, even lapses, whereas those who are



using avoidance-based coping may place more emphasis on their surroundings than on their own behavior (Moos et al. 1990).

Inaction can sometimes be viewed as a kind of coping. The acceptance of drug cues has traditionally been regarded as inaction, which can be described as "letting go" and resisting an urge. Being aware of desires and "staying in the now" are beneficial coping mechanisms (Marlatt & Witkiewitz, 2005).

### **1.15.2 Affective model of drug motivation**

This affective model of drug motivation postulates that excessive substance use is driven by both positive and negative emotion regulation (Marlatt & Witkiewitz, 2005). Later researchers, like Baker, proposed the negative reinforcement model of drug addiction, which holds that the primary motivation for using addictive drugs is to avoid or escape undesirable emotions (Baker et al. 2004). Continuous depression has been demonstrated in studies with alcohol-dependent patients to increase the likelihood of relapse both during and after treatment, while rapid elevations in negative affect have been found to occur right before nicotine relapse (McKay, 2004). In one study, the presentation of alcoholic beverages and images of unfavorable emotions boosted the subject's subjective reporting of a desire to drink and predicted when the subject would relapse after leaving the hospital (Cooney et al., 1997). Anger, loneliness, boredom, and weariness are some of the negative emotional states linked to relapse.

## **1.16 Emotion Regulation and Persistent Treatment**

Gross (2014, 2015) defines emotion regulation as a process by which individual influence what emotions they have, when they have them, and how they experience and express them. The ability of a person to deal with stressors and to

regulate his or her emotions effectively is called emotion regulation (Eisenberg & Spinard, 2004). Researchers have proposed five kinds of emotion regulation strategies: situation selection, situation modification, attention deployment, cognitive reappraisal, and expressive suppression (Gross, 1998a, b, 2002). Studies have shown that cognitive reappraisal and expressive suppression were the most commonly used and most effective of these (Dillon et al., 2007; Hayes et al., 2010; Knight and ponzio, 2013).

Emotion Regulation A wide, all-encompassing concept known as emotion regulation (ER) includes "extrinsic and intrinsic systems responsible for monitoring, analysing, and adjusting emotional reactions, notably their intensity and temporal aspects, to achieve one's goals." Gross (2007), says. Preliminary research indicates that people use ER processes to enhance pleasure and lessen discomfort (Larsen, 2000; Gross, 2014). The various stages of the emotion-generating process are depicted in Gross's (1998, 2014) Process Model of Emotion Regulation, which has attracted the most scholarly attention. Contextualization, scenario modification, attentional focus, cognitive rewiring, and response modulation are five strategies that people might employ to manage their emotions, according to the study. Since each of these strategies focuses on a different emotion-generating mechanism, they can be utilized to alter the emotional dynamics of the emotional response, such as the intensity, length, magnitude, and offset of behavioral, physiological, and sensory reactions (Thompson, 1994), (Gross, 1998). So, rather than the emotion's valence, engaging in healthy ER processes refers to the ability to change the intensity, duration, and speed of one's experience of emotion (Gross, 2007). As a result, the ER process entails adjusting the intensity or duration of one's emotional responses utilising a number of emotion-focused strategies (Gross, 2014) .These ER tactics

aren't often bad or great by definition; instead, they need to be considered in the context of a person's goals in a given situation (Gross, 2007).

Gross (2014, 2015) the process through which humans manage their emotions, including when and how they arise, is known as emotional regulation. A person's ability to properly manage demands and control their emotions is referred to as emotional regulation (Eisenberg & Spinard, 2004). Researchers have proposed five categories of emotional control techniques: context choice, scenario modification, attentional concentration, cognitive reappraisal, and expressive suppression. (Gross, 1998a, b) According to studies, cognitive reappraisal and expressive suppression were the most common and effective of these (Dillon et al. 2007; Hayes et al., 2010; Knight & Ponzio, 2013).

Thus, issues with treatment perseverance could result from difficulties regulating emotions. For instance, among substance users, ambivalence about quitting is almost universal, and as therapy progresses, withdrawal symptoms, cravings, and other variables may tip the scales against pursuing a productive course of action. Given that emotion dysregulation has been linked to impaired decision-making, those with lower capacity for emotion regulation may decide, maybe impulsively, to discontinue treatment in the face of such variables (Heilman, et al. 2010) and impulsive behavior (Davidson et al., 2000). The study's main hypothesis is that individuals with higher levels of emotion regulation are more likely to remain in residential drug and alcohol treatment, whereas those with lower levels of emotion regulation are more likely to leave the programme early or not comply with treatment recommendations.

Increasing, reducing, or maintaining both good and negative emotions are examples of variations in emotional responding that are frequently a part of emotion

regulation (Aldao et al., 2010 & Webb et al., 2012) These changes could happen on three levels: the kind of emotions people experience, when they experience those emotions, and how they feel and express those feelings (Gross, 2015; Koole, 2009; Tamir, 2016). The concept of emotion regulation has typically been seen as an aspect of individual difference that is generally consistent over time and context (Gross and John, 2003) but differs across age groups (Gross et al., 1997; Hofer et al., 2015; Riediger and Luong, 2015; Röcke et al., 2018; Scheibe et al., 2015; Urry and Gross, 2010).

### **1.17 Drug craving and Emotion Regulation**

The concept of emotion regulation has been characterized in a variety of ways by academics and theorists. (Gross, 1998) presented some of the most significant definitions, including the method by which humans regulate the emotions they experience, when they do, and how they feel and express them. According to (Thompson 1994), the extrinsic and intrinsic processes are in charge of monitoring, evaluating, and modifying emotional reactions—especially their intensity and temporal characteristics—in order to accomplish one's goals. People employ a variety of techniques to change how they feel; these techniques impact not only the individual's current emotional experience but also their cognitive and interpersonal functioning. One of the most important components of wellbeing and adaptive behaviour is the ability to control one's emotions, and there are various techniques that people employ to do this. But as (Garefski 2002), it has been argued that some of these tactics are more flexible than others. Emotional reappraisal and suppression are two well-studied regulatory techniques that can be used to either raise or decrease emotional response tendencies or affective states (Frijda, 1998). Suppression prevents behaviour that leads to emotional manifestation when emotions are aroused (Gross &

Levenson, 1993). Reappraisal is the process of reinterpreting emotionally charged stimuli in neutral language (Speisman, et al., 1964). In order to reduce suffering, it entails developing constructive or upbeat interpretations or viewpoints on a difficult circumstance. For psychopathologies when there are ideas about which emotions are acceptable to have and which are not, reappraisal may be especially crucial (Werner & Gross, 2010). Reappraising emotional stimuli and suppressing them both lessened their negative effects. According to models of alcohol misuse, people with poor emotion regulation utilised alcohol as a diversion from their inability to control their emotions (Grekin & Sher, 2007).

Reappraisal of the cognitive process and repression are two typical tactics (Gross, 1998, 2008). By altering how it is produced or by examining the emotional input, reappraisal is a cognitive approach that reduces the emotional effect of a scenario. To stop or diminish emotional response-related behaviors like facial expressions, verbal emotions, and gestures, a response-focused method known as suppression is applied. The emphasis of Gross' (1998, 2015) model of emotion regulation is on process. It implies that reappraisal is the most popular and efficient antecedent-focused technique utilized before or early in an emotional episode. According to Gross, suppression is a response-focused tactic performed when a current emotional experience is still being experienced (1998, 2015). Cognitive reappraisal and suppression are strategies that aim to alter the intensity or valence of an emotional experience. This is accomplished through altering one's assessment of emotionally charged situations or by making an effort to suppress any outward expressions of an internalised emotion. Both approaches can be used to deal with both good and negative emotions. According to this line of thinking, reappraising pleasant feelings entails altering one's perspective in order to foster more positive emotions.

Reappraising bad feelings entails altering one's perspective in order to lessen negative feelings. Negative emotions are suppressed by inhibiting the manifestation of negative feelings, while happy emotions are suppressed by inhibiting the expression of pleasant emotions (Kuppens & Nezlek, 2008). An individual's objective is typically to maximise happy emotional experiences and reduce negative ones, however there are several exceptions to this rule (Riediger et al., 2009; Tamir, 2009). In the context of professional caring, for instance, the expression of positive (or neutral) emotions is especially crucial, as the field of geriatric nursing demands affective and mental balance (Mauk, 2010). The majority of study in applied psychology has focused on the need for people to display good emotions in spite of whatever negative feelings they may be feeling in the moment (Grandey, 2003; Scott & Barnes, 2011).

According to Gross (2014, 2015) Emotion regulation is the process through which people control the emotions they experience, when they occur, and how they are felt and expressed. Emotional regulation refers to a person's capacity to manage pressures and effectively control their emotions (Eisenberg & Spinard, 2004). Researchers have identified five categories of emotion management techniques: context choice, scenario modification, attentional concentration, cognitive reappraisal, and expressive suppression (Gross, 1998 & 2002). Studies have shown that among these, cognitive reappraisal and expressive suppression were the most commonly used and most effective (Dillon et al., 2007; Hayes et al., 2010; Knight & Ponzio, 2013).

Psychology uses a variety of definitions to describe emotion regulation. The unitary model of emotion and emotional regulation is described by Campos et al. (2004). They contend that emotion expression and control are same interdependent processes that occur concurrently rather than sequentially and serve the same purposes. Emotion regulation is described in some theoretical theories as a process

aiming at maximising good emotions and minimising negative ones Wojciszke, 2003), which is called hedonic emotion regulation. Such a definition, however, does not encompass the full range of emotion regulation processes, as people occasionally regulate their emotions for purposes other than those that are hedonistic. For instance, people could try to boost their negative emotions to be more assertive or decrease their pleasant emotions to be focused. Gross' theory of emotion regulation, which has recently been immensely pivotal and dominant, takes this possibility into account (Gross, 2015a; Tamir, 2016).

In order to control the type, timing, mode, method, and intensity of behavioural, experiential, or bodily processes of emotions, a person must engage in emotion regulation. Reappraisal, obsessive rumination, self-declaration, avoidance, and inhibition are a few emotion regulation tactics that can be used to control emotions in either an automatic or controlled way. It is understandable that problems with emotion and its regulation can cause grief and psychological impairment given how crucial emotion regulation is to every person's life. People who have trouble controlling their emotions are more likely to take substances or engage in addictive behaviors (Cashwell et al., 2017; Dingle et al., 2018; Estevez et al., 2017; Prosek et al., 2018). It appears that people seek predictable ways to change how they feel, such as the use of addictive substances or engaging in compulsive behaviors, because they lack developed and effective emotion regulation strategies (Cashwell et al., 2017; Dingle et al., 2018; Estevez et al., 2017; Prosek et al., 2018).

Zargar et al., (2019) study that relapse and pining were caused by psychological and environmental variables, such as trouble regulating emotions (ER) and relationship issues, in cases of drug use disorders. By focusing on appropriate adaptation of feelings, threat to regulate emotions can support opioid usage and make

sexual connections better. Their goal was to determine how well emotion regulation therapy worked in treating drug use disorders clients who were experiencing pining, emotion regulation, and sexual pleasure. The emotion regulation group therapy group had eight daily treatments based on the evident model in order to understand how to celebrate feelings and their benefits, get through barriers to accepting pleasant feelings, recognize nonsupervisory maladaptive and adaptive feelings-related behaviours, and change geste. On the basis of results of this study, ERGT significantly reduces yearning and improves compatibility and feeling control in patients with diseases because of usage of such substances. As a result, it can also be used as helpful behaviour modification therapy in center for drug usage treatment.

Silverman et al., (2021) proposed that while many people utilize music as a kind of emotional guidance, there aren't enough studies looking at how music-based self-administrative features relate to and foresee adult adaptation to drug use confusion (SUD). They explain how this cross-sectional review was motivated by the need to examine music-based feeling guidelines, sound and unwanted music usage, and coping mechanisms in adults with SUD undergoing detoxification. There were a great deal of huge connections between factors on the basis of music and adapting. Relapse consequences showed that comfort anticipated acknowledgment and diversion anticipated venting. Solid music utilize anticipated dynamic adapting and humor, while undesirable music utilize anticipated declaring, refusal, social separation, and self-fault. By and large, unfortunate music utilizes anticipated maladaptive adapting while solid music utilizes anticipated versatile adapting. As music use is normal for individuals with SUD, they appear to be that music-based feeling guideline preparing may have the likelihood to expand versatile adapting abilities to a definitive objective of improving the probability of recuperation.



Tsujimoto et al., (2022) proposed that feeling guideline was urgently associated with mental and actual wellbeing. A few techniques ought to be contrasted with explain the brain relates of positive feeling guideline. In any case, there were no examinations on different positive feeling guideline techniques. They planned to explore the brain corresponds of positive feeling guideline with various feeling guideline procedures and recognize normal and differential mind regions associated with good feeling up guideline. The ventral striatum was acting more prominently during the good emotion guideline, according to the area of interest research. There are several organizations involved in response modification and cognitive change. Their findings show that various systems for uplifting guidelines encompass both conventional and unique groupings.

Ong and Thompson (2019) have shown that the utilization of maladaptive survival techniques and challenges in controlling temperament are connected to expanding hazard of self-destruction. Their analysis calculated the impact of conforming to and sensing guidelines on damaging attitude in a short sample of Asian undergraduates. Their goal was to interpret whether various survival skills, expressive concealment techniques, and mental reappraisal procedures would be associated with self-destructive behavior. 120 college understudies were selected from in Hong Kong the open university and all finished polls that deliberate adapting, profound guideline, and self-destructive way of behaving. Their outcomes showed that expanded evasion adapting was related to expanded self-destructive way of behaving, though expanded mental reappraisal was related with diminished chance of self-destructive way of behaving. In particular, in an Asian understudy populace, evasion adapting gives off an impression of being a gamble factor for self-destruction, while mental reappraisal might be viewed as a positive, safeguarding methodology.

