

## **Comparing Stress Management Strategies and Impulsivity in Opioids, Moderators, and Stimulant Abusers**

*Ahmad Borjali*<sup>1</sup>  
*Raheleh Siah Kamari*<sup>2</sup>  
*Mohammad Jalalvand*<sup>3</sup>  
*Soheila Shaii Arani*<sup>4</sup>  
*Yousef Aazami*<sup>\*5</sup>

*Received: August, 22, 2016; Accepted: February 21, 2017*

### **Abstract**

The present study aimed at dealing with stress management strategies and impulsivity in opiate abusers, sedative and stimulus is conducted. In the study, a causal-comparative method was adopted. Research participants included 180 drug users inhabiting the already-determined addiction centers in Shiraz. They were selected using availability random sampling. To collect the data, stress management strategies and impulsivity scales were employed and to analyze the results, descriptive statistical methods and variance analysis were used. The results indicated that abuse stimulating consumers significantly more than consumers emotion-centered use of opioids and moderator of coping strategies virgin (0.007), but abusers response-moderator (0.26) and opioids - moderator (0.43) were not significantly different. As well as the construction abusers significantly greater impulsivity as compared to the stimulus (0.012) and opioids (0.005) showed, but stimulants and opioids two groups had no significant differences in

- 
1. Associate Professor, Department of Clinical Psychology, Faculty of Psychology and Educational Sciences, Allameh Tabataba'i University, Tehran, Iran, e-mail: borjali@atu.ac.ir
  2. M.A. Student of General Psychology, Department of Psychology, Faculty of Social Sciences, Razi University, Kermanshah, Iran
  3. M.A. in Clinical Psychology, Lecturer of Afarinesh Non-Profit University of Boroujerd, Lorestan, Iran, e-mail: mohammad900292@yahoo.com
  4. MA in Clinical Psychology, School of Psychology and Educational Sciences, Shiraz University, Shiraz, Iran, e-mail: irani.2548@gmail.com
  - 5.\* Ph.D. Student of Psychology, Faculty of Psychology and Educational Sciences, Allameh Tabataba'i University, Tehran, Iran, e-mail: yaazami@yahoo.com

impulsivity variables (0.94). It can be said that the research is based on the type of substance, in terms of coping with stress and control of their impulsivity, of consumers stimulants other than using virgin materials more negatively of coping with stress and drug abuse-moderator of impulsivity than other people are experiencing abuse.

**Keywords:** Stress management, impulsivity, drug users

### **Introduction**

Drug abuse disorder is one of the major issues in the area of mental health, which may lead to harmful circumstances for the users themselves, their family, and the health care system in which they live (Gowing, et al., 2015; Peiper, Ridenour, Hochwalt, & Coyne-Beasley, 2016; Klein, 2016). Drug abusers mostly receive services from general physicians instead of being visited by mental health experts. Thus, psychological disorders or drug addiction is properly diagnosed in only 5 percent of them (Olfson, Tobin, Cassells, & Weissman, 2003). Addiction is a brain disease which is diagnosed by natural tendency of abusers towards re-use and recurrence (Zhou, Sun, & See, 2011; Milton, & Everitt, 2010). Barlow and Durand (2011) stated that drug use disorders annually cause hundreds of millions of individuals to lose their lives. In the fifth edition of the Diagnostic and Statistical Manual of Psychiatric Disorders (DSM-5), this problem has been viewed in its dimensions (American Psychiatric Association, 2013). Drug abuse and drug abuse disorders are characterized by 11 symptoms among which 6 or more symptoms indicate severe disorder, 4 to 5 symptoms indicate moderate drug abuse and 2 to 3 symptoms represent mild disorder (Gowing et al., 2013).

In terms of prevalence, drug abuse disorders are more frequent than other clinical problems, so that according to the reports provided by National Institute of Mental Health (NIMH), lifetime prevalence of drug abuse disorder in the general population is reported to be 35.3 percent (Kober and Bolling, 2014). According to the UN report in 2006, Iran has the highest rate of heroin and opium addicts in the world. Based on this report, in Iran, one out of every 17 people are addicted to this substance (Ghedeniya Jahromi et al., 2016). In addition, 20% of the population, aged 15-60, are in some way involved in drug abuse (Rostami, Hazrat Abadi and Mohammadi, 2007).

