The Effectiveness of Teaching Emotional Regulation Based on Gross's Model in Reducing Impulsivity in Drug-Dependent People

Yosouf Aazami, Faramarz Sohrabi, Ahmad Borjali, Hamed Chopan

Yosouf Aazami
Ph.D. Student of Psychology
Allame Tabatabaei University, Tehran, Iran
E-mail: yaazami@yahoo.com

Faramarz Sohrabi
Associate Professor of Clinical Psychology Department
Allame Tabatabaei University, Tehran, Iran

Ahmad Borjali
Associate Professor of Clinical Psychology Department
Allame Tabatabaei University, Tehran, Iran

Hamed Chopan
M.A. of Rehabilitation Counseling
Allame Tabatabaei University, Tehran, Iran

Abstract

Objective: This study aimed to determine the effectiveness of teaching emotion regulation based on Gross's model in reducing impulsivity in drug dependent people. **Method:** This research project was some type of pilot studies that has employed pretest - posttest design with control group. For the present study, all the addicted referring to drug-quitting clinics at in Marivan in 2011 constituted the study population. A total of 30 drug-dependent persons were selected by simple random sampling and randomly assigned to one of the experimental and control groups. **Results:** The results showed that emotion regulation training can be effective in reducing symptoms of impulsivity in drug-dependent individuals. **Conclusion:** Given that drug-dependent individuals are naturally more susceptible to negative emotions, they will probably act impulsively without having any plans in such situations. Therefore, emotion regulation training to such people can enhance their self-restraining power in such situations.

Keywords: Emotion Regulation, Impulsivity, Substance-Dependent Individuals

Introduction

Today, substance abuse and its overwhelming consequences is one of the most important health problems throughout the world (Dally & Marlatt, 2005, quoted Eouraky, 2011). On the other hand, studies have shown that low level of emotional regulation which is rooted in failure to effective control of emotions and their management has a significant role in the initiation of substance abuse (Parker, Taylor, Eastabrook, Schell and Wood, 2008). Competency in controlling the emotions leads to opposing strategies in situations where risk of abuse is high (Trinidad and Johnson, 2000). Effective management of emotions includes: 1. Revealing and calming yourself when you are sad, 2. Enforcement of self-control, 3. Anger management, 4. Impulse control, 5. Expression of emotions at the right time and place, 6. Avoidance of continual nervousness, anger and stress, 7. Management of fiascos and inevitable life problems, 8. Prevention of the effect of negative emotion on judgments and problem solving, 9. Tolerating fiascos and, 10. Self-acceptance and self-value (Clark, 2000; translated by Rostami & Niloufari, 2000). Generally, six methods of emotion regulation are usually discussed: acceptance, avoidance, problem solving, reappraisal, rumination and suppression. Acceptance which is often a form of mindfulness means awareness of each thought in a simple way, without details and judgment. In this method thought, feelings and senses are accepted as they exist. Avoidance refers to active and insightful avoidance from situations and experiences. Problem solving includes insightful effort for changing a tense situation or preventing its consequences. Reappraisal is developing positive or neutral explanations for reducing negative tensions in tense situations. Rumination is concentration on thoughts, emotions and experiences and their reasons and consequences. Suppression includes any effort to reduce or prevent emotional expression or mental experience of emotion (Aldao & Hoeksema, 2010 translated by Alavizadeh & Entezari, 2011). Psychological pathology researchers suggest that successful function in social interaction, aggression, impulsive violence, feeling of shame and guilt is is developed from insufficient regulations in emotional responding (Sandler, Tein & West, 1994). Lack of emotional regulation also leads to problematic behaviors such as violence (Dillon, Ritchey, Johnson & La-Bar, 2007).