Regarding emotion regulation, a variety of techniques have been developed, including attachment, insight-oriented, dialectal behavior, and cognitive-behavioral therapies. Emotion regulation has been a crucial concept in social science study since the 1990s. Emotion regulation is essentially the capacity of a person to control their emotional reactions through both internal and external means (Gross, 1998; Thompson, 1994). The intensity, timing, quality, scope, length, and recovery from emotional events can all be altered by emotion control systems. (Thompson, 1994) Since the capacity to control one's emotions is necessary for interacting with others, lacking these abilities can be both mildly difficult and extremely incapacitating.

Two well-studied regulation strategies are emotional reappraisal and suppression, to decrease or increase emotional response tendencies or affective states (Frijda, 1998). Suppression reduces emotion-expressive behavior by inhibition during a state of emotional arousal (Gross & Levenson, 1993). Reappraisal is the reinterpretation of emotionally valence stimuli in unemotional terms (Mordkoff & Davison, Speisman, Lazarus, 1964). It involves generating benign or positive interpretations or perspectives on a stressful situation as a way of reducing distress. Reappraisal may be particularly important for psychopathology is beliefs about which emotions are okay to have and which not (Gross & Werner, 2010) are. Both the reappraisal and suppression of emotional stimuli reduced negative affect.

## **1.18 Types of emotion regulation**

### **1.18.1 Cognitive reappraisal**

The antecedent-focused method of cognitive reappraisal intervenes before the full activation of emotion response tendencies has occurred. The term "cognitive process of determining how stressful the interaction between persons and the

environment is" is used to describe the following cognitive reappraisal examples: (1) the degree of risk associated with the stressor (threat assessment), (2) the possible harm associated with the threat (hazard assessment), (3) the likelihood that the threat will be addressed head-on (challenge assessment), and (4) the likelihood that the situation can be handled (controllability) (Lazarus & Folkman, 1984). An antecedent-focused method called cognitive reappraisal works before the emotional response tendencies are fully activated.

### **1.18.2 Expressive suppression**

The act of attempting to conceal, prevent, or lessen ongoing displays of emotional expression is known as expressive repression (Gross & Levenson, 1993; Gross & John, 2003). Expressive suppression is a technique for controlling emotions that is response-focused. Reduced facial expression and restraint of both happy and negative emotions are examples of expressive suppression. Individuals may have adverse emotional and psychological repercussions from using this type of emotion management method. Additionally, a study done on a sample of minors (mean age: 12.5 years) discovered that a significant portion of those who scored higher on problem gambling were smokers and drinkers of alcohol (Míguez & Becoña, 2015), a finding reported in other studies (e.g., Griffiths & Sutherland, 1998). These studies are complemented by this one, which also adds to the evidence about the connections between substance abuse and other, less-researched habits, like problematic Internet use and video game addiction van Rooij et al.,(2014). Internet use and video gaming are two activities that might suit this description. Research in the field already indicates that people who abuse substances are more prone to engage in sensation-seeking activities (Quigley & Leonard, 2000). Furthermore, it is important to keep in

mind that, particularly in adolescents, the probability of developing other problem behaviors increases as one problem behavior worsens (Griffiths & Sutherland, 1998).

A collection of abilities known as emotion regulation involves both internal and external activities. Examples of approaches for controlling emotions include: (a) making plans for one's life that make it more likely that they will have positive emotional experiences and less likely that they will have negative emotional experiences (such as controlling one's environment; Thompson, 1994); (b) changing one's current circumstances so they have a different effect on emotional experiences (Gross, 2014), (c) Changing one's cognitive assessment of a situation (Gross, 2014) or "one's interpretation of emotionally meaningful information" (Thompson, 1994), (e) Changing emotional reactions and choosing a different emotional expression (e.g., using adaptive coping strategies to change one's mood); and (f) Changing one's cognitive assessment of a situation (Gross, 2014; Thompson, 1994).

Emotion regulation refers to a broad range of abilities and mechanisms that enable people to manage their emotional experiences during the course of their life. Without these abilities, people would find it difficult to control their emotions and may be more open to using addictive behaviors or abuse of substances to improve their mood. Researchers have focused particularly on emotion control as a psychological characteristic in recent years. (Golman, 1995); numerous studies have shown how emotion control affects a person's ability to cope with stress and succeed or fail in a variety of spheres of life (Eisenberg, et al. 2000) growth and development of substance misuse, high-risk sexual behaviours, post-accident stress, generalised anxiety disorder, and borderline personality disorder. Gratz and Roemer separated emotion regulation into four parts: A flexible use of situationally relevant tactics to control emotional reactions, as well as (1) awareness and knowledge of emotions, (2)

acceptance of emotions, (3) ability to participate in goal-directed conduct and stop from impulsive behavior when experiencing unpleasant emotions (Zareban, 2017).

Both internal and external techniques for controlling emotions are displayed frequently in social situations (Thompson, 1994). Indeed, a significant component of many therapeutic therapies for addiction is the development of emotion management skills (Cavicchioli et al., 2019; Giordano, 2022; Katehakis, 2009). Therefore, ensuring that all children and teens have the opportunity to learn, develop, and strengthen emotion control skills may be one of the most successful prevention strategies for addiction. The family unit, the classroom at school, or therapeutic groups seems to be the greatest settings for this prophylactic work to take place given that emotion regulation occurs predominantly in social environments (Thompson, 1994). Making counseling options available to all patients and teaching parents and teachers how to support youngsters in developing effective emotion regulation skills may be helpful ways to stop later addictive tendencies (Cavicchioli et al., 2019; Giordano, 2022; Katehakis, 2009).

### **1.19 Cognitive Appraisal Theory**

A person examines how an emotional circumstance will affect them, interprets the many components of the scenario, and then formulates a reaction based on that interpretation. This process is known as cognitive appraisal. When there is neither physical stimulation nor clear cues as to how the scenario should be evaluated, cognitive assessments typically take place. For instance, you won't require a cognitive evaluation if you wake up in the middle of the night to find a stranger standing over you with a pistol because the threat to your safety is obvious and there is no need to evaluate the circumstances (Lazarus, 2000).

Emotional regulation (ER) is a tuned-in and adaptive psychosocial response to environmental circumstances that maximises a person's chances of completely thriving there (Cherland, 2012). By conveying information about internal or external individual conditions, it entails planning adaptive and appropriate emotional behaviours and responses related to internal cues to external situations (Jarymowicz & Imbir, 2015). Failure to do so leads to an exaggerated, incorrect, and inappropriate response to external stimuli, which deteriorates people's general well-being (Price & Hooven, 2018), and crucial to regulate for healthy functioning (Werner & Gross, 2010). Given that it has an impact on people's conscious experiences, which aid in the regulation and control of their sentiments and behaviors, the current scenario justifies research into the inherent controls of emotions (Webb et al., 2012). After all, there hasn't been any previous research on the connection between COVID-19 and mental health problems. Dysregulated emotions are known to be associated with PTSD, anxiety, depression, and violent conduct (Price & Hooven, 2018). ER is made comprised of two potent techniques, cognitive reappraisal, and expressive suppression, which support the management of depression and anxiety in high-risk situations (Ford & Gross, 2019) and enable conscious pursuit of desirable goals by preserving an individual's wellbeing (Verzeletti et al., 2016) through situational assessment, attention, appraisal, and response (Ford & Gross, 2019). The current emotion-expressing behaviors are covered up, suppressed, held back, or inhibited by expressive suppression reactions, but cognitive reappraisal is a sort of cognitive modification that interprets emotion in a way to modify its effects in various contexts (Gross & John, 2003). Both strategies aid in the growth of social interactional skills, which in turn facilitate control and behavior modification (Cole et al., 2008 found that expressive suppression and cognitive evaluation are strongly related to depressive and

phobic symptoms). The emotional response to the situation can be changed by cognitive reappraisal to have a more advantageous outcome (Gross & John, 2003), and nonverbal signs of discomfort can be concealed or suppressed using an expressive suppression technique (Katana et al., 2019). Both strategies help modify the intensity and duration of an emotional episode (Kuppens & Nezlek, 2008).

The reevaluation of the situation modifies mental patterns by making one feel better. Negative reappraisal modifies thought processes to lessen the unpleasant emotions, whereas expressive suppression of joyful or negative emotions hides both feelings by not expressing those (Katana et al., 2019). Gross and John (2003) found that cognitive appraisal is more closely related to well-being and helps people to grow physically and mentally by improving interpersonal skills, whereas expressive suppression results from negative emotions and can occasionally be helpful to deal with difficult conditions and circumstances (Katana et al., 2019; & Verzeletti et al., 2016) and it starts developing in the young age (Shipman & Zeman, 2001).

Culturally acceptable depictions include people's physiological responses to situations, whether they are uninhibited or restrained (Bericat, 2016). According to Gordon (1990), sentiments (also known as feelings and affects) are patterns of sensations that are created by culture and society and arranged around the significance of relationships in both small and large groupings. Gordon's explanation of the socially acceptable emotions—both positive and negative—helps control behavior. Examples of positive emotions include happiness, romance, and parental love (fear, anguish, envy, and sorrow). Multiple emotional manifestations are connected with socio-cultural elements using symbolic interactionism methods. Situational factors, such as the COVID-19 epidemic in this context, trigger various emotional displays. These displays vary from culture to culture and rely on cultural effects rather than

psychological antecedents. Controlling one's emotions and speaking out when necessary are all societal constructs (Hochschild, 1983). The majority of psychologists explain that, whether explicitly or covertly, emotions influence subsequent behaviours and are, in theory, connected to social control. Additionally, emotions play a role as intervening factors in the larger social process (Kemper et al., 2020) and severely restrict people's ability to express their feelings and constantly evaluate them for improved societal adjustment.

Emotional regulation Skills ER depicts an incredibly dynamic process, as shown in the previous section (Ochsner & Gross, 2007). ER can be considered as abilities that are used during the ER process, in addition to the described ER techniques. These abilities are essential for adaptive coping with adverse emotional states and, thus, the participation in healthy ER processes. They can be thought of as a component of the ER process (Berking et al., 2015). The Adaptive Coping with Emotions Model was developed by Berking and Whitley (2014) to provide a conceptual framework for the pertinent ER skills involved in adaptive ER processes and adaptive coping (Berking & Whitley, 2014). According to the ACE model, adaptive ER is the context-adapted interaction of the ER capacities to: (1) be aware of one's emotions as this is a requirement for conscious emotion management, and (2) accurately name and identify one's emotions as this aids in regulating them (3) Recognize the source of your emotions as this will help you identify areas for progress., (4) Appropriately interpreting emotions related to physiological sensations helps one prevent misinterpretations that could cause psychological or psychosomatic disorders. (5) Adaptively manage negative emotions to enhance emotional health and self-efficacy, (6) Recognize and accept one's emotions because repressing them leads to the emergence of more upsetting feelings. (7) Be strong (tolerate and accept



negative emotions), since poor control attempts contribute to the maintenance of negative emotions and because brain regions that regulate emotions are resistant to voluntary control efforts (Berking, 2015). To avoid irrational behavioural mood-repair responses, one should offer themselves emotional support in difficult situations. They should also confront uncomfortable situations that elicit negative emotions in order to improve their ER abilities and resilience (Berking & Znoj, 2008).

## **1.20 Rationale of study**

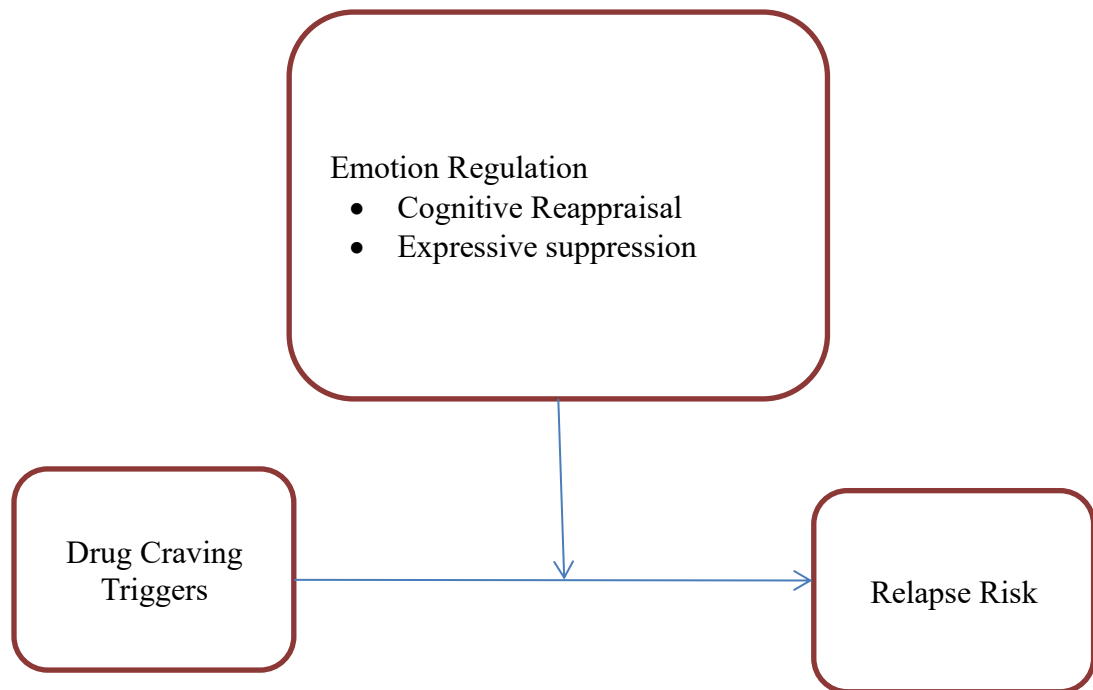
Given the rising rate of relapse among drug addicts in our nation, relapse prevention is a crucial topic that has to be researched (Masood & Sahar, 2014). However, the research of Pakistani literature revealed that there is a void in the literature regarding the role of craving triggers in predicting relapse. According to treatment research, controlling craving is a crucial component of good treatment outcomes for all types of addictions (Brewer, 2013; Dolan et al., 2013; Gossop et al., 2002; Kiluk et al., 2010; Longabaugh, & Morgenstern, 2000; Witkiewitz, Mallik, & Witkiewitz et al., 2013). However, the research of Pakistani literature revealed that there is a void in the literature regarding how our study factors relate to drug user relapse prevention.