Drug abuse pattern among Iranians has considerably changed in the recent years. The fact that is noteworthy in our country is the shift of tendency from traditional drugs such as opium and Hash toward industrial drugs and experiencing new substances such as ecstasy, methamphetamine and crack (AghaBakhshi, Sediqi et al., 2009). Drug abuse disorder results from the coexistence of genetic and environmental factors such as developmental abnormalities and psychological, social and spiritual disadvantages. These disorders, in turn, can possibly be resulted from using alcohol, opiate, cannabis, methamphetamine, cocaine and etc., and can be manifested as dependency and abuse (Asadi, Amiri and Poorkmali, 2010).

Various hypotheses have been expressed regarding the etiology of the tendency to drug abuse, and different factors are involved in them, but none of them can exclusively explain the drug abuse (Sobhi Qurmaleki and Shafqati, 2016). Research findings have shown that addiction is associated with social indicators, especially stress (Rohsenow, Martin, Mont, 2005). Stress and tension have become an indispensable part of today's human life. The previous studies on stress emphasize the fact that stress is not the only factor threatening the humans' behavioral health but also one's way of stress assessment and stress management techniques and methods are equally prominent. (Termil and King, 1996; quoted in Ashuri, Mlazadeh, and Mohammadi, 2008). Stressful situations not only create different emotional reactions such as anxiety, anger, disappointment, and psychological disorders, but they may also be effective in making the individuals more inclined to health behaviors like alcohol abuse, smoking, using psychedelics, and other substances (Botvin, Griffin, Paul, & Macaulay, 2003). According to the stress management model regarding addition, individuals tend to use stimulants to avoid thinking about and experiencing various stressful events (Aldrij and Roch, 2008; quoted by Floyd et al., 2010).

Lazarus and Folkman (1991) consider coping to act as a cognitive and behavioral attempt to overcome stress or minimize its effect (Kronenberg et al., 2015). Three types of coping have been discussed in the research literature; they include as follows: Problem-oriented strategies (such as problem-solving behaviors), emotion-oriented strategies (such as anxiety) and avoidance strategies (such as denial of problems). In this model, emotional and avoidable styles are considered as maladaptive styles and problem-oriented styles are

regarded as adaptive styles used to deal with everyday stresses (Marquez-Arrico, Benaiges, & Adan, 2015). Previous research has investigated the relationship between coping styles and a range of drug abuse behaviors (Abdollahi and Jooybari, 2016), and a big part of the research results shows that there is direct relationship between ineffective coping styles, including emotional coping styles drug abuse (Modaresifard and Mardpoor, 2016; Jafari et al., 2010).

Impulsivity is the other variable which makes individuals vulnerable toward addiction and drug abuse (Azami et al., 2014). Impulsive behaviors, which are sometimes described as risky behaviors, cover a wide range of actions, on which there is not much thinking. They occur in an immature and instantaneous manner, without the ability to focus on a specific task, in the absence of proper planning. They are highly risk-prone (Muller et al., 2001; quoted by Waxman, 2009). Studies indicate that impulsivity is not a discrete personality trait; instead, it is composed of multidimensional constructs (Khadka et al., 2017). In this regard, Heinz, Bui, Thomas, and Blonigen (2015) introduced four personality traits in association with different dimensions of impulsive behaviors, which include lack of planning, emergency, excitement seeking, and lack of sustainability.

Studies have also shown that impulsivity is a strong phenomenon among users of such drugs as alcohol, cocaine and amphetamines (Fox et al., 2007). It is also indicated that there is a relationship between different aspects of impulsivity and various aspects of high-risk behaviors on the one hand (Coskunpinar, Dir, & Cyders, 2013) and poor treatment outcomes in drug abusers, on the other. (Loree, Lundahl, & Ledgerwood, 2015; Stevens et al., 2014).