One of the variables which makes the individuals vulnerable to addiction and substance abuse is impulsivity. In different studies, interventions of emotional regulation in relation to impulsivity have been investigated. Impulsivity is defined as a base for thoughtless and fast reactions to internal or external stimuli without paying attention to the negative consequences for oneself or others (Moeller, Barratt, Dougherty, Schmitz, & Swann, 2007). Impulsivity is the major axis for diagnosing different types of clinical disorders such as drug dependence (Dawe & Loxton, 2004). This concept which is used in a large scale in psychology is referred to as an incautious

behavior (Evenden, 1999 b). Although some dimensions of impulsivity are considered as adaptive and functional (Dickman, 1990), it usually refers to lawless feature which is associated with criminal or violent acts and physical harm to oneself (suicide) (Patton et al, 1995; cited in Verdejo-Garrcia, Lawrence & Clark, 2008). Impulsivity is also related to substance abuse disorders (Verdejo-Garcia et al, 2008). Abramowitz & Berenbaum (2007) noted that principle of emotion regulation may be especially a fruitful perspective for understanding impulsive and pernickety behaviors. In Fox, Axelrod, Paliwal, Sleeper & Sinha's (2007) studies, it was observed that in the first week of abstinence, cocaine dependent individuals compared to control group reported some problems in relation to emotional understanding, emotional management and impulse control; and cocaine dependent individuals reported continual problems only in impulse control by continuing abstinence. Cocaine dependent individuals demonstrate significant defects in emotional regulation which are related to more stressful reaction and reduced impulse control (Fox, Bergquist, Casey, Hong & Sinha, 2011). In addition, some studies have shown that pervasive impulsivity is a powerful phenomenon among consumers of some abusive substances such as alcohol, cocaine and amphetamine (Coffey, Gudleski, Saladin & Brady, 2003; Semple, Zians, Grant & Patterson, 2005). In these studies, abusers of provocative substances and alcohol typically gained higher scores in self report instruments of impulsivity trait (such as Barratt & Eysenck's scales) and they showed weaker functions in cognitive scales of inhibition control such as longer delay in reaction (Li, Milivojevic, Kemp & Hong, 2006). Impulsivity among consumers of some abusive drugs such as alcohol, cocaine and amphetamine is pervasive and it is known as risk factor for future initiation of substance abuse and substance dependence (Bechara, Recknor & Perez-Garcia, 2007). The results of the study done by Verdejo-Garcia et al (2007) showed that substance abusers got higher scores in such dimensions as urgency, lack of premeditation, lack of perseverance, sensation seeking (as impulsivity dimensions). The results of a study done by Schreiber, Grant & Odlaug (2012) showed that individuals with emotional disorders received higher scores in impulsivity, harmful avoidance and cognitive reasoning. Generally, this study has shown the highest relation between emotional regulation and impulsivity and implies that emotional regulation may be considered as a major factor when individuals are assessed as being exposed to high risk of addiction. As a result, given the role of emotional regulation in the development and establishment of emotional problems, it seems that teaching emotional regulation skills based on Gross's process model and the effect of this method in reducing emotional problems such as impulsivity can increase the knowledge in this field. The high importance of this study and similar studies is much apparent. The present study is going to answer this

question that if teaching emotional regulation based on Gross's process model affects the reduction of impulsivity in substance dependent individuals.

Method

In this study, an experimental research method of the type of pretest-posttest with control group was used. Subjects of the study included all the addicts who had referred to addiction treatment clinics in Marivan between 2013 and 2014 who were 502 people. After identifying all subjects, 30 people were chosen randomly and were randomly divided into two groups. Then, teaching emotional regulation based on Gross's process model commenced for one group which was randomly considered as the experimental group. Entrance criteria in the subjects of study included: being male, aged from 18 to 50, qualified with criteria for substance dependence, free of severe psychological disorders according to medical and psychiatric assessment, and the enjoyment of physical health to be able to participate in the program.