The research is conducted to find out the role of emotion regulation and drug craving triggers with relapse prevention among drug addicts. It also measures the impact of emotion regulation and drug craving triggers with relapse prevention among drug addicts. The result of previous study demonstrated that emotion regulation was positively correlated with addictive behaviors. This study also explores how drug craving triggers effects person's emotional regulation and it helps to prevent relapse.

Although there was so much work has been done on drug addicts but in this study, we examine the relationship of emotional regulation with drug craving trigger among drug addicts. And also the impact of emotional regulation and drug craving trigger on relapse prevention. In previous studies, researchers find out the relationship of emotional regulation with stress. In this study we explored different drug addicts who used cannabis and methamphetamine. This study also helpful for the readers to take prevention steps if there is someone in their surrounding are on drugs and they will get knowledge and side effects of some common drugs which are widely used in our society.

Present research therefore aims to study the role of craving triggers in predicting relapse; moreover, considering the role of emotion regulation in predicting relapse, the result of previous study demonstrated that emotion regulation was positively correlated with addictive behaviors (Koob, 2000). Present study therefore addressed role of emotion regulation strategies namely cognitive reappraisal and expressive suppression in predicting relapse prevention among persons with drug dependence. This study also explores how drug craving triggers effects person's emotional regulation and it helps to prevent relapse. Therefore we need to investigate the factors that are related to relapse risk.

## 1.21 Conceptual framework



**Figure 1. Conceptual model showing the relationship among drug craving triggers Emotion regulation and Relapse prevention.**

## **CHAPTER 2**

### **RESEARCH METHODOLOGY**

#### **2.1 Objectives**

1. To investigate the relationship between drug craving triggers, Cognitive Reappraisal and Expressive suppression and, relapse among persons with drug dependence.
2. To investigate the moderating role of emotion regulation (Cognitive Reappraisal and Expressive suppression) in the relationship between drug craving triggers and relapse among persons with drug dependence.

#### **2.2 Hypotheses**

1. Drug craving triggers is a significant positive predictor of relapse among persons with drug dependence
2. Cognitive Reappraisal is negative predictor of relapse among persons with drug dependence.
3. Expressive suppression is a positive predictor of relapse among persons with drug dependence.
4. Cognitive Reappraisal moderates the relationship between drug craving triggers and relapse among persons with drug dependence.
5. Expressive suppression moderates the relationship between drug craving triggers and relapse among persons with drug dependence.

## **2.3 Conceptual definition**

### **2.3.1 Emotion Regulation**

Emotion regulation is a process through which people control the emotions they experience, when they feel them, and how they experience and express them, (Gross 2014, 2015).

### **2.3.2 Expressive suppression**

Expressive suppression has been defined as the attempt to hide, inhibit or reduce ongoing emotion expressive behavior (Gross and John 2003, Gross and Levenson, 1993).

### **2.3.3 Cognitive reappraisal**

Cognitive reappraisal is an antecedent- focused strategy that acts before the complete activation of emotion response tendencies has taken place (Gross & John, 1998).

### **2.3.4 Drug Craving Triggers**

Drug Craving Triggers refers to a desire to consume a substance. Craving is a subjective sensation since it requires awareness of a desire ( Kassel & Shiffman, 1992; Niaura et al., 1988).

### **2.3.5 Relapse**

Relapse, or the return to heavy alcohol use following a period of abstinence or moderate use, occurs in many drinkers who have undergone alcoholism treatment. Traditional alcoholism treatment approaches often conceptualize relapse as an end-state, a negative outcome equivalent to treatment failure. Thus, this perspective

considers only a dichotomous treatment outcome—that is, a person is either abstinent or relapsed. In contrast, several models of relapse that are based on social-cognitive or behavioral theories emphasize relapse as a transitional process, a series of events that unfold over time (Annis 1986; Marlatt & Gordon 1985).

### **2.3.6 Relapse Prevention**

Relapse prevention (RP) is a method for lessening the risk and severity of relapse when problematic behaviors have been stopped or reduced (Marlatt & Witkiewitz, 2005).

## **2.4 Operational definitions**

Following instruments were used for collecting data in the present study, namely, “Emotion Regulation Scale”, “Core Beliefs Related to Drug use and Craving Scale (CBRDC)” and “Advance Warning of Relapse Scale (AWARE)”.

### **2.4.1 Emotion Regulation scale**

A 10-item questionnaire intended to assess respondents' propensity for cognitive reappraisal and expressive suppression as two methods of emotion regulation. Items for expressive suppression are 2,4,6,9, highest scores on these items is positively related to relapse .while items for cognitive reappraisal are 1,3,5,7,8,10 (Gross & John, 2003). Each question asks respondents to respond on a scale of 1 to 7, with 1 representing "strongly disagree" and 7 representing strongly agree. High score on cog reappraisals is negatively related to relapse.

### **2.4.2 Craving Belief Questionnaire (CBQ)**

The craving belief questionnaire (Wright, 2001), a self-report questionnaire was used in order to evaluate addicts' craving beliefs. This questionnaire describes the

beliefs of drug abusers regarding their craving for substances and to gauge their level of agreement or disagreement with each item concerning their beliefs regarding craving. Twenty statements make up the survey, and each one can be scored from "completely disagree" (1) to "absolutely agree" (7), with seven being the highest score. High score indicate high craving.

#### **2.4.3 Advance Warning of Relapse (AWARE)**

Relapse for the current study was operationalized through 28 items of Advance Warning of Relapse (AWARE) questionnaire (Groski & Miller, 1982; Millar & Harris, 2000). These items were rated on a 7-point Likert scale ranging from 1 (Never) to 7 (Always). Items 8,14,20,24, 26 were reverse scored, the greater the score the higher will be relapse.

#### **2.5 Demographic sheet**

The demographic sheet was used in the study to collect information on age, gender, education, marital status, drug name, and routes of drug, treatment time, and intensity of drug, drug duration and marital duration. Each participant was given a questionnaire, this included three questionnaires.

#### **2.6 Sample and sampling technique**

Sample of 300 male drug addicts with age ranging from 16 to 60, from different socio-economic status i.e. lower, higher and middle. Persons with dependence on following five most common substance namely Alcohol, Tobacco, Cannabis, Stimulants (including amphetamine-type substances, cocaine, and other stimulants) and Opioid were contacted from following rehabilitation centers of Pindi and Islamabad. The sample of this study was approached using purposive convenient sampling technique

## **2.7 Design**

This study used correlational research design, quantitative, cross sectional method was used.

## **2.8 Procedure**

For the purpose of data collection, 300 drug addicts were approached in thirteen Rehabilitation centers of Rawalpindi and Islamabad. Indoor patients of Doctor rehab Banigala, Subhan medical trust, Irada clinic, Nishan rehab, Life line, Life care, Safe care, Wada clinic, Aasra rehab, Hosla rehab, Psychaid rehab, Ali rehab, and our home rehab. Inclusion criteria was participants in recovery phase, however, the ones in their withdrawal phase were excluded from the research. Patients were contacted when they are not in withdrawal phase. Exclusion criteria consist of the respondent whose age range is beyond 16 and above 60 because there are high chances of drug addiction in these ages.

For the data collection, respondents were approached Consent Privacy etc. How data would be used, rights, and the main goal of the study were described after. All subjects received guarantees that the information they submitted would be kept private and used only for research. The questionnaire battery was to be completed by participants in 30 to 40 minutes. Persons with dependence on following most common substances namely Alcohol, Cannabis, Stimulants (including amphetamine-type substances, cocaine, and other stimulants) and Opioid.

Participants who provided informed consent were asked to provide information on demographic form, Emotion Regulation Scale”, “Core Beliefs Scale” (CBQ) and “Advance Warning of Relapse Scale (AWARE). The respondents received detailed instructions. They were instructed to read the general guidelines



carefully before responding. The respondents were asked to decide whether or not the statement was true and to genuinely mark the appropriate response category. Participants were asked to answer every question on the questionnaire. All incomplete surveys were removed from the study. Statistical analysis was carried out using SPSS in accordance with the nature of the data and the assumptions. The data obtained from the research sample was encoded in the SPSS version 23.

The data was analyzed to test the hypotheses of the current research. Firstly, demographic characteristics of the sample were assessed through frequency analysis. Secondly, the psychometric properties of the study measures were explored through alpha reliability and descriptive analysis in terms of mean, standard deviation, skewness and kurtosis. Thirdly, the trend of relationships among study variables was analyzed as correlation coefficient, using Pearson correlation analysis. Moreover, regression analysis was conducted to find out the predictive properties of independent variables for dependent variable. Additionally, moderation analysis was done by using Process Macro and was portrayed by 1<sup>st</sup> model of Andrew Hayes. The results were interpreted according to the findings obtained in the form of SPSS outputs.

## **CHAPTER 3**

### **RESULTS**

The data obtained from the research sample was encoded in the SPSS version 23. The data was analyzed as per the hypotheses of the current research. Firstly, demographic characteristics of the sample were assessed through frequency analysis. Secondly, the psychometric properties of the study measures were explored through alpha reliability analysis and descriptive description in terms of mean, standard deviation, skewness and kurtosis. Thirdly, the trend of relationships among study variables was analyzed as correlation coefficient, using Pearson correlation analysis. Moreover, regression analysis was done to find out the predictive properties of independent variables for dependent variable. Additionally, moderation analysis was done by using Process Macro and was portrayed by 1<sup>st</sup> model of Andrew Hayes. The results were interpreted according to the findings obtained in the form of SPSS outputs.

**Table 1: Demographic characteristics of the study sample (N=300)**

	<i>Frequency</i>	<i>%</i>
<b>Gender</b>		
Male	300	100
<b>Education</b>		
8 <sup>th</sup>	34	11.3
9 <sup>th</sup>	14	4.7
10 <sup>th</sup>	78	26
12 <sup>th</sup>	86	28.7
14 <sup>th</sup>	35	11.7
16 <sup>th</sup>	53	17.7
<b>Marital status</b>		
Married	104	34.7
Unmarried	175	58.3
Divorced/separated	21	7.0
<b>Socio economic status</b>		
Lower class	17	5.7
Middle class	282	94
<b>Drugs used</b>		
Alcohol	56	18.7
Cannabis	106	35.4
Heroin	67	22.3
Methamphetamine	71	23.7
<b>Route of drug intake</b>		
Smoking	140	46.7
Drinking	56	18.7
Sniffing	48	16
Injecting	56	18.7
<b>Duration of treatment</b>		
One month	110	36.7
Two months	110	36.7
Three months	67	22.3
More than three months	13	4.3

The table above represents the distribution of the total sample on the basis of gender, marital status, socioeconomic status, types of drug use, routes of drug intake and the duration of treatment. The results suggest that all the participants of this research were males, 34.7% were married, and 58.3% were unmarried while 7% of them were divorced or separated. On the basis of the educational status of the sample, 11.3% of them had acquired education up to 8<sup>th</sup> grade, 4.7% of them up to 9<sup>th</sup> grade, 26% of them up to 10<sup>th</sup> grade, 28.7% of them up to 12<sup>th</sup> grade, 11.7% of them up to 14<sup>th</sup> grade while 17.7% of them up to 16<sup>th</sup> grade. Around 5.7% of the participants belonged to lower socioeconomic class, 94% of them belonged to middle class. According to the data about the type of drug use was reported, 18.7% used alcohol, 35.4% used cannabis, 22.3% used heroin and methamphetamine was used by 23.7% of the sample. The data about the route of the drug intake explain that drug was smoked by 46.7%, drank by 18.7%, sniffed by 16% and injected by 18.7% of the research sample. Moreover, the treatment record of the sample describes that about 36.7% of them received their treatment for one month, 36.7% for two months also, 22.3% for three months and 4.3% of them received the treatment for more than three months.

**Table 2: Alpha reliability of the study measures (N=300).**

<i>Scales</i>	<i>a</i>	<i>M</i>	<i>SD</i>	<i>Skew</i>	<i>Kurt</i>
DCTS	.83	69.70	23.81	.57	.31
Exp.sup	.70	44.33	15.04	.92	.15
Cog.reapp	.93	51.35	16.04	1.8	-.08
AWARE	.89	94.12	25.64	.98	1.92

*Note.* DCTS= Drug Craving Triggers Scale, Exp.sup. = expressive suppression  
Cog.reapp= cognitive reappraisal, AWARE= Advanced Warning of Relapse Scale

The results of the table above show that all instruments i.e., Drug Craving Triggers Scale, Cognitive Reappraisal Scale, Expressive Suppression Scale and Advanced Warning of Relapse Scale have acceptable reliability. The reliability of Drug Craving Triggers Scale is .83, for Expressive Suppression Questionnaire it is .70 and Cognitive appraisal is .93, for Advanced Warning of Relapse Scale it is .76. These values of alpha reliabilities indicate that all instruments used in this research are reliable (Taber, 2018) and suitable for data collection purpose.