For example, lack of planning, but not emergency, is related to alcohol consumption in non-clinical samples of university students (Anestis, Selby, & Joiner, 2007). Also, consumers of stimulants and alcohol typically show higher scores in self-reporting tools about impulsivity (for example, Barratt and Ayzeng scales) and have poorer performance in cognitive measurements such as long stop of reaction time (Li, Milivojevic, Kemp, Hong, & Sinha, 2006). Several studies have shown that high impulsivity is a strong phenomenon among drug abusers including alcohol, cocaine, and amphetamines (Coffey, Gudleski, Saladin, & Brady, 2003). To conclude, it can be stated that negative emotional impulses among drug abusers is a strong predictor

of psychological, social, and family problems as well as representative of severity of alcohol and drug use (Verdejo-García, Bechara, Recknor, & Pérez-García, 2007).

Given the above-mentioned facts, the main research question is: Do abusers of opioids, moderators, and stimulants vary in terms of strategies of coping with stress and impulsivity?

### **Method**

Causal-scale method is used in the current research. Research population included all individuals addicted to drug abuse in Shiraz. 108 of them were selected in terms of the type of abused substance, i.e. opioids (65), moderator (48), and stimulant (67), using convenience sampling method. Sampling was done in the following way: 180 individuals were selected using convenient sampling from three drug abuse treatment clinic, where two researchers worked as psychologist. Drug abusers underwent the study with taking beforehand written consent for participation in the research and given inclusion and exclusion criteria.

Inclusion criteria included following cases: 1. Educational degree at least secondary school degree, 2. Aged from 20 - 45 years, 3. Male, 4. Not having severe psychological disorders or specific physical disease which hinders participation in research.

Exclusion criteria included as follows: 1. Aged below 20 or above 45 years, 2. severe physical or psychological disorders, 3. Illiteracy

#### **Measurement Tools**

1. Coping Strategies Inventory (CISS-21): Short form of stress coping scale was developed by Calzbic, et al. based on the main stress coping scale (Endler, & Parker, 1990). Short form and main scale are different in the number of their items. The main stress coping scale contains 48 items, while the short form contains 21 items. This scale evaluates three major coping styles: problem-oriented style, which means emotional control and planning for step-to-step problem solving (7 items), emotion-oriented style, in which individual focuses on the emotions resulting from the problem instead of focusing on the problem itself, and attempts to reduce the negative emotions instead of problem solving (7 items), and avoidance coping style, where one avoids coping with the problem (7 items). Responding to items of this scale is scored in five-point Likert scale from never (1) to very much (5). Research results suggests acceptable internal consistency of sub-

scales with cronbach's alpha coefficient as 0.88 - 0.97. Alpha obtained for this test was 0.87 in the research by Rostami (2012). In the current research, cronbach's alpha coefficient for the whole scale was 0.64.

2. Barratt Impulsivity Scale (BIS): Impulsivity scale was developed by Barratt in 1994. It contains 30 items and measures three sub-scales including cognitive impulsivity, motor impulsivity, and lack of planning. The subject responds to each item based on a four-point scale (never, almost always), and the score is calculated based on score of three sub-scales and a total score (Poorkard et al., 2013). Total reliability of the scale was analyzed using cronbach's alpha method and retest, which was reported to be 0.81 and 0.77, respectively. Overall, this research provided adequate experimental support for using this scale in research and clinical situations in Iran (Javid, Mohammadi, and Rahimi, 2012). In the current research, cronbach's alpha coefficient for the whole scale was 0.70.

**Results**

Research subjects were 180 male abusers of stimulants, moderators, and opioids with average age and standard deviation as 34.01± 2.14, which were identical in terms of social class, education, age, and marital status.

Given Kolmogorov - Smirnov test results for each variable and normality of data (p < 0.05) in four variables, and using one-way variance analysis, three groups were compared. Table 1 gives descriptive indexes of three groups of stimulants, moderators, and opioids and results for one-way variance analysis. Table 2 gives follow-up test results on stress coping strategies and impulsivity.