Instrument

1- Barratt Impulsivity Scale (BIS): original version of this test was developed by Ernest Barratt in 1950 and since then has been revised so many times. This questionnaire had a good correlation with impulsive questionnaire of Eysenck and it includes 30 questions based on a 4-value Likert scale and it measures the multi-dimensional nature of impulsivity. This questionnaire contains three subscales: 1. Cognitive impulsivity: it includes fast cognitive decisions measured by questions numbered 5, 6, 9, 11, 20, 24, 26, and 28, 2. Motor impulsivity: it includes thoughtless act measured by questions numbered 2, 3, 4, 16, 17, 19, 21, 22, 23, 25 and 30, and 3. Non-planning impulsivity which is measured by questions numbered 1, 7, 8, 10, 12, 13, 14, 15, 18, 27, and 29. In addition to the score of each subscale, a separate score is calculated for the whole scale of impulsivity. For avoiding the establishment of a style in responses by the subjects some of the questions are designed in such a way that they show the lack of impulsivity and are scored inversely which include questions numbered 1, 7, 8, 9, 10, 12, 13, 15, 20, 29, and 30. In the latest version of this scale, Barratt, Stanford & Patton (1995) reported the reliability and validity of this test to be very high for all samples. Internal consistency for the sample of criminals was reported as 0.80, for graduate students as 0.82 and for psychotic patients as 0.83. Different studies show that the numbers of questions which are loaded on each factor have been well repeated. Ekhtiari et al (2008) evaluated the validity of the Persian version of Eysenck, Barratt, Dickman & Zackurman's questionnaire, and reported the Alpha coefficient for this scale in healthy individuals as 0.83 and in substance dependents as 0.84 in determining the risky and impulsive behaviors. In addition, correlation of non-planning, motor and cognitive

subscales with the whole scale was reported as 0.47, 0.50 and 0.42, respectively and the correlation of the total score of Barratt scale with Barratt impulsivity scale was reported significant. Ekhtiari et al identified the Barratt impulsivity scale as an appropriate questionnaire for measuring dimensions of impulsivity. In addition, the reliability of the scale by the Cronbach's Alfa coefficient was calculated as 0.87 in the present study.

Procedure

To carry out the present research the list of all the people who had referred to addiction treatment centers between 2012 and 2013 was taken and, to better conduct the study, the help of authorities of these centers was requested.

Table 1: Summery of teaching sessions' contents for emotional regulation based on Gross's model

Sessions	Contents
1st session	1) Acquaintance of all group members with each other and initiation of bilateral relation between the leader of the group (counselor) and the members, 2) Stating the main and secondary goals of group and dialogue between members over personal and collective goals, 3) Stating the logic and process of intervention, 4) Stating the routines and rules of participation in the group.
2nd session	Choosing the situation, aim: presenting emotional teaching; sessions' agenda: understanding the emotion and provocative situation by teaching the different functions of emotions, information on different dimensions of emotion and short-term and long-term effects of emotions.
3rd session	Choosing the situation, aim: assessment of vulnerability degree and emotional skill of the members. Sessions' agenda: members of the group talk about functions of emotions in the process of human coping and its advantages, roles of emotions in communication and impacting other people and also organizing and deriving human behavior; and some real examples of experiences were given by the members.
4th session	Situational reform, aim: developing change in emotional provocative situation; sessions' agenda: a) preventing social isolation and avoidance b) teaching problem solving strategies. c) teaching interpersonal skills (dialog, self-expression and problem solving)
5th session	Developing Attention, aim; change of attention; sessions' agenda: 1) stopping rumination and anxiety. 2) teaching attention
6th session	Cognitive assessment, aim: change of cognitive assessment, sessions' agenda; 1) understanding the wrong assessments and their effects on emotional states 2) teaching reassessment strategies.
7th session	Balancing the target response, changing the behavioral and physiological consequences of emotion; sessions' agenda 1) understanding the degree and quality of avoidance strategy and investigating its emotional consequences, 2) confrontation, 3)

Sessions	Contents
	teaching emotional expressions 4) behavioral reform by changing the environmental boosters, 5) teaching emotional discharging, relaxation and inverse action.
8ᵗʰ session	Assessment and function, aim: reappraisal and removal of obstacles of application; sessions' agenda: 1) assessment of the degree of success in achieving personal collective goals, 2) the application of learned skills in authentic environments out of the sessions, 3) Reviewing and removing the obstacles against performing the tasks.

In the next step, 30 people were randomly chosen among qualified people for entering the study. Then, the teaching protocol of emotional regulation based on Gross's process model which is a suggestive method for emotional regulation teaching was used as an interventional factor. This protocol was developed by James Gross and is used for teaching the ways of managing and regulating the emotions.