**Table 3: Pearson correlation among study variables (N=300).**

Variables	1	2	3	4
1. Drug Craving Triggers	1	<b>-.26*</b>	<b>.18**</b>	<b>.36**</b>
2. Cognitive Reappraisal		1	<b>-.21**</b>	<b>-.26*</b>
3. Expressive suppression			1	<b>.58*</b>
4. Relapse Prevention				1

(\*\* $p < .01$ , \* $p < .05$ )

Table above illustrates the results of correlation between drug craving triggers, emotional regulation and relapse prevention. Pearson Product Moment correlation was used to assess the association between the study variables. The results show that drug craving triggers has significant positive correlation with relapse prevention and expressive suppression drug craving triggers has significant negative correlation with cognitive Reappraisal.

**Table 4: Regression Analysis of Drug Craving Triggers, Cognitive Reappraisal and Expressive Suppression for Relapse (N=300)**

Variables	Relapse Prevention		
	B	95 % CI	
		LL	UL
Constant	62.34	[49.57	75.10]
Drug craving triggers	.40	[.28	.5 ]
Cognitive reappraisal	.21	[.09	.5]
Expressive suppression	-.03	[-.34	.27]
	R <sup>2</sup>	.15	
	F	14.47	

*Note. \*\*\*p<.001*

Table above illustrates regression analysis to study the predicting effect of drug craving triggers, cognitive reappraisal and expressive suppression on relapse prevention. The table depicts that drug craving triggers ( $\beta = .40$ ,  $p < .01$ ), cognitive reappraisal ( $\beta = .21$ ,  $p < .01$ ) and expressive suppression ( $\beta = -.03$ ,  $p < .01$ ) are significant predictors of relapse. The value of  $R^2$  shows that 15% of variance is accounted for relapse prevention by drug craving triggers, cognitive reappraisal and expressive suppression. Thus, it is depicting that drug craving triggers and expressive suppression are positive predictors of relapse accepting hypothesis one moreover, cognitive reappraisal is seen as a negative predictor of relapse prevention accepting hypothesis two.

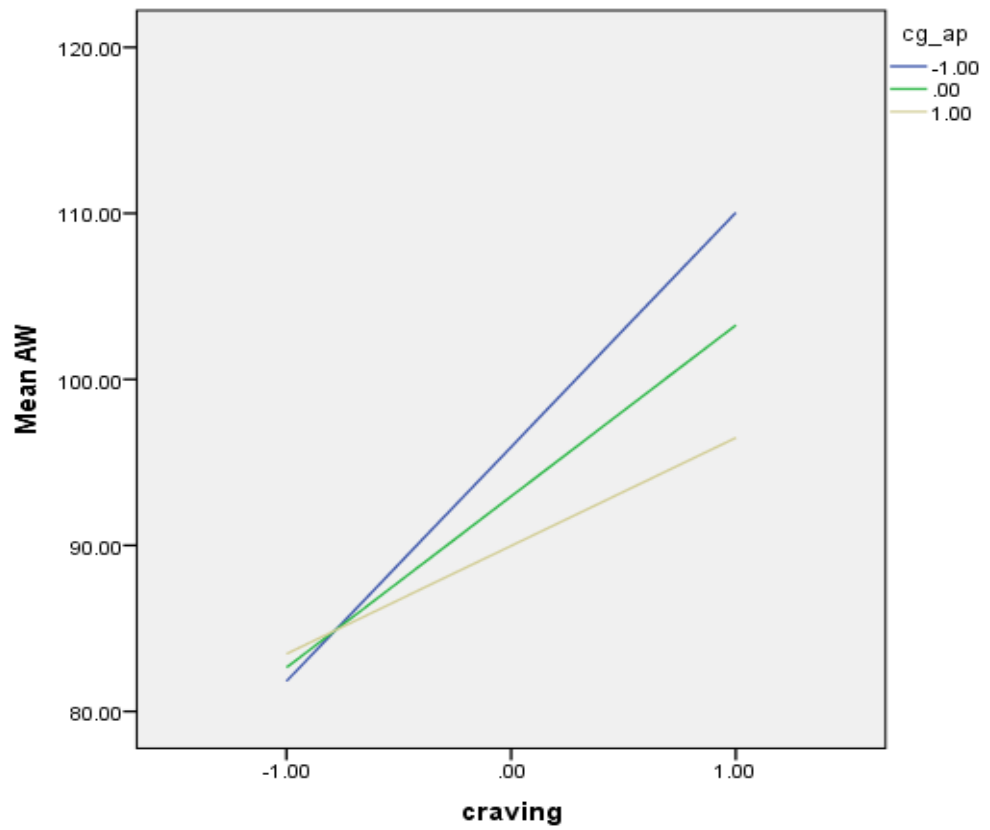
**Table 5: Moderating Effect of Cognitive Reappraisal on Drug Craving Triggers and Relapse (N= 300)**

Model 1	95%CI		
Variables	B	LL	UL
Constant	91.34	88.78	93.89
Drug craving triggers	7.05	2.98	11.17
Cognitive reappraisal	-4.62	-7.2	-2.03
Drug craving triggers* Cognitive reappraisal	-4.59	-8.53	-.65
R <sup>2</sup> = .03			
F = 13.96,			
p < .001			

Table above represent the regression coefficients of cognitive reappraisal for drug craving triggers and relapse as an outcome. Moderating effect of Cognitive reappraisal was calculated through PROCESS MACRO Hayes (2013). The results show that there is a significant moderating effect of Cognitive reappraisal between drug craving triggers and relapse hence supporting the hypothesis 4 of current research that Cognitive reappraisal moderates the relationship between drug craving triggers and relapse prevention among persons with drug dependence.



**Figure 2.**



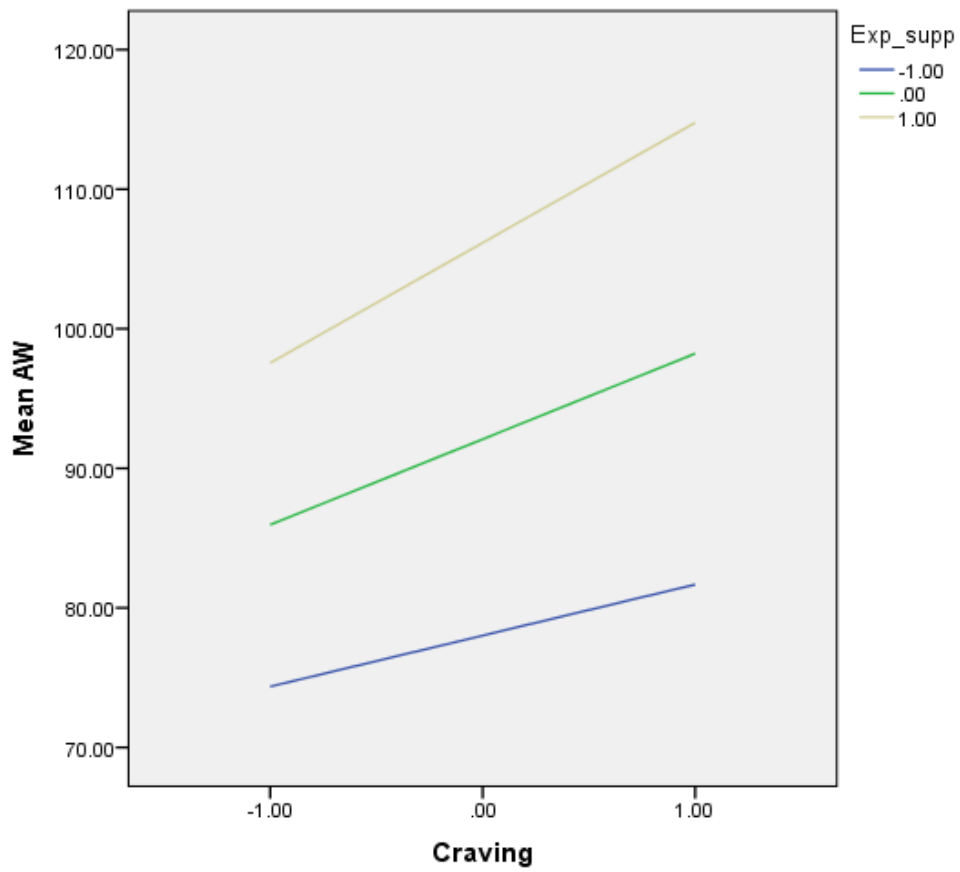
**Figure 2. Moderating Effect of Cognitive Reappraisal on Drug Craving Triggers and Relapse.**

**Table 6: Moderating Effect of Expressive Suppression on Drug Craving Triggers and Relapse (N= 300)**

Model 1 Variables	95%CI		
	B	LL	UL
Constant	92.08	90.06	94.11
Drug craving triggers	6.13	3.53	8.68
Expressive suppression	14.07	11.59	16.54
Drug craving triggers* Expressive suppression	2.47	.83	4.11
R <sup>2</sup> = .03			
p < .001			

Table above represent that expressive suppression plays a role in the relationship between craving trigger and relapse in person with drug dependence. Expressive suppression serves as a significant moderator, as indicated by the significant term. Moderating effect of expressive suppression was calculated through PROCESS MACRO Hayes (2013). The results show that there is a significant moderating effect of expressive suppression between drug craving triggers and relapse hence supporting the hypothesis 5 of current research that Expressive Suppression moderates the relationship between drug craving triggers and relapse prevention among persons with drug dependence.

**Figure 3.**



**Figure 3. Moderating Effect of Expressive Suppression on Drug Craving Triggers and Relapse**

# **CHAPTER 4**

## **DISCUSSION, CONCLUSION, IMPLICATIONS, LIMITATIONS AND RECOMMENDATIONS**

### **4.1 Discussion**

The current research aimed to investigate the impact of drug craving triggers, cognitive reappraisal, and expressive suppression relapse risk among persons with drug addiction. Furthermore, it was aimed to find out the moderating role of emotion regulation dimensions, namely cognitive reappraisal and expressive suppression between drug craving triggers and relapse risk.

First of all, the main effects of antecedents (drug craving triggers, cognitive reappraisal and expressive suppression) on the outcome variable namely relapse risk were investigated. It was hypothesized in hypothesis 1 that drug craving triggers significantly positively predict the relapse risk. The results of present study are supporting the hypotheses 1. These findings are in line with past research findings that investigated that The risk of vulnerability to relapse is significantly raised by the interaction of the cognitive component of seeking (want for the prior effects of a drug), withdrawal-induced negative affect, and a dysregulated reward system during abstinence (Koob, 2000). Drug craving is the subjective desire for drug effects felt by drug addicts or users, along with their hidden wishes for a pleasurable experience, the relief of withdrawal symptoms and the unfavorable emotions that drugs cause, and their unintentional over-attention to drug-related cues (Field et al., 2009; Washton, 1986).

Drug-related environmental triggers like drug paraphernalia, associated thoughts like thinking about another person who uses drugs, physical withdrawal

symptoms, anticipatory actions like salivation, and unfavorable emotions can all cause drug cravings. Negative mood is intimately related to desiring and may become more prominent as addiction grows and bad mood is more frequently associated with drug shortages. It takes time to overcome a drug or alcohol addiction. The symptoms of withdrawal, dependency, and the impulse to use must all be managed over time. Drug desire is a crucial therapy goal to lower the risk of relapse and enhance patients' quality of life because it is closely related to patients using drugs again (Robinson et al., 2011).

It was hypothesized in hypothesis 2 that cognitive reappraisal significantly negatively predicts the relapse risk. The results of present study are supporting the hypotheses 2. These findings are in line with past research findings that investigated that there is a significant prevalence of co-occurring substance use disorders in people with affective disorders. In the absence of affective disorders, a variety of abnormalities in the feeling and expression of emotion have also been connected to substance use problems (Cheetham, et.al, 2010). Anecdotal and empirical evidence both suggest that Drug use and unpleasant feelings are interrelated. The connection is explained by the notion that people who experience more negative affect are more likely to use drugs, food, or alcohol as coping techniques to avoid feeling these emotions (Kelly, Masterman & Young, 2011). Baker, et al. (2004) proposed an Drug use is frequently resumed for the purpose of avoiding the unpleasant effects of withdrawal, according to the emotional model of drug motivation.

Drug cravings are a significant treatment goal to reduce the risk of relapse and improve patients' quality of life because they are closely linked to people taking drugs again. Drug craving is linked to subsequent drug usage (Allen et al., 2008; Robinson et al., 2011). Studies have demonstrated in particular that desire is a strong predictor

of drug use and/or relapse following abstinence (Anderson et al., 2014; Berlin et al., 2013).