Table 1. Results related to one-way variance analysis in stress coping strategies and impulsivity

Variable	Group	N	M	SD	F	sig	
Stress coping strategies	Stimulant	67	21.37	4.50	1.772	0.173	
	Moderator	48	20.52	4.89			
	Opioid	65	22.26	5.25			
	Emotion-	Stimulant	67	25.88	4.66	5.164	0.007
		Moderator	48	24.25	5.24		

oriented	Opioid	65	22.95	5.79	0.240	0.787
	Stimulant	67	20.00	5.47		
	Moderator	48	20.16	5.08		
Avoidance	Opioid	65	20.61	6.01	6.351	0.002
	Stimulant	67	72.97	11.33		
	Moderator	48	79.68	8.69		
Impulsivity	Opioid	65	72.23	11.87		

Results of Table 1 indicates that given significance of stress coping strategies and impulsivity variables, there is a significant difference between at least one of the two groups in terms of variables under study. In order to investigate whether there is a difference between the two groups, Scheffe's post hoc test was used, the results of which are presented in Table 2.

Table 2. Scheffe's post hoc test results in stress coping strategies and impulsivity variables

Dependent Variable	Group I	Group J	Difference of means	Sig. level
Problem-oriented strategy	Moderator	Opioid	1.74	0.176
		Stimulant	0.85	0.654
	Opioid	Stimulant	0.89	0.580
Emotion-oriented strategy	Moderator	Opioid	1.30	0.432
		Stimulant	1.63	0.261
	Opioid	Stimulant	2.93	0.007
Avoidance strategy	Moderator	Opioid	0.49	0.903
		Stimulant	0.17	0.986
	Opioid	Stimulant	0.61	0.796
Impulsivity	Moderator	Opioid	7.46	0.005
		Stimulant	6.72	0.012
	Opioid	Stimulant	2.06	0.938

Levene test showed that assumption of homogeneity of variances for each variable ( $p < 0.05$ ) was established; and as seen from the Scheffe's post hoc test, the stimulant users were significantly (0.007) more likely than the opioid users to use the emotion-oriented coping strategy. While other groups did not show significant difference in this regards (stimulant and moderator: 0.26, moderator and opioid: 0.43). Also, moderator users significantly showed higher impulsivity compared to stimulant (0.012) and opioid (0.005) users. Two latter groups did not show significant difference in impulsivity variable (0.94).

### **Discussion and Conclusion**

The present research is intended to compare stress coping strategies and impulsivity in opioids, moderators and stimulants abusers. Research findings showed that there is a significant difference among three groups of stimulant, moderator, and opioid abusers in terms of strategy used in coping with stress, so that abusers of industrial stimulants significantly use maladaptive strategies for coping stress more than opioid abusers (traditional). This finding is somehow consistent with findings by Rostami, Ahadi, and Cheraghaligol (2012), and Arévalo, Prado, and Amaro (2008).

According to the model by Endler and Parker (1990), emotion-oriented and avoidance styles are considered as maladaptive styles to cope with everyday tensions, and some studies (McConnell, Memetovic, & Richardson, 2014) emphasized that most of the individuals with maladaptive coping styles tend to abuse substances in order to cope with stress and negative events. This finding can be described in the way that stimulant abusers have poor communication with others when confronting problems and negative events, and this weakness in mutual communication causes one to take less actions to search for social supports and tend to use maladaptive stress coping strategies (emotion-oriented and avoidance styles) to escape from problems. Emotion-oriented coping strategies are effective to reduce stress in short-term, but they have negative effects in long term (Bronfman, Leyva, Negroni, & Rueda, 2002). Thus, inefficient coping with those who undergo stress creates such outcomes as depression, anxiety, using drugs and alcohol, illegal sexual behaviors and aggression (Stein and Nyamathi, 1998).



In studies by Ball (2005) and Rommer and Hennessy (2007), there is a correlation between weak coping strategies and inappropriate problem solving methods with substance use in the addicts. Almost all previous studies emphasize that the use of maladaptive coping strategies (emotion-oriented style) is related to substance abuse. In the meantime, the role of industrial substances such as glass and crack is more pronounced than others. Researchers stated that features such as futility, failure in life, escape from reality, inability to solve the problem, obstruction and revenge, are individual factors that tend to induce the use of industrial substances. These people choose to use industrial stimulants because of the inability to solve their own problems and to escape the reality, which is in fact the same maladaptive way of coping with stress. These researchers maintained that one reason for tendency toward industrial stimulants or changing the consumption from traditional to industrial is that they do not have the proper power to solve problem of their life and they are not familiar with coping skills (Salehabadi and Salimi, 2012).