According to this package, the teaching process was carried out in 8 group two-hour sessions. First, there were two briefing sessions' strategies for sample group to be introduced along with the design of study for the participants. Understanding the importance of subject and encouraging them in cooperation, they filled in the Barratt Impulsivity Scale. Then, they were randomly divided into experimental and control groups. In the next stage, all the participants in the experimental group were asked to take part in sessions as much as possible and, at the end, the experimental group was treated with emotional regulation protocol while the control group received no interventional treatment. Finally, at the end of teaching sessions, posttest was given to both groups and the groups' performance was measured accordingly.

A summary of sessions' contents for emotional regulation based On Gross's model has been presented in the table above.

Results

In the experimental group, the participants lay in the 22-49 age range with the mean of 32.20 years and SD of 8.05 and these measures for the participants in the control group were 24-44 age range, mean of 30.50 and standard deviation of 5.21. In terms of marital status, %33.3 of the participants in the experimental group were single, %53.4 of them were married, and %13.3 were divorced. For the type of substance, %40 of the participants in the experimental group were addicted to opioids, %60 of them were addicted to stimulants and %13.3 of them took hallucinogens in addition to the above-mentioned substances. In terms of educational status, %33.3 of the participants in the experimental group held degrees lower than guidance school, %53.4 had diploma, %13.3 were graduates; and in the control group

%33.3 held degrees lower than guidance school, %63 had diploma, and 6.7 were graduates.

The descriptive statistics of impulsivity components according to the type of test and the group are presented in the following table:

Table 2: Descriptive statistics of impulsivity components according to type of test and group

Components	Type of test	Mean	SD	Std. Error Mean
Cognitive Impulsivity	Pretest	17.55	4.44	0.82
	Posttest	14.36	3.68	0.67
Motor Impulsivity	Pretest	23.89	6.66	1.23
	Posttest	22.76	5.26	0.96
Non-planning Impulsivity	Pretest	25.48	6.27	1.16
	Posttest	24.36	5.52	1.01
Whole Impulsivity	Pretest	66.93	15.73	2.92
	Posttest	63.50	12.31	2.24

MANCOVA test was used to investigate the effectiveness of emotional regulation teaching in impulsivity. One of the assumptions of this analysis is the equality of matrix covariance. The result of Box's test suggests the satisfaction of this assumption (Box's M=11.42, F=1.670, P> 0.05). In addition, Leven's test was run to explore the satisfaction of the assumption of the equality of error variances as in the following table.

Table 3: Leven's test representing the equality of error variances of impulsivity components

Components	*F*	*Sig.*
Cognitive Impulsivity	0.002	0.966
Motor Impulsivity	0.202	0.657
Non-planning Impulsivity	3.280	0.081

As seen in the above table, this assumption has been met in all components (P> 0.05).

Given the satisfaction of the assumptions, multivariate analysis covariance was conducted and the results suggest the significance of the linear combination of components in both groups (P< 0.001, F=4.116, Wilks' Lambda=0.641). To evaluate the patterns of difference, univariate analysis of covariance was used as shown in the following table.

Table 4: univariate analysis of covariance representing patterns of difference in components

Components	mean squares	F	Sig.
Cognitive Impulsivity	55.53	7.590	0.001
Motor Impulsivity	182.27	10.480	0.001
Non-planning Impulsivity	39.22	2.430	0.132

As seen in table 4, emotional regulation teaching significantly influenced cognitive impulsivity (F=7.590, P<0.001) and motor impulsivity (F=10.480, P<0.001), whereas it did not significantly affect non-planning impulsivity (F=2.43, P>0.05).