It was hypothesized in hypothesis 3 that expressive suppression significantly positively predicts the relapse risk. The results of present study are supporting the hypotheses 3. These findings are in line with past research findings that investigated that Drug use taught addicts that substances can lessen the unpleasant affective experiences that are a part of almost all withdrawal symptoms by providing negative reinforcement of those states. They stated that reactions to distress and negative affect serve as the main drivers of drug use, and they came to the conclusion that treatment strategies should work to alter the ingrained links between affect and drug responses as well as enhance proactive coping (Bakker et al., 2004). Emotion regulation is seen as a vital component of happiness and adaptive behavior. Although people employ a variety of techniques for this aim, some of these techniques are more flexible than others, according to Gafetski (2002). According to models of alcohol misuse, those who had trouble managing their emotions may have turned to alcohol as a way to cope (Sher & Grekin, 2007). An emotion that is response-focused is called expressive suppression. Expression suppression can be seen in less facial expression and inhibition of both positive and negative emotions. Individuals who employ this method of emotion regulation may have unfavorable psychological and emotional impacts. Previous studies on a sample of minors (mean age: 12.5 years) found that a significant number of those with higher problem gambling scores were smokers and alcohol drinkers (Míguez & Becoña, 2015), a finding reported in past studies (e.g., Griffiths & Sutherland, 1998). These past studies are complemented by this one, which also adds to the evidence about the connections between substance abuse and other, less-researched habits, like problematic addiction Van Rooij et al., (2014).

It was hypothesized in hypothesis 4 that cognitive reappraisal significantly moderates the relapse risk. The results of present study are supporting the hypotheses 4 these findings are in line with past research findings that investigated that antecedent-focused method of cognitive reappraisal intervenes before the full activation of emotion response tendencies has occurred. cognitive process of determining how stressful the interaction between persons and the environment is" is used to describe the cognitive reappraisal instances below: Threat assessment considers: (1) the degree of risk associated with the stressor; (2) the potential harm associated with the threat; (3) the likelihood that the threat will be met head-on; and (4) the controllability of the situation (Lazarus & Folkman, 1984). Cognitive reappraisal is an antecedent-focused technique that operates before the emotional response tendencies are completely activated. Cognitive reappraisal has received particular attention. Reappraisal refers to changing one's interpretation of a situation so as to alter emotion (Gross, 2002). Previous studies have shown that reappraisal is an efficient way to modify emotional responses, including emotional experience, expression, and psychophysiology (Gross, 1998, 2002; Ochsner and Gross, 2005; Gross and Thompson, 2007). Furthermore, compared to other regulation strategies (e.g., suppression, avoidance, drug use) cognitive reappraisal appears to be more effective and more beneficial to long-term physical health (Ehring et al., 2010; Gross, 1998, 2002; John and Gross, 2004).

Previous studies have investigated the relation between drug addiction and the use of emotion regulation strategies. The consistent findings are that early smoking initiation, enhanced smoking urges, and failures in smoking abstinence are associated with a more frequent use of maladaptive strategies (e.g., suppression); on the contrary, reduced craving to smoke, greater positive mood, and fewer depressive symptoms are

associated with a more frequent use of reappraisal strategies (Fucito et al., 2010; Szasz et al., 2012). Mostly these studies relied on self-reports to investigate the use of emotion regulation strategies and emotional responses. Although self-reports are a valuable source of information about affective experience, emotional reactions are expressed on multiple levels (Lang, 1995). Reappraisal, according to Speisman et al., (1964), is the process of reinterpreting emotionally charged stimuli in neutral language. It comprises forming uplifting or constructive interpretations of a trying situation in order to lessen pain. Reappraisal may be especially important for psychopathologies because there are beliefs about which emotions are appropriate to experience and which are not (Werner & Gross, 2010). The negative impacts of emotional stimuli were decreased by reevaluating them as well as by suppressing them. Alcohol was used as a distraction by those with poor emotion regulation, according to models of alcohol abuse, from their failure to control their emotions (Sher & Grekin, 2007). Research from the past has already shown that substance abusers are more likely to partake in sensation-seeking behaviors (Quigley & Leonard, 2000). Furthermore, it's crucial to remember that when one issue behavior gets worse, the likelihood of developing another one does too, especially in teens (Donovan & Jessor, 1985; Griffiths & Sutherland, 1998).

It was hypothesized in hypothesis 5 that expressive suppression significantly moderates the relapse risk. The results of present study are supporting the hypotheses 5. These findings are in line with past research findings that investigated that Expressive suppression comes relatively late in the emotion-generative process and principally modifies the behavioral aspect of the emotional responses, without reducing the subjective and physiological experience of negative emotion, which is not directly targeted by suppression and may thus continue to linger and accumulate



unresolved. As expressive suppression comes late in the emotion-generative process, it requires the individual to effort fully manage emotional responses as they constantly occur. These repeated efforts deplete cognitive resources to the detriment of social performances and create a sense of discrepancy between inner experience and outer expression in the individual (Higgins, 1987). The final effect of this sense of inauthenticity can lead to negative feelings about the self, making more difficult the establishment of emotionally close relationships and rather contributing to avoidant, diverted and anxious relational behaviors (Sheldon et al., 1997; John and Gross, 2004). It is possible to increase or decrease emotional response tendencies or affective states by using the well-researched regulating techniques of emotional reappraisal and suppression (Frijda, 1998). In response to the arousal of emotions, suppression stops behavior that results in emotional manifestation (Gross & Levenson, 1993).

## **4.2 Conclusion**

The results suggested that drug craving triggers and expressive suppression are a significant positive predictor of relapse risk, whereas cognitive reappraisal is a significant negative predictor of relapse risk among drug addicts. Moreover, cognitive reappraisal and expressive suppression were found moderating the relationship between drug craving triggers and relapse risk among drug addicts.

## **4.3 Implications**

1. Current research is adding to the theoretical understanding of relapse prevention from the psychological perspective, increasing the literature regarding the study variables.

2. Findings of this research may be utilized in guiding and counseling the drug addicts in rehabilitation center. The drug addicts having self-insight regarding the predictors of risk relapse may help themselves to quit the drug use / avoid risk relapse effectively
3. Creating awareness among people who are experiencing drug cravings can help them monitor their emotions and exercise cognitive reappraisal in order to prevent relapse.
4. The clinicians can formulate an appropriate intervention such as emotional regulation techniques for treating the drug addicts who are at risk of relapse.
5. Psychologists should be hired in the rehabilitation centers for the intervention to the persons at relapse risk.
6. Similarly, rehabilitation centers might assess the level of cognitive reappraisal and expressive suppression among the persons with substance use as this assessment may guide the Psychologist in addressing the relapse risk among persons with drug dependence

#### **4.4 Limitations and recommendations**

- i. Data for present study was collected from the private rehabilitation centers from Islamabad and Rawalpindi. In future studies data may be collected from rehabilitation centers in government sectors and from different provinces of the country. This will help in the generalization of the study.

- ii. The study was conducted on only male drug addicts; further research may be carried out on female population as well.
- iii. For present study quantitative method was used, however, future studies on this area may choose qualitative method to have in depth information about antecedents of relapse risk. This method maybe provides opportunities for participants to express their own ideas more effectively.
- iv. Present study was only focused on four types of drugs; future studies may examine the drug addicts of other drugs too.
- v. It is also suggested to conduct study to find out the impact of other factors like religious coping and social support as moderators.
- vi.** Similarly mediating role of affective states may be investigated in the relationship between drug craving belief and relapse risk.

## REFERENCES

- Akindipe, T., Wilson, D., & Stein, D. J. (2014). Psychiatric disorders in individuals with methamphetamine dependence: prevalence and risk factors. *Metabolic Brain Disease, 29*(2), 351–357. <https://doi.org/10.1007/s11011-014-9496-5>
- Alatawi, K. K. Z., Albalawi, K. S. D., Aljuhani, A. A. M., Albalawi, N. S. D., Alalawy, A. I., and Oyouni, A. A. A. (2022). Drug detection tests and the important factors and effects of the development of addiction. *Journal of King Saud University-Science, 34*(5), 102093
- Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review, 30*(2), 217–237. <https://doi.org/10.1016/j.cpr.2009.11.004>
- Ali, H., Bushra, R., & Aslam, N. (2011). Profile of drug users in Karachi city, Pakistan. *Eastern Mediterranean Health Journal, 17*(01), 41–45. <https://doi.org/10.26719/2011.17.1.41>
- Allen, S. S., Bade, T., Hatsukami, D., & Center, B. (2008). Craving, withdrawal, and smoking urges on days immediately prior to smoking relapse. *Nicotine & Tobacco Research, 10*(1), 35-45. <https://doi.org/10.1080/14622200701705076>
- Allsop, S. (1990). Relapse prevention and management. *Drug and Alcohol Review, 9*(2), 143-153.
- Amada, C., Siste, K., Hanafi, E., Ophinni, Y., Beatrice, E., Rafelia, V., & Sakamoto, R. (2021). Protocol: Relapse prevention group therapy via video-conferencing

for substance use disorder: protocol for a multicenter randomized controlled trial in Indonesia. *BMJ Open*, *11* (9)

American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). American Psychiatric Publishing

Anglin, M. Burke, C., Perrochet, B., Stamper, E., & Dawud-Noursi, S. (2000). History of the methamphetamine problem. *Journal of Psychoactive Drugs*, *32*(2), 137-141.

Annis, H. M. (1986). A Relapse Prevention Model for Treatment of Alcoholics. *Treating Addictive Behaviors*, 407-433. [https://doi.org/10.1007/978-1-4613-2191-0\\_21](https://doi.org/10.1007/978-1-4613-2191-0_21)

Azmi, A. A., Hussin, H., Ishak, S. I. D., & DaudFhiri, N. S. (2018). Drug Addicts: Psychosocial Factor Contributing to Relapse. *MATEC Web of Conferences*, *150*, 05097. <https://doi.org/10.1051/mateconf/201815005097>

Baker, T. B., Piper, M. E., McCarthy, D. E., Majeskie, M. R., & Fiore, M. C. (2004). Addiction Motivation Reformulated: An Affective Processing Model of Negative Reinforcement. *Psychological Review*, *111*(1), 33-51. <https://doi.org/10.1037/0033-295x.111.1.33>

Bakker, A. B., Demerouti, E., & Verbeke, W. (2004). Using the job demands-resources model to predict burnout and performance. *Human Resource Management*, *43*(1), 83-104.

Bericat, E. (2016). The sociology of emotions: Four decades of progress. *Current Sociology*, *64*(3), 491-513. [doi.org/10.1177/0011392115588355](https://doi.org/10.1177/0011392115588355)

- Berking, M., & Lukas, C. A. (2015). The Affect Regulation Training (ART): a transdiagnostic approach to the prevention and treatment of mental disorders. *Current Opinion in Psychology*, 3, 64–69. <https://doi.org/10.1016/j.copsyc.2015.02.002>
- Berking, M., & Whitley, B. (2014). *Affect Regulation Training: A Practitioners' Manual*. Berlin: Springer. doi: 10.1007/978-1-4939-1022-9
- Berking, M., Wupperman, P., Reichardt, A., Pejic, T., Dippel, A., & Znoj, H. (2008). Emotion-regulation skills as a treatment target in psychotherapy. *Behaviour research and therapy*, 46(11), 1230-1237
- Berlin, I., Singleton, E. G., & Heishman, S. J. (2013). Predicting smoking relapse with a multidimensional versus a single-item tobacco craving measure. *Drug and alcohol dependence*, 132(3), 513-520
- Berman, S. M., London, E. D., Simon, S. L., Mandelkern, M. A., Lichtman, A. M., Bramen, J., & Ling, W. (2004). Mood disturbances and regional cerebral metabolic abnormalities in recently abstinent methamphetamine abusers. *Archives of general psychiatry*, 61(1), 73-84
- Bishop, S. (1999). *Epidemiology and treatment of methamphetamine abuse in California: A regional report*. Los Angeles, CA: National Evaluation and Technical Assistance Center.
- Blascovich, J., & Mendes, W. B. (2010). Social psychophysiology and embodiment. In S. T. Fiske, D. T. Gilbert, & G. Lindzey (Eds.), *Handbook of social psychology* (194–227). John Wiley & Sons, Inc. <https://doi.org/10.1002/9780470561119.socpsy001006>

- Brecht, M. L., Von Mayrhauser, C., & Anglin, M. D. (2000). Predictors of relapse after treatment for methamphetamine use. *Journal of Psychoactive Drugs*, 32(2), 211-220.
- Brecht, M.-L., O'Brien, A., von Mayrhauser, C., & Anglin, M. D. (2004). Methamphetamine use behavior and gender differences. *Addictive Behaviors*, 29, 89- 106
- Brewer, J. A., Elwafi, H. M., & Davis, J. H. (2013). Craving to quit: psychological models and neurobiological mechanisms of mindfulness training as treatment for addictions. *Psychology of Addictive Behaviors*, 27(2), 366
- Brunswick, K. A., Penix, T. M., & O'Donohue, W. (2002). Relapse prevention. *Empirically supported techniques of cognitive behavioral treatment: A step-by-step guide for clinicians* New York: Wiley.
- Bukhtawer, N., Muhammad, S., & Iqbal, A. (2014). Personality traits and self-regulation: A comparative study among current, relapse and remitted drug abuse patients. *Health*, 6 (12), 1368
- Campos, J. J., Frankel, C. B., & Camras, L. (2004). On the nature of emotion regulation. *Child development*, 75(2), 377-394
- Carter, B. L., & Tiffany, S. T. (1999). Meta-analysis of cue-reactivity in addiction research. *Addiction*, 94(3), 327–340. <https://doi.org/10.1046/j.1360-0443.1999.9433273.x>

- Cashwell, C. S., Giordano, A. L., King, K., Lankford, C., & Henson, R. K. (2017). Emotion regulation and sex addiction among college students. *International Journal of Mental Health & Addiction, 15*, 16-27.
- Cavicchioli, M., Movalli, M., Vassena, G., Ramella, P., Prudenziati, F., & Maffei, C. (2019). The therapeutic role of emotion regulation and coping strategies during a stand-alone DBT skills training program for alcohol use disorder and concurrent substance use disorders. *Addictive behaviors, 98*, 106035
- Chang, L. Alicata, D. Ernst, T. & Volkow, N. (2007). Structural and metabolic brain changes in the striatum associated with methamphetamine abuse. *Addiction 102*(1):16–32,
- Cheetham, A., Allen, N. B., Yücel, M., & Lubman, D. I. (2010). The role of affective dysregulation in drug addiction. *Clinical psychology review, 30*(6), 621-634
- Cherland, E. (2012). The polyvagal theory: Neurophysiological foundations of emotions, attachment, communication, self-regulation. *Journal of the Canadian Academy of Child and Adolescent Psychiatry, 21*(4), 313
- Chomchai, C., & Chomchai, S. (2015). Global patterns of methamphetamine use. *Current opinion in psychiatry, 28*(4), 269-274
- Cooney, N. L. Litt, M.D. Morse P.A. Bauer, L.O. & Gaupp, L. (1997). Alcohol cue reactivity, negative-mood reactivity, and relapse in treated alcoholic men. *J Abnorm Psychol. 106*(2):243–50
- Cornelius, R. R. (1991). Gregorio Marafion's two-factor theory of emotion. *Personality and Social Psychology Bulletin, 17*(1), 65-69.