The other research finding showed that there is a significant difference among three groups of stimulants, moderators, and opioid abusers in terms of impulsivity, and it was found that abusers of moderators are significantly more impulsive than the other two groups which is somehow consistent with findings by Kaiser et al. (2016), Vest, Reynolds, and Tragesser (2016), Fox et al. (2007), Ghamari Givi and Mojarad (2016), and Li et al. (2006).

Impulsivity is the main core of various symptoms in a wide range of clinical disorders such as drug, alcohol, and substance dependency (Boothby, et al., 2017). Studies indicate that there is a mutual relationship between substance abuse or dependency and impulsivity (Fillmore, & Weafer, 2013; King et al., 2014). In his regards, Dévieux, et al. (2002) studied impulsivity role in adopting risky behaviors and attitudes in a sample of adolescents. Their findings showed that the group with higher impulsivity used alcohol and marijuana in higher frequency within three last months as compared to the group with lower impulsivity. In fact, impulsivity is defined as an immediate and unplanned response to internal and external stimuli that lead to pleasure. In this process, the individual does not take into account the negative consequences of these behaviors, and it is highly associated with disorders such as bipolar depression, disorders of the

addiction spectrum, and hyperactivity disorder (Chamorro et al., 2012).

This finding can be described in the way that balance changes occur in some chemicals in the brain in alcoholism, and thus there is a high tendency to use higher amount of alcohol. These chemicals include Gamma Aminobutric Acid, which inhibits impulsivity. Glutamate can also stimulate the nervous system (Shahraki et al., 2011). Alcohol consumption affects areas of thinking, emotions, and judgment, and can ultimately interfere with speech and balance and behavior. Certain areas of the brain, such as the limbic device, and the temporal lobes are associated with violent and impulsive activity. Relationship between serotonin levels in cerebrospinal fluid and impulsive aggression has been found (Yang, 2007). Also some hormones, especially testosterone, are related to violent and aggressive behavior, which are influenced by alcohol consumption due to resolvability in water. Herrick, Fields, Reynolds, and Pirie (2015) showed that the maternal impulsivity acts as predictor of adolescent's alcoholism situation. That is, the mothers with low impulsivity level had adolescents who were not alcoholic, and the mothers with high impulsivity level had alcoholic or smoker adolescents. Therefore, it seems that using moderators including alcohol may cause inability in behavior control and impulsivity through influence on neural system and brain neurotransmitters, and findings of the current research support this finding.

Findings of this research can provide insights for psychiatrists and therapists of drug addiction centers and other relevant institutions to create programs such as emotional control, stress coping strategies, and considering group approaches for separate education for each consumer group. One of the research limitations was using convenience sampling method which makes it difficult to generalize the findings. In addition, the research was conducted only on male population, thus in generalization of findings to the female group, one should be cautious. It is suggested that this comparison need to be done among females in future works so that damages to the environment and family relationship resulting from female addiction can be reduced by consideration of their strengths and weaknesses in this regard. Investigation of this issue in other age groups such as adolescents with drug abuse, given increasing impulsivity and risk-taking in this age as well as significance of stress coping skills in this

critical age, helps future researchers to provide strategies for adjusting problems of this group and prevent them from becoming addict.

*Conflict of Interests:* No conflict of interests was reported from the authors.