Discussion and Conclusion

The present study investigated the effect of emotional regulation teaching by Gross's model on reducing impulsivity in drug dependent people. According to the findings of this study, emotional regulation teaching is effective in reducing impulsivity in drug dependent people. Schreiber et al (2012) investigated emotional regulation and cognitive impulsivity in drug dependent people and found out that the group with lack of emotional regulation got higher scores in two components of cognitive and avoidance impulsivity. The present study showed the highest relation between lack of emotional regulation and impulsivity and implies that emotional regulation is possibly considered as an important factor when people are exposed to the high risk of addiction. Sezar, Szentagotai & Hofmann (2012) also examined the effect of teaching emotional regulation strategies on the temptation of cigarette smoking, attentional protection and negative emotions and concluded that people who used more reappraisal techniques had less temptation, negative emotion and attentional bias against cigarette smoking symptoms. These findings showed that reappraisal techniques were more effective than other emotional regulation strategies such as suppression and acceptance in relation to cigarette smoking problems. Abolghasemi, GholiLoo, Narimani & Zahed (2011) investigated emotional regulation strategies in substance abusers with higher and lower provocations, showing that abusers with higher responsiveness used more negative emotional regulation strategies and abusers with lower responsiveness used more positive emotional regulation strategies. Accordingly, it is to be said that responsiveness and high impulsivity and also the use of more negative emotional regulation strategies are among risk factors for substance abuse and generally the results of these studies are consistent with those of the present study.

Findings of this study can be summarized as to say that substance dependent people act impulsively in different situations and substance abuse

increases such impulsivity; as a result, they do not have much control over their behaviors. Also, teaching emotional regulation to these people plays an effective role in impulse control and avoidance which is confirmed by the present study. Today, impulsivity is conceptualized as a cognitive dimension, that is, impulsivity is followed by lack of cognitive inhibition, and slow and defective decision making process (Dawe, Glow & Lockston, 2008). It has been known that impulsivity is one of the features of all types of addiction (Myreth, Pallesen, Molde, Johnsen & Lorvik, 2009) so that some individuals act impulsively in all situations (trait dependent); on the other hand, some people act in such a way in special situations, like encountering some signals which establish craving for substance abuse (situation dependent) (Dougherty, Mathias, Marsh, Moeller & Swann, 2004). According to cognitive model, the chain of addiction usually has a hierarchical course which is derived from anxiety or low mood and ends in self-curing with alcohol or substance abuse (Mohamadkhani, Sadeghi & Farzad, 2011). One of the important and effective factors in substance abusers is responsiveness. High responsiveness leads to negative emotional strategies and, as a result, substance abuse augments. Individuals who can control their excitation are likely exposed to the risk of substance abuse (Doran, Mc Charque& Cohen, 2007). Impulsivity is one of the personality traits of the individuals who show high responsiveness in their life events. The role of impulsivity in substance abuse has been illustrated in different studies (Bjork, Homer, Grant & Danube, 2004; Kofi et al, 2003). In these studies, consumers of stimulants and alcoholic substances obtained higher scores in impulsivity and showed lower function in inhibition control. The ability to control emotions leads the individuals to follow appropriate coping strategies in situations where the risk of substance abuse is high. Mainly, individuals with high emotional regulation are more competent in predicting the demands of other people, understand the unwelcomed pressures from other people, control their emotions in a better way, and, as a result, show more resistance to substance abuse (Trinidad & Johnson, 2002). Individuals with lower emotional regulation usually seek substance abuse to resist to their negative emotions (Trinidad, Unger, Chou & Johnson, 2004). Schreiber et al (2012) showed that individuals with emotional disorders gained higher scores in impulsivity and they encountered many different problems, especially in the initial stages of dependence. In different models of substance abuse disorders, it is assumed that individuals who are not able to appropriately control their emotions are likely to turn to substance abuse disorder as a way to mitigate their emotions. Many different types of addiction treatments place emphasis on reducing maladaptive methods of emotional regulation and following adaptive methods of emotional regulation (Aldao & Houksma, 2010, translated by Alavizadeh & Entezari, 2011). Given the importance of the relationship between substance abuse temptation, impulsivity, and addiction severity

components as effective factors of treatment outcomes and powerful predictors of failure or success of treatment, it is necessary to use other treatment interventions such as emotional regulation as a treatment for controlling these factors in addition to methadone treatment methods in order to reduce patients' lapses in this regard. One of the limitations of the study was the non-inclusion of females in the sample and it is suggested that next researchers include addicted females in their studies on emotional regulation, as well, in order to reduce the degree of vulnerability.

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