- Daley, D. C., Marlatt, G. A., & Douaihy, A. (2011). Relapse prevention. In: Lowinson JH, Ruiz, eds. *Substance abuse: A comprehensive textbook*, 5th ed. Philadelphia: Lippincott, Williams & Wilkins, pp. 633-647.
- Davidson, R. J., Putnam, K. M., & Larson, C. L. (2000). Dysfunction in the neural circuitry of emotion regulation--a possible prelude to violence. *science*, 289(5479), 591-594.
- Dillon, D. G., Ritchey, M., Johnson, B. D., & LaBar, K. S. (2007). Dissociable effects of conscious emotion regulation strategies on explicit and implicit memory. *Emotion*, 7(2), 354.
- Dillon, D. G., Ritchey, M., Johnson, B. D., & LaBar, K. S. (2007). Dissociable effects of conscious emotion regulation strategies on explicit and implicit memory. *Emotion*, 7(2), 354
- Dingle, G. A., Neves, D., Alhadad, S. S. J., & Hides, L. (2018). Individual and interpersonal -emotion regulation among adults with substance use disorders and matched controls. *British Journal of Clinical Psychology*, 57, 186-202.
- Docherty, M., Lieman, A., & Gordon, B. L. (2022). Improvement in Emotion Regulation While Detained Predicts Lower Juvenile Recidivism. *Youth Violence and Juvenile Justice*, 20(2), 164-183
- Donovan, J. E., & Jessor, R. (1985). Structure of problem behavior in adolescence and young adulthood. *Journal of consulting and clinical psychology*, 53(6), 890
- Dorison, C. A., Wang, K., Rees, V. W., Kawachi, I., Ericson, K. M., & Lerner, J. S. (2020). Sadness, but not all negative emotions, heightens addictive substance use. *Proceedings of the National Academy of Sciences*, 117(2), 943-949.

- Drummond, D. C., Litten, R. Z., Lowman, C., & Hunt, W. A. (2000). Craving research: future directions. *Addiction*, *95*(Suppl2), 247-255.
- Drummond, D., Tiffany, S. T., Glautier, S. E., & Remington, B. E. (1995). *Addictive behaviour: Cue exposure theory and practice*. John Wiley & Sons.
- Drummond, G. B., Ray, D. C., Wilkinson, E., & Beckett, G. J. (1995). Relationship of admission thyroid function tests to outcome in critical illness. *Anaesthesia*, *50*(12), 1022-1025.
- Edwards, G., & Gross, M. M. (1976). Alcohol dependence: provisional description of a clinical syndrome. *British medical journal*, *1*(6017), 1058
- Ehring, T., Tuschen-Caffier, B., Schnülle, J., Fischer, S., & Gross, J. J. (2010). Emotion regulation and vulnerability to depression: spontaneous versus instructed use of emotion suppression and reappraisal. *Emotion*, *10*(4), 563
- Eisenberg, N., & Spinrad, T. L. (2004). Emotion-related regulation: Sharpening the definition. *Child development*, *75*(2), 334-339
- Eisenberg, N., Guthrie, I. K., Fabes, R. A., Shepard, S., & Losoya, S. (2000). Prediction of elementary school children's externalizing problem behaviors from attentional and behavioral regulation and negative emotionality. *Child development*, *71*(5), 1367-1382
- Ekendahl, M., & Karlsson, P. (2022). A matter of craving—An archeology of relapse prevention in Swedish addiction treatment. *International Journal of Drug Policy*, *101*, 103575

- Ernst, T., Chang, L., Leonido-Lee, M., & Speck, O. (2000). Evidence for long-term neurotoxicity associated with methamphetamine abuse: a 1H MRS study. *Neurology* 54(6):1344-1349.
- Estevez, A., Jauregui, P., Sanchez-Marcos, I., Lopez-Gonzalez, H., & Griffiths, M. D. (2017). Attachment and emotion regulation in substance addictions and behavioral addictions. *Journal of Behavioral Addictions*, 6, 534-544.
- Field, M., Munafo, M. R., & Franken, I. H. A. (2009). A meta-analytic investigation of the relationship between attentional bias and subjective craving in substance abuse. *Psychol. Bull.* 135, 589–607. doi: 10.1037/a0015843.
- Foo, Y. C., Tam, C. L., & Lee, T. H. (2012). Family factors and peer influence in drug abuse: a study in rehabilitation center. *International Journal of Collaborative Research on Internal Medicine & Public Health*, 4(3), 189
- Ford, B. Q., & Gross, J. J. (2019). Why beliefs about emotion matter: An emotion-regulation perspective. *Current Directions in Psychological Science*, 28(1), 74-81.
- Frijda, N. H. (1988). The laws of emotion. *Am Psychol*, 43(5),349–58.
- Fucito, L. M., Juliano, L. M., & Toll, B. A. (2010). Cognitive reappraisal and expressive suppression emotion regulation strategies in cigarette smokers. *Nicotine & Tobacco Research*, 12(11), 1156-1161.
- Garnefski, N., Van Den Kommer, T., Kraaij, V., Teerds, J., Legerstee, J., & Onstein, E. (2002). The relationship between cognitive emotion regulation strategies and emotional problems: Comparison between a clinical and a non-clinical

sample. *European Journal of Personality*, 16(5), 403–420. <https://doi.org/10.1002/per.458>

Giordano, A. L. (2021). *A Clinical Guide to Treating Behavioral Addictions*. Springer Publishing Company.

Goleman, D. P. (1995). *Emotional intelligence: Why it can matter more than IQ for character, health and lifelong achievement*. New York: Bantam Books.

Golestan, S., Abdullah, H. B., Ahmed, N. B., & Anjomshoa, A. (2010). Environmental factors influencing relapse behavior among adolescent opiate users in Kerman (a province in Iran). *Glob J Hum Soc Sci*, 10(4), 71-6.

Gordon, S. L. (1990). Social structural effects on emotions. *Research agendas in the sociology of emotions*, 145-179.

Gorski, T. T., & Miller, M. (1982). *Counseling for relapse prevention*. Independence Press.

Gossop, M., Stewart, D., Browne, N., & Marsden, J. (2002). Factors associated with abstinence, lapse or relapse to heroin use after residential treatment: protective effect of coping responses. *Addiction*, 97(10), 1259-1267.

Grandey, A. A. (2003). When “the show must go on”: Surface acting and deep acting as determinants of emotional exhaustion and peer-rated service delivery. *Academy of management Journal*, 46(1), 86-96.

Griffiths, M. D. (1998). Internet addiction: Does it really exist? In J. Gackenbach (Ed.), *Psychology and the Internet: Intrapersonal, Interpersonal and Transpersonal Applications*. 61-75. New York: Academic Press.

- Gross, J. J. & Levenson, R.W (1993). Emotional suppression: physiology, self-report, and expressive behavior. *J Pers Soc Psychol*, 64(6), 970–86.
- Gross, J. J. (1998). Antecedent- and response-focused emotion regulation: divergent consequences for experience, expression, and physiology. *J Pers Soc Psychol*, 74(1), 224–37.
- Gross, J. J. (1998). The emerging field of emotion regulation: an integrative review. *Rev. Gen. Psychol.* 2, 271–299. doi: 10.1037/1089-2680.2.3.271.
- Gross, J. J. (2002). Emotion regulation: affective, cognitive, and social consequences. *Psychophysiology* 39, 281–291. doi: 10.1017/S0048577201393198.
- Gross, J. J. (2011). *Handbook of Emotion Regulation, First Edition*. Guilford Press.
- Gross, J. J. (2014). Emotion regulation: Conceptual and empirical foundations. *Handbook of emotion regulation*, 2, 3-20.
- Gross, J. J. (2015). Emotion regulation: current status and future prospects. *Psychol. Inq.* 26, 1–26.
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85(2), 348-362.
- Gross, J. J., Carstensen, L. L., Pasupathi, M., Tsai, J., Gotestam-Skorpen, C., & Hsu, A. Y. C. (1997). Emotion and aging: experience, expression, and control. *Psychol. Aging* 12, 590–599. doi: 10.1037/0882-7974.12.4.590.

- Gupta S, & Kulhara P. (2007). Cellular and molecular mechanisms of drug dependence: An overview and update. *Indian J Psychiatry*, 49(2), 85–90.
- Hawke, J., Jainchill, N., & De Leon, G. (2000). Adolescent amphetamine users in treatment: Client profiles and treatment outcomes. *Journal of Psychoactive Drugs*, 23(1), 95-105.
- Hayes, J. P., Morey, R. A., Petty, C. M., Seth, S., Smoski, M. J., McCarthy, G., & LaBar, K. S. (2010). Staying cool when things get hot: Emotion regulation modulates neural mechanisms of memory encoding. *Frontiers in human neuroscience*, 4, 230
- Heilman, R.M., Crisan, L.G., Houser, D., Miclea, M., & Miu, A.C. (2010). Emotion regulation and decision making under risk and uncertainty, *Emotion*, 10, 257–265.
- Hendershot, C. S., Witkiewitz, K., George, W. H., & Marlatt, G. A. (2011). Relapse prevention for addictive behaviors. *Substance Abuse Treatment, Prevention, and Policy*, 6(1), 17
- Higgins, E. T. (1987). Self-discrepancy: a theory relating self and affect. *Psychol. Rev.* 94, 319–340. doi: 10.1037//0033-295x.94.3.319
- Hill, A. J. (2007). The psychology of food craving: Symposium on ‘Molecular mechanisms and psychology of food intake’. *Proceedings of the Nutrition Society*, 66(2), 277-285.

- Hochschild, A. (1983). Comment on Kemper's "Social constructionist and positivist approaches to the sociology of emotions." *American Journal of Sociology*, 89(2), 432–434. <https://doi.org/10.1086/227874>.
- Hofer, M., Burkhard, L., & Allemand, M. (2015). Age differences in emotion regulation during a distressing film scene. *J. Media Psychol.* 27, 47–52. doi: 10.1027/1864-1105/a000134.
- Hong, P., Li, S., Yu, Y., & Deng, Q. (2021). How to Enhance the Motivation for Drug Detoxification: Consciousness Guidance and Behaviour Restriction of Family Intergenerational Ethics. *International Journal of Environmental Research and Public Health*, 19(1), 366
- Isbell, H., Jellinek, E. M., Lundquist, G., Tiebout, H. M., Duchene, H., Mardones, J., & MacLeod, L. D. (1955). The “Craving” for Alcohol; A Symposium by Members of the WHO Expert Committees on Mental Health and on Alcohol. *Quarterly journal of studies on alcohol*, 16(1), 34-66
- Jabeen, S., Raja, M. S., Saeed, S., Zafar, M. M., Ghani, R. A., Mahmood, A., Fiaz, M., Shiaq, P. A., Baig, S. M., Naqvi, S. M. S., & Raja, G. K. (2016). Factors Influencing Vulnerability Towards Heroin Addiction in a Pakistani Cohort. *Pakistan Journal of Zoology*, 49(1), 95–99. <https://doi.org/10.17582/journal.pjz/2017.49.1.95.99>
- Jarymowicz, M. T., & Imbir, K. K. (2015). Toward a human emotions taxonomy (based on their automatic vs. reflective origin). *Emotion Review*, 7(2), 183–188. <https://doi.org/10.1177/1754073914555923>

- Jellinek, E. M. (1960). Alcoholism, a genus and some of its species. *Canadian Medical Association Journal*, 83(26), 1341
- John, O. P., & Gross, J. J. (2004). Healthy and unhealthy emotion regulation: personality processes, individual differences and life span development. *J. Pers.* 72, 1301–1333. doi: 10.1111/j.1467-6494.2004.00298.x.
- Johnson, S. L., Tharp, J. A., Peckham, A. D., Carver, C. S., & Haase, C. M. (2017). A path model of different forms of impulsivity with externalizing and internalizing psychopathology: Towards greater specificity. *British Journal of Clinical Psychology*, 56(3), 235-252.
- Joseph, J. K., Ambady, K. G., Dev, K. A., Hsu, E. B., & Pradeepkumar, A. P. (2020). Pilgrim satisfaction in a mass religious gathering: study from Sabarimala destination, Kerala state of India. *Journal of religion and health*, 59, 1713-1727
- Kamper-DeMarco, K. E., Shankman, J., Fearey, E., Lawrence, H. R., & Schwartz-Mette, R. A. (2020). Linking social skills and adjustment. *In Social Skills Across the Life Span*. <https://doi.org/10.1016/b978-0-12-817752-5.00003-2>
- Kassel, J. D., & Shiffman, S. (1992). What can hunger teach us about drug craving? A comparative analysis of the two constructs. *Advances in Behaviour Research and Therapy*, 14(3), 141-167.
- Katana, M., Röcke, C., Spain, S. M., & Allemand, M. (2019). Emotion regulation, subjective wellbeing, and perceived stress in daily life of geriatric nurses. *Frontiers in Psychology*, 10, 1097. <https://doi.org/10.3389/fpsyg.2019.01097>.