## References

- Abdollahi, M. H. & Jouybari, S. (2016). Inhibition and Behavioral Activation Systems and Coping Styles in Opium Consumers, Methadone Maintenance Therapists and Healthy Neighborhoods. *Quarterly Journal of Addiction Research*, 10 (40): 11-26.
- Aghabakhshi, H., Sedighi, B., & Eskandari, M. (2009). Factor's affecting trends in youth drug abuse industrial. *Social Research*, 4, 71-75.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. American Psychiatric Pub.
- Anestis, M. D., Selby, E. A., & Joiner, T. E. (2007). The role of urgency in maladaptive behaviors. *Behaviour research and therapy*, 45(12), 3018-3029.
- Arévalo, S., Prado, G., & Amaro, H. (2008). Spirituality, sense of coherence, and coping responses in women receiving treatment for alcohol and drug addiction. *Evaluation and program planning*, 31(1), 113-123.
- Asadi, Z., Amiri, S. & Poorkmali, A. (2010). Comparison of early maladaptive schemas in patients with glass abuse and normal people. *Quarterly Journal of Drug Abuse*, 4 (16): 85-92.
- Ashoori, A., Molazadeh, J. & Mohammadi, N. (2008). Effectiveness of Group-Behavioral Therapy on Improving Coping Behaviors and Preventing Recurrence in Addicted People. *Journal of Psychiatry and Clinical Psychology*, 3 (14): 281-288.
- Azami, Y., Sohrabi, F., Borjali, A. & Choopan H. (2014). Effectiveness of Grass's Model-Based Exercise Training on Impulsivity Reduction in Drug Users. *Quarterly Journal of Addiction Research*, 8 (30): 127-142.
- Ball, S. A. (2005). Personality traits, problems and disorders: Clinical applications to substance use disorders. *Journal of Research in Personality*, 39(1), 84-102.
- Barlow, D. H., & Durand, V. M. (2011). *Abnormal psychology: An integrative approach*. Nelson Education.
- Boothby, C. A., Kim, H. S., Romanow, N. K., Hodgins, D. C., & McGrath, D. S. (2017). Assessing the role of impulsivity in smoking & non-smoking disordered gamblers. *Addictive Behaviors*, 70, 35-41.
- Botvin, G. J., Griffin, K. W., Paul, E., & Macaulay, A. P. (2003). Preventing tobacco and alcohol use among elementary school students through life skills training. *Journal of Child & Adolescent Substance Abuse*, 12(4), 1-17.

- Bronfman, M. N., Leyva, R., Negroni, M. J., & Rueda, C. M. (2002). Mobile populations and HIV/AIDS in Central America and Mexico: research for action. *Aids*, *16*, S42-S49.
- Chamorro, J., Bernardi, S., Potenza, M. N., Grant, J. E., Marsh, R., Wang, S., & Blanco, C. (2012). Impulsivity in the general population: a national study. *Journal of psychiatric research*, *46*(8), 994-1001.
- Coffey, S. F., Gudleski, G. D., Saladin, M. E., & Brady, K. T. (2003). Impulsivity and rapid discounting of delayed hypothetical rewards in cocaine-dependent individuals. *Experimental and clinical psychopharmacology*, *11*(1), 18.
- Coskunpinar, A., Dir, A. L., & Cyders, M. A. (2013). Multidimensionality in impulsivity and alcohol Use: a meta-analysis using the UPPS model of impulsivity. *Alcoholism: Clinical and Experimental Research*, *37*(9), 1441-1450.
- Dévieux, J., Malow, R., Stein, J. A., Jennings, T. E., Lucenko, B. A., Averhart, C., & Kalichman, S. (2002). Impulsivity and HIV risk among adjudicated alcohol-and other drug-abusing adolescent offenders. *AIDS Education and Prevention*, *14*(5 Supplement), 24-35.
- Fillmore, M. T., & Weafer, J. (2013). Behavioral inhibition and addiction. *The Wiley-Blackwell handbook of addiction psychopharmacology*, 135-164.
- Floyd, L. J., Hedden, S., Lawson, A., Salama, C., Moleko, A. G., & Latimer, W. (2010). The association between poly-substance use, coping, and sex trade among black South African substance users. *Substance use & misuse*, *45*(12), 1971-1987.
- Fox, H., Axelrod, S., Paliwal, P., Sleeper, J., & Sinha, R. (2007). Difficulties in emotion regulation and impulse control during cocaine abstinence. *Drug and Alcohol Dependence*, *89*(2), 298-301.
- Ghaedeeniya Jahromi, A., Hasani, J., Farmani Shahreza, S. & Zarei, F. (2016). Study of cognitive emotion regulation strategies and emotional schemas in males with substance abandonment and normal people. *Social Health*, *3* (4): 307-318.
- Ghamari Givi, H. & Mojarad, A. (2016). Prognosis of addiction tendency using attachment style and impulsivity. *Journal of Health and Care*, *18* (1): 17-27.
- Gowing, L. R., Ali, R. L., Allsop, S., Marsden, J., Turf, E. E., West, R., & Witton, J. (2015). Global statistics on addictive behaviours: 2014 status report. *Addiction*, *110*(6), 904-919.
- Heinz, A. J., Bui, L., Thomas, K. M., & Blonigen, D. M. (2015). Distinct facets of impulsivity exhibit differential associations with substance use disorder treatment processes: A cross-sectional and prospective