- Katehakis, A. (2009). Affective neuroscience and the treatment of sexual addiction. *Sexual Addiction & Compulsivity, 16*, 1-31.
- Kelly, A. B., Masterman, P. W., & Young, R. M. (2011). Negative mood, implicit alcohol-related memory, and alcohol use in young adults: The moderating effect of alcohol expectancy. *Addictive Behaviors, 36*(1-2), 148-151.
- Killinger, B. (2006). The workaholic breakdown syndrome. *Research companion to working time and work addiction, 61-88*
- Kiluk, B. D., Nich, C., Babuscio, T., & Carroll, K. M. (2010). Quality versus quantity: acquisition of coping skills following computerized cognitive-behavioral therapy for substance use disorders. *Addiction, 105*(12), 2120-2127. doi: 10.1111/j.1360-0443.2010.03076.x
- Knight, M., & Ponzio, A. (2013). The effects of emotion regulation on explicit memory depend on strategy and testing method. *Emotion, 13*(6), 1041
- Koob, G. F. (2000). Neurobiology of addiction: toward the development of new therapies. *Annals of the New York Academy of Sciences, 909*(1), 170-185.
- Koole, S. L. (2009). The psychology of emotion regulation: an integrative review. *Cogn. Emot. 23*, 4–41. doi: 10.1080/02699930802619031.
- Kozlowski, L. T., & Wilkinson, D. A. (1987). Use and misuse of the concept of craving by alcohol, tobacco, and drug researchers. *British Journal of Addiction, 82*, 31–36.
- Lang, P. J. (1995). The emotion probe: studies of motivation and attention. *Am. Psychol. 50*, 372–385. doi: 10.1037/0003-066X.50.5.372

- Large, M., Sharma, S., Compton, M. T., Slade, T., & Nielssen, O. (2011). Cannabis Use and Earlier Onset of Psychosis. *Archives of General Psychiatry*, 68(6), 555. <https://doi.org/10.1001/archgenpsychiatry.2011.5>
- Larimer, M. E., Palmer, R. S., & Marlatt, G. A. (1999). Relapse prevention: An overview of Marlatt's cognitive-behavioral model. *Psychosocial treatments*, 23(2) 151-60
- Larsen, R. J. (2000). Toward a science of mood regulation. *Psychol. Inq.* 11, 129–141. doi: 10.1207/s15327965pli1103\_01.
- Lazarus, R. S. (2000). Cognitive-motivational-relational theory of emotion. In Y. L. Hanin (Ed.), *Emotions in sport* (39–64). Champaign, IL: Human Kinetics
- Lazarus, R., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- Liu, C. J. (2020). Development and Validation of the Volitional Components Inventory for Drug Rehabilitation. *Journal of Drug Issues*, 50(1), 89-102.
- Lorenz, H. S., Stuebing, M. D., Nambeye, C., Lungu, G., & Littlefield, L. M. (2022). Substance use treatment using cultural arts and 12 steps: Curriculum training and community-led implementation in Zambia. *Addictive Behaviors Reports*, 15, 100424. <https://doi.org/10.1016/j.abrep.2022.100424>
- Ma, B., Mei, D., Wang, F., Liu, Y., & Zhou, W. (2019). Cognitive enhancers as a treatment for heroin relapse and addiction. *Pharmacological research*, 141, 378-383

- Maglione, M., Chao, B., & Anglin, M.D. (2000). Correlates of outpatient drug treatment drop-out among methamphetamine users. *Journal of Psychoactive Drugs*, 32(2), 221-228.
- Malik, A. A., Nawaz, S., Tahir, A. A., Ahmed, S., Ashraf, S., Hanif, N., & Malik, M. R. (2012). Knowledge and awareness of harmful effect of substance abuse among users and non-users: A cross-sectional study from Bari Imam. *The Journal of the Pakistan Medical Association*, 62(4), 412- 415
- Marlatt, G. A., & Gordon, J. R. (1985). *Relapse prevention: Maintenance strategies in the treatment of addictive behaviors* New York: Guilford Press
- Marlatt, G. A., Gordon, J. R. (1980) *Determinants of relapse: Implications for the maintenance of behavior change. Behavioral Medicine: Changing health lifestyles*. New York: Brunner/Mazel, 410-452.
- Martínez-González, J. M. & Verdejo-García A. (2011). Creencias básicas adictivas y craving. *Adicciones*, 23, 339- 352. doi:10.20882/adicciones.166.
- Masood, S., & Sahar, N. (2014). An exploratory research on the role of family in youth's drug addiction. *Health Psychology and Behavioral Medicine*. 2(1), 820-832.
- Mauk, K. L. (2010). *Gerontological Nursing: Competencies for Care*. Sudbury, MA: Jones and Bartlett Publishers.
- Mc Donnell, E., Hevey, D., McCauley, M., & Ducray, K. N. (2018). Exploration of associations between early maladaptive schemas, impaired emotional

regulation, coping strategies and resilience in opioid dependent poly-drug users. *Substance use & misuse*, 53(14), 2320-2329

McCann, U. D., Wong, D. F., Yokoi, F., Villemagne, V., Dannals, R. F., & Ricaurte, G. A. (1998). Reduced Striatal Dopamine Transporter Density in Abstinent Methamphetamine and Methcathinone Users: Evidence from Positron Emission Tomography Studies with [11C]WIN-35,428. *The Journal of Neuroscience*, 18(20), 8417–8422. <https://doi.org/10.1523/jneurosci.18-20-08417.1998>

McGrath, J., Welham, J., Scott, J., Varghese, D., Degenhardt, L., Hayatbakhsh, M. R., Alati, R., Williams, G. M., Bor, W., & Najman, J. M. (2010). Association Between Cannabis Use and Psychosis-Related Outcomes Using Sibling Pair Analysis in a Cohort of Young Adults. *Archives of General Psychiatry*, 67(5), 440. <https://doi.org/10.1001/archgenpsychiatry.2010.6>

McKay, J. R. (2004). Negative Mood, Craving, and Alcohol Relapse: Can Treatment Interrupt the Process? *Curr Psychiatry Rep.* 13(6):431–433.

Miguez, M. C., & Becoña, E. (2015). Do cigarette smoking and alcohol consumption associate with cannabis use and problem gambling among Spanish adolescents? *Adicciones*, 27, 8–16.

Milivojevic, V., & Sinha, R. (2018). Central and peripheral biomarkers of stress response for addiction risk and relapse vulnerability. *Trends in molecular medicine*, 24(2), 173-186.

Miller, W. R., & Harris, R. J. (2000). A simple scale of Gorski's warning signs for relapse. *Journal of Studies on Alcohol*, 61, 759-765.

- Mooney, L., Dolezal, B. A., Chudzynski, J. O. Y., Dickerson, D., Rawson, R. A., Garfinkel, A., & Cooper, C. B. (2014). Exercise training improves heart rate variability after methamphetamine dependency. *Medicine and science in sports and exercise*, 46(6), 1057.
- Moos, R. H., Brennan P. L., Fondacaro M. R. , Moos, B. S. (1990). Approach and avoidance coping responses among older problem and non-problem drinkers. *Psychol Aging*. 5(1):31–40.
- Morgenstern, J., & Longabaugh, R. (2000). Cognitive-behavioral treatment for alcohol dependence: a review of evidence for its hypothesized mechanisms of action. *Addiction*, 95(10), 1475–1490. <https://doi.org/10.1046/j.1360-0443.2000.951014753.x>
- Naqvi, I. (2020). Psychological Determinants of Relapse Prevention. *Pakistan Journal of Psychological Research*, 35(2)
- National Institute on Drug Abuse [NIDA]. (2002). Methamphetamine abuse and addiction. NIDA Research Report Series DHHS Publication No. 02-4210.
- National Institute on Drug Abuse. (2016). Understanding drug use and addiction.US: National Institute of Health. National Mental Health Commission. *The National Review of Mental Health Neuroscience*, 11, 1–24.
- Nezlek, J. B., & Kuppens, P. (2008). Regulating positive and negative emotions in daily life. *Journal of Personality*, 76(3), 561–580. <https://doi.org/10.1111/j.1467-6494.2008.00496.x>

- Niaura, R. S., Rohsenow, D. J., Binkoff, J. A., Monti, P. M., Pedraza, M., & Abrams, D. B. (1988). Relevance of cue reactivity to understanding alcohol and smoking relapse. *Journal of abnormal psychology, 97*(2), 133
- Nilsson, E., & Kristenson, M. (2010). Psychological factors related to physical, social, and mental dimensions of the SF-36: a population-based study of middle-aged women and men. *Patient Related Outcome Measures, 153-162*.
- Obert, J. L, McCann, M. J, Marinelli-Casey, P., Weiner, A., Minsky, S., Brethen, P., & Rawson, R. (2000). The Matrix Model of outpatient stimulant abuse treatment: History and description. *Journal of Psychoactive Drugs, 32*(2), 157-164.
- Ochsner, K. N., & Gross, J. J. (2007). "The neural architecture of emotion regulation," in *Handbook of Emotion Regulation, ed. J. J. Gross*. New York, NY: Guilford Press, 87–109.
- Ong, E., & Thompson, C. (2019). The importance of coping and emotion regulation in the occurrence of suicidal behavior. *Psychological reports, 122*(4), 1192-1210.
- Osborne, G. B., & Fogel, C. (2008). Understanding the motivations for recreational marijuana use among adult Canadians. *Substance use & misuse, 43*(3-4), 539-572
- Panenka, W. J. Procyshyn, R. M. Lecomte, T. (2013). Methamphetamine use: A comprehensive review of molecular, preclinical and clinical findings. *Drug Alcohol Depend, 129*, 167-79.

- Perkins, K. A. (2009). Does smoking cue-induced craving tell us anything important about nicotine dependence?. *Addiction, 104*(10), 1610-1616.
- Preston, K. L., Vahabzadeh, M., Schmittner, J., Lin, J. L., Gorelick, D. A., & Epstein, D. H. (2009). Cocaine craving and use during daily life. *Psychopharmacology, 207*, 291-301.
- Price, C. J., & Hooven, C. (2018). Interoceptive awareness skills for emotion regulation: Theory and approach of mindful awareness in body oriented therapy (MABT). *Frontiers in Psychology, 9*, 798
- Prosek, E. A., Giordano, A. L., Woehler, E. S., Price, E., & McCullough, R. (2018). Differences in emotion dysregulation and mental health symptoms among illicit substance users and nonusers. *Substance Use and Misuse, 53*, 1915-1918.
- Quigley, B. M., & Leonard, K. E. (2000). Alcohol and the continuation of early marital aggression. *Alcoholism: Clinical and Experimental Research, 24*(7), 1003-1010.
- Raccanello, D., Brondino, M., & Moè, A. (2022). Malleability beliefs shape mathematics-related achievement emotions: The mediating role of emotion regulation in primary school children. *Learning and Individual Differences, 97*, 102177.
- Rahman, M. M., Rahaman, M. M., Hamadani, J. D., Mustafa, K., & Shariful Islam, S. M. (2016). Psycho-social factors associated with relapse to drug addiction in Bangladesh. *Journal of Substance Use, 21*(6), 627-630.

- Ramsewak, S., Putteeraj, M., & Somanah, J. (2020). Exploring substance use disorders and relapse in Mauritian male addicts. *Heliyon*, 6(8)
- Rawson, R., Huber, A., Brethen, P., Obert, J., Gulati, V., Shoptaw, S., & Ling, W. (2000). Methamphetamine and cocaine users: Differences in characteristics and treatment retention. *Journal of Psychoactive Drugs*, 32(2), 233-238.
- Rehm, J., Peacock, A., Leung, J., Larney, S., Colledge, S., Hickman, M., & Degenhardt, L. (2018). Global statistics on alcohol, tobacco and illicit drug use. *Addiction*, 113(10), 1905-1926.
- Ricuarde, G.A., McCann, U. D. (1992). Neurotoxic amphetamine analogues: Effects in monkeys and implications for humans. *Annals of the New York Academy of Sciences*, 648, 371-382.
- Riediger, M., & Luong, G. (2015). From adolescence to old age: developmental perspectives on the extended process model of emotion regulation. *Psychol. Inq.* 26, 99–107.
- Riediger, M., Schmiedek, F., Wagner, G. G., & Lindenberger, U. (2009). Seeking pleasure and seeking pain differences in prohedonic and contra-hedonic motivation from adolescence to old Age. *Psychol. Sci.* 20, 1529–1535. doi: 10.1111/j.1467-9280.2009.02473.
- Robinson, T. E. Saunders, B. T., & (2011). Individual variation in the motivational properties of cocaine. *Neuropsychopharmacology*, 36(8), 1668-1676.



- Robinson, T. E., & Berridge, K. C. (1993). The neural basis of drug craving: an incentive-sensitization theory of addiction. *Brain research reviews*, *18*(3), 247-291.
- Robinson, T. E., & Berridge, K. C. (2001). Incentive-sensitization and addiction. *Addiction*, *96*(1), 103-114.
- Robinson, T. E., & Saunders, B. T. (2011). Individual variation in the motivational properties of cocaine. *Neuropsychopharmacology*, *36*(8), 1668-1676.
- Röcke, C., Brose, A., & Kuppens, P. (2018). Emotion dynamics in older age. *Emotion regulation: A matter of time*, 179-207.
- Rosenberg, H. (2009). Clinical and laboratory assessment of the subjective experience of drug craving. *Clinical Psychology Review*, *29*, 519–534.
- Rusyniak, D. E. (2013). Neurologic manifestations of chronic methamphetamine abuse. *Psychiatr Clin North Am.* *36*, 261-75.
- Sampedro-Piquero, P., de Guevara-Miranda, D. L., Pavón, F. J., Serrano, A., Suárez, J., de Fonseca, F. R., & Castilla-Ortega, E. (2019). Neuroplastic and cognitive impairment in substance use disorders: a therapeutic potential of cognitive stimulation. *Neuroscience & Biobehavioral Reviews*, *106*, 23-48.
- Sazhin, D., Frazier, A. M., Haynes, C. R., Johnston, C. R., Chat, I. K. Y., Dennison, J. B., Smith, D. V. (2020). The role of social reward and Corticostriatal connectivity in substance use. *Journal of psychiatry and brain science*, *5*.

- Scheibe, S., Sheoppes, G., & Staudinger, U. M. (2015). Distract or reappraise Age-related differences in emotion-regulation choice. *Emotion* 15, 677–681. doi: 10.1037/a0039246.
- Schweinsburg, A. D. Brown, S. A. & Tapert, S. F. (2008). The influence of cannabis use on neurocognitive functioning in adolescents. *Current Drug Abuse Reviews*, 1, 99-111.
- Scott, B. A., & Barnes, C. M. (2011). A multilevel field investigation of emotional labor, affect, work withdrawal, and gender. *Acad. Manag. J.* 54, 116–136. doi: 10.5465/amj.2011.59215086.
- Sedler, M., Volkow, N. D., Chang, L., Wang, G. J., Fowler, J. S., Franceschi, D., & Logan, J. (2001). Loss of dopamine transporters in methamphetamine abusers recovers with protracted abstinence. *Journal of Neuroscience*, 21(23), 9414-9418.
- Sehgal, I. (2010). National Anti-Narcotics Policy 2010. *Defence Journal*, 14(4), 116.
- Serre, F., Fatseas, M., Denis, C., Swendsen, J., & Auriacombe, M. (2018). Predictors of craving and substance use among patients with alcohol, tobacco, cannabis or opiate addictions: Commonalities and specificities across substances. *Addictive Behaviors*, 83, 123-129.
- Seyedfatemi, N., Peyrovi, H., & Jalali, A. (2014). Relapse experience in Iranian opiate users: a qualitative study. *International journal of community based nursing and midwifery*, 2(2), 85.
- Sheldon, K. M., Ryan, R. M., Rawsthorne, L. J., & Ilardi, B. (1997). Trait self and true self: cross-role variation in the big-five personality traits and its relations

with psychological authenticity and subjective well-being. *J. Pers. Soc. Psychol.* 73, 1380–1393. doi: 10.1037//0022-3514.73.6.1380

Shiffman, S. (2000). Comments on craving. *Addiction*, 95(2), S171–S1795

Shipman, K. L., & Zeman, J. (2001). Socialization of children's emotion regulation in mother– child dyads: A developmental psychopathology perspective. *Development and Psychopathology*, 13(2), 317-336. <https://doi.org/10.1017/S0954579401002073>

Siegel, L. (1989). *Laughing matters: Comic tradition in India*. Motilal Banarsidass

Silverman, M. J. (2021). Music-based emotion regulation and healthy and unhealthy music use predict coping strategies in adults with substance use disorder: A cross-sectional study. *Psychology of Music*, 49(3), 333-350.

Simon, S., Richardson, K., Dacey, J., Glynn, S., Domier, C., Rawson, R. & Ling, W. (2002). A comparison of patterns of methamphetamine and cocaine use. *Journal of Addictive Diseases*, 21(1), 35-44.

Sinha, R., Garcia, M., Paliwal, P., Kreek, M. J., & Rounsaville, B. J. (2006). Stress-induced cocaine craving and hypothalamic–pituitary– adrenal responses are predictive of cocaine relapse outcomes. *Archives of General Psychiatry*, 63, 324–331.

Solomon, R. L., & Corbit, J. D. (1974). An opponent-process theory of motivation: I. Temporal dynamics of affect. *Psychological review*, 81(2), 119.

Solowij, N. (2002). Cognitive functioning of long-term heavy cannabis users seeking treatment. *Journal of the American Medical Association*, 287, 1123-1131

- Speisman, J. C., Lazarus, R. S., Mordkoff, A., & Davison, L. (1964). Experimental Reduction of Stress Based on Ego-Defense Theory. *J Abnorm Psychol*, 68, 367–80.
- Stewart, J., de Wit, H., & Eikelboom, R. (1984). The role of unconditioned and conditioned drug effects in the self-administration of opiates and stimulants. *Psychological Review*, 91, 251–268.
- Sui, Y., Thompson, P. M., Hayashi, K. M., Simon, S. L., Geaga, J. A., Hong, M. S., & London, E. D. (2004). Structural abnormalities in the brains of human subjects who use methamphetamine. *Journal of Neuroscience*, 24(26), 6028-6036.
- Svanberg, J. (2018). The psychology of addiction. London: Routledge. doi.org/10.4324/9781315462653.
- Sweitzer, M. M., Denlinger, R. L., & Donny, E. C. (2012). Dependence and withdrawal-induced craving predict abstinence in an incentive-based model of smoking relapse. *Nicotine & Tobacco Research*, 15(1), 36-43.
- Szasz, P. L., Szentagotai, A., & Hofmann, S. G. (2012). Effects of emotion regulation strategies on smoking craving, attentional bias, and task persistence. *Behav. Res. Ther.* 50, 333–340. doi: 10.1016/j.brat.2012.02.010
- Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48(6), 1273–1296. doi.org/10.1007/s11165-016-9602-2

- Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in science education, 48*, 1273-1296
- Talbot, P. S Haddad, P. M., Anderson, I. M., & McAllister-Williams, R. H. (2015). Managing inadequate antidepressant response in depressive illness. *British medical bulletin, 115*(1), 183-201
- Tamir, M. (2009). What do people want to feel and why? Pleasure and utility in emotion regulation. *Curr. Dir. Psychol. Sci. 18*, 101–105. doi: 10.1111/j.1467-8721.2009.01617.
- Tamir, M. (2016). Why do people regulate their emotions? A taxonomy A motives in emotion regulation. *Personal. Soc. Psychol. Rev. 20*, 199–222. doi: 10.1177/1088868315586325.
- Thompson, P.M., Hayashi, K.M., Simon, S.L., Geaga, J.A., Hong, M. S., & Sui, Y. (2004). Structural abnormalities in the brains of human subjects who use methamphetamine. *Journal of Neuroscience, 24*(26), 6028-6036.
- Thompson, R. A. (1994). Emotion regulation: a theme in search of definition. *Monogr Soc Res Child Dev, 59*(2-3),25–52.
- Tiffany, S. T. (1999). Cognitive concepts of craving. *Alcohol Research and Health, 23*, 215–224.
- Tsui, J. I., Anderson, B. J., Strong, D. R., & Stein, M. D. (2014). Craving and subsequent opioid use among opioid dependent patients who initiate treatment

- with buprenorphine. *The American journal of drug and alcohol abuse*, 40(2), 163
- Tsui, J. I., Anderson, B. J., Strong, D. R., & Stein, M. D. (2014). Craving predicts opioid use in opioid-dependent patients initiating buprenorphine treatment: a longitudinal study. *The American Journal of Drug and Alcohol Abuse*, 40(2), 163-169.
- Tsujimoto, M., Saito, T., Matsuzaki, Y., Kojima, R., & Kawashima, R. (2022). Common and distinct neural bases of multiple positive emotion regulation strategies: A functional magnetic resonance imaging study. *NeuroImage*, 119334
- Urry, H. L., & Gross, J. J. (2010). Emotion regulation in older age well-being in older age. *Curr. Dir. Psychol. Sci.* 19, 352–357. doi: 10.1177/0963721410388395.
- Van Rooij, A., & Prause, N. (2014). A critical review of “Internet addiction” criteria with suggestions for the future. *Journal of behavioral addictions*, 3(4), 203-213
- Verzeletti, C., Zammuner, V. L., Galli, C., & Agnoli, S. (2016). Emotion regulation strategies and psychosocial wellbeing in adolescence. *Null*, 3(1), 1199294
- Volkow, N. D., Wang, G. J., Fowler, J. S., Tomasi, D., & Baler, R. (2012). Food and drug reward: overlapping circuits in human obesity and addiction. *Brain imaging in behavioral neuroscience*, 1-24
- Volkow, N.D. Chang, L. Wang, G-J. Fowler, J.S. Franceschi, D. Sedler, M. Gatley, S.J. Miller, E. Hitzemann, R. Ding, Y-S. & Logan, J. (2001). Loss of

dopamine transporters in methamphetamine abusers recovers with protracted abstinence. *J Neurosci* 21(23):9414–9418.

Wagner, E. F. Myers, M.G. & McIninch, J. L. (1999). Stress-coping and Temptation-coping as Predictors of Adolescent Substance Abuse. *Addict Behav.* 24(6),769–79.

Washton, A. M. (1986). Nonpharmacologic treatment of cocaine abuse. *The Psychiatric clinics of North America*, 9(3), 563-571

Washton, M. A. (1986). Relapse prevention: maintenance strategies in the treatment of addictive behaviors. *J. Stud. Alcohol* 47, 260–261. doi: 10.15288/jsa.1986.47.260.

Webb, T. L., Miles, E., & Sheeran, P. (2012). Dealing with feeling: a meta-analysis of the effectiveness of strategies derived from the process model of emotion regulation. *Psychol. Bull.* 138, 775–808. doi: 10.1037/a0027600.

Weingarten, H. P., Elston, D. (1990). The phenomenology of food cravings. *Appetite.* ;15: 231–246.

Weiss, F. (2005). Neurobiology of craving, conditioned reward and relapse. *Current opinion in pharmacology*, 5(1), 9-19

Werner, K., & Gross, J. J. (2010). Emotion regulation and psychopathology: A conceptual framework. M. Kring & D. M. Sloan (Eds.), *Emotion regulation and psychopathology: A transdiagnostic approach to etiology and treatment.* 13–37. The Guilford Press

- Wikler, A. (1948). Recent progress in research on the neurophysiologic basis of morphine addiction. *American journal of Psychiatry*, *105*(5), 329-338
- Wilson, J. M., Kalasinsky, K. S., Levey, A. I., Bergeron, C., Reiber, G., Anthony, R. M. (1996). Striatal dopamine nerve terminal markers in human, chronic methamphetamine users. *Nature Medicine*, *2*, 699-703.
- Witkiewitz, K., & Marlatt, G. A. (2004). Relapse Prevention for Alcohol and Drug Problems: That Was Zen, This Is Tao. *American Psychologist*, *59*(4), 224–235. <https://doi.org/10.1037/0003-066x.59.4.224>
- Witkiewitz, K., Mallik, S., Elwafi, H. M., Thornhill IV, T. A., & Brewer, J. A. (2013). Mindfulness training for smoking cessation: Moderation of the relationship between craving and cigarette use. *Drug and alcohol dependence*, *130*(1-3), 222-229
- Wojciszke, B. (2003). Mood regulation scales. In M. Marszal-Wisniewska, T. Klonowicz, & M. Fajkowska-Stanik (Eds.), *Psychology of individual differences* 163–178.
- Wray, J. M., Gass, J. C., & Tiffany, S. T. (2013). A systematic review of the relationships between craving and smoking cessation. *nicotine & tobacco Research*, *15*(7), 1167-1182.
- Wright, F. D. (2001). Craving beliefs questionnaire. In Beck, A. T., Wright, F., D. & Newman, C., F. (Eds.), *Cognitive Therapy of Substance Abuse* (311). New York, NY: Guilford Press.



- Yiğitoğlu, G. T., & Keskin, G. (2019). Relationship between dysfunctional beliefs and stress coping methods in drug-addicted patients: A sample of Turkey. *Indian Journal of Psychiatry, 61*(5), 508
- Zareban, I., Bakhshani, N., Bor, M., & Bakhshani, S. (2017). Emotion regulation difficulties in drug abusers. *Annals of Tropical Medicine and Public Health, 10*(6)
- Zargar, F., Bagheri, N., Tarrahi, M. J., & Salehi, M. (2019). Effectiveness of emotion regulation group therapy on craving, emotion problems, and marital satisfaction in patients with substance use disorders: A randomized clinical trial. *Iranian Journal of Psychiatry, 14*(4), 283
- Zeng, Q. & Zhang, J. (2017). Theoretical research and practical exploration of drug rehabilitation work models. *Chin. J. Drug Depend. 74*(4), 410-425.
- Zhao, F. Y., Zhou, C. L., & Liu, T. Z. (2018). Neurobiological mechanism of exercise inhibiting drug addicts' psychological craving and relapse behavior: based on the regulation of exercise on neurotransmitters, hormones and peptides. *China Sport Sci. 38*, 33–41. doi: 10.16469/j.css.2018s07016.