- investigation among military veterans. *Journal of substance abuse treatment*, 55, 21-28.
- Herrick A., Fields S., Reynolds B., Pirie P. (2015) Maternal impulsivity as a predictor of adolescent smoking status. *Drug and Alcohol Dependence*, 146, e118–e201
- Jafari, E., Eskandari, H., Sohrabi, F., Delavar, A., & Heshmati, R. (2010). Effectiveness of coping skills training in relapse prevention and resiliency enhancement in people with substance dependency. *Social and Behavioral Sciences*, 5, 1376–1380.
- Kaiser, A., Bonsu, J. A., Charnigo, R. J., Milich, R., & Lynam, D. R. (2016). Impulsive personality and alcohol use: bidirectional relations over one year. *Journal of studies on alcohol and drugs*, 77(3), 473-482.
- Khadka, S., Stevens, M. C., Aslanzadeh, F., Narayanan, B., Hawkins, K. A., Austad, C. & Potenza, M. N. (2017). Composite impulsivity-related domains in college students. *Journal of Psychiatric Research*, 90, 118-125.
- King, K. M., Patock-Peckham, J. A., Dager, A. D., Thimm, K., & Gates, J. R. (2014). On the mismeasurement of impulsivity: Trait, behavioral, and neural models in alcohol research among adolescents and young adults. *Current Addiction Reports*, 1(1), 19-32.
- Klein, J. W. (2016). Pharmacotherapy for substance use disorders. *Medical Clinics of North America*, 100(4), 891-910.
- Kober, H., & Bolling, D. (2014). Emotion regulation in substance use disorders. *Handbook of emotion regulation*, 2, 428-46.
- Kronenberg, L. M., Goossens, P. J., van Busschbach, J., van Achterberg, T., & van den Brink, W. (2015). Coping styles in substance use disorder (SUD) patients with and without co-occurring attention deficit/hyperactivity disorder (ADHD) or autism spectrum disorder (ASD). *BMC psychiatry*, 15(1), 159. <https://doi.org/10.1186/s12888-015-0530-x>
- Li, C.-s. R., Milivojevic, V., Kemp, K., Hong, K., & Sinha, R. (2006). Performance monitoring and stop signal inhibition in abstinent patients with cocaine dependence. *Drug and Alcohol Dependence*, 85(3), 205-212.
- Loree, A. M., Lundahl, L. H., & Ledgerwood, D. M. (2015). Impulsivity as a predictor of treatment outcome in substance use disorders: review and synthesis. *Drug and alcohol review*, 34(2), 119-134.
- Marquez-Arrico, J. E., Benaiges, I., & Adan, A. (2015). Strategies to cope with treatment in substance use disorder male patients with and without schizophrenia. *Psychiatry research*, 228(3), 752-759.

- McConnell, M. M., Memetovic, J., & Richardson, C. G. (2014). Coping style and substance use intention and behavior patterns in a cohort of BC adolescents. *Addictive behaviors*, 39(10), 1394-1397.
- Milton, A. L., & Everitt, B. J. (2012). The persistence of maladaptive memory: addiction, drug memories and anti-relapse treatments. *Neuroscience & Biobehavioral Reviews*, 36(4), 1119-1139.
- Modaresfard, F. & Mardpoor, A. (2016). Relationship between personality traits and coping strategies and self-efficacy of avoiding substances in young adults infected. *Quarterly Journal of Addiction Research*, 10 (39): 213-230.
- Olfson, M., Tobin, J. N., Cassells, A., & Weissman, M. (2003). Improving the detection of drug abuse, alcohol abuse, and depression in community health centers. *Journal of health care for the poor and underserved*, 14(3), 386-402.
- Peiper, N. C., Ridenour, T. A., Hochwalt, B., & Coyne-Beasley, T. (2016). Overview on prevalence and recent trends in adolescent substance use and abuse. *Child and Adolescent Psychiatric Clinics*, 25(3), 349-365.
- Poorkrd, M., Abolghasemi, A., Narimani, M. & Rezaei Jamalooi, M. (2013). Direct and indirect effects of self-efficacy, impulsivity, activation-behavioral inhibition and social skills on substance abuse in students. *Quarterly Journal of Addiction Research*, 7 (26): 11-28.
- Rohsenow, D. J., Martin, R. A., Monti, P. M. (2005). Urge-specific and lifestyle coping Strategies of cocaine abusers: Relationship to treatment outcomes. *Drug and Alcohol Dependence*, 78(2), 211-219.
- Rommer, D., & Hennessy, M. (2007). A biosocial-affect model of adolescent sensation seeking the role of affect evaluation and peer group influence in adolescent drug use. *Society for Prevention Research*, 8(2), 89-101.
- Rostami, A. M. (2012). *Comparison of coping styles in patients with cancer, multiple sclerosis (MS) and normal people*. Master thesis, Islamic Azad University, Roudehen Branch.
- Rostami, R., Hazratabadi, M., & Mohammadi, F. (2007). Study of Pilot Diagnosis of APS, MAC-R, AAS. *Psychological Reseach*, 10(1-2), 11-28.
- Salehabadi, I. & Salimi, Amanabad, M. (2012). Investigating relationship between youth lifestyle and tendency to use narcotics in Shirvan city. *Sociology of Young Studies*, 3 (6): 32-41.
- Shahraki, A., Ghahagai, A. & Zakeri, Z. (2011). Glutamate transducers and stimulatory toxicity in the nervous system. *Journal of Gorgan University of Medical Sciences*, 13 (3): 1-15.

- Sobhi Qurmaleki, N. & Shafqati Riya. S. (2016). Comparison of identity styles, coping styles and behavioral inhibition systems in addicts and normal people. *Magazine of Forensic Medicine*, 5 (2): 123-133.
- Stein, J. A., & Nyamathi, A. (1998). Gender differences in relationships among stress, coping, and health risk behaviors in impoverished, minority populations. *Personality and Individual Differences*, 26(1), 141-157.
- Stevens, L., Verdejo-García, A., Goudriaan, A. E., Roeyers, H., Dom, G., & Vanderplasschen, W. (2014). Impulsivity as a vulnerability factor for poor addiction treatment outcomes: a review of neurocognitive findings among individuals with substance use disorders. *Journal of Substance Abuse Treatment*, 47(1), 58-72.
- Verdejo-García, A., Bechara, A., Recknor, E. C., & Pérez-García, M. (2007). Negative emotion-driven impulsivity predicts substance dependence problems. *Drug and alcohol dependence*, 91(2), 213-219.
- Vest, N., Reynolds, C. J., & Tragesser, S. L. (2016). Impulsivity and risk for prescription opioid misuse in a chronic pain patient sample. *Addictive behaviors*, 60, 184-190.
- Waxman, S. E. (2009). A systematic review of impulsivity in eating disorders. *European Eating Disorders Review*, 17(6), 408-425.
- Young, S. N. (2007). How to increase serotonin in the human brain without drugs. *Journal of psychiatry & neuroscience: JPN*, 32(6), 394.
- Zhou, L., Sun, W. L., & See, R. E. (2011). Orexin receptor targets for anti-relapse medication development in drug addiction. *Pharmaceuticals*, 4(6), 804-821.