

Abstract

Objective: The aim of the current study was to predict drug use tendency based on psychological loneliness and cognitive emotion regulation in patients recovering from drug addiction. **Method:** The current study is a descriptive correlational research. The sample size contained 120 addicts under recovery from drug addiction who were selected as the sample units via convenience sampling method. Farjad drugs use tendency questionnaire (2006), Russell, Peplau, & Cutrona's UCLA Loneliness Scale (1980), and Garnefski's Cognitive Emotion Regulation Questionnaire (2001) were used to measure the variables. **Results:** The results showed that psychological loneliness and obsessive thinking (rumination) have a significant positive relationship with drug use tendency. However, cognitive emotion regulation was revealed to hold a significant negative relationship with drug use tendency while there was no relationship between self-blame and drug use tendency. Psychological loneliness was revealed to be the strongest predictor of drug use tendency. **Conclusion:** These findings have important implications in the pathology of drug abuse. Thus, clinical technicians can stop the incidence of psychological loneliness by providing appropriate advice and consultation and can embark on the treatment of drug abuse by teaching cognitive regulation strategies.

Keywords: drug use tendency, psychological loneliness, cognitive emotion regulation

Prediction of Drug Use Tendency Based on Psychological Loneliness and Cognitive Emotion Regulation among Addicts under Abstinence

Gili, M., Zanganeh Motlagh, F.,
Taghvayi, D.

Gili, M.

M.A. in Clinical Psychology, Azad University of Arak, Arak, Iran

Zanganeh Motlagh, F.

Assistant Professor, Department of Psychology, Azad University of Arak, Arak, Iran

Taghvayi, D.

Assistant Professor, Department of Psychology, Azad University of Arak, Arak, Iran



**Research on Addiction
Quarterly Journal of Drug
Abuse**

Presidency of the I. R. of Iran
Drug Control Headquarters
Department for Research and Education
Vol. 11, No. 43, Autumn 2017
<http://www.etiadpajohi.ir>

Introduction

Addiction is a chronic disease; relapse of the disorder by a definite coercion and it is followed on drug seeking. Loss of control in drug use, the emergence of a negative emotional state (e.g. restlessness, anxiety and irritability), and stopping of syndrome is created when there is no access to drugs. Koob & Lo(1997) (quoted by Koob, 2015) argue that drug addiction is sometimes the loss of control over consumption, and the emergence of drugs-seeking behaviors and the compulsion of the motivational drug-seeking behavior. Addiction is a multi-stage diet and consumption / poisoning /search cycle / mental pursuit to achieve drugs that gets worse over time. Addiction involves a change in the brain reward system and has the achievement stress. There are two main sources of addiction enhancement as: positive reinforcement and negative reinforcement; positive reinforcement is providing a pleasant stimulus (substance use) in order to increase the future good behavior (euphoria), negative reinforcement; is removing of unpleasant stimulus (elimination of hangover in an effort to find drugs) to improve the good behavior in the future (Koob, 2015). Since the passion for interpersonal intimacy starts from childhood in every human being and continues to spread throughout life, thus, one is born with the need for connection and creation of interpersonal relations. Individuals who have constant problems of experience in creating and maintaining in satisfactory relationships with others, their belonging needs are not satisfied and they will most likely experience a sense of deprivation and psychological loneliness (Bamaystr & Leary 1996 (quoted by Heinrich & Gullone, 2006).

There are many factors in the tendency of young people to use drugs, such as experiencing stressful situations during different periods of life, loneliness and social exclusion, which can increase the risk of drug use tendency. Psychological loneliness has many physiological and psychological effects and leads to mental and behavioral abnormalities in individuals (Lopez & Laber, 2014). Sigmund Freud (1939) is the first person to speak about psychological loneliness. Freud believed that life experiences are manifested in the individual's inner structure. Then in 1953, Sullivan continued the Freudian view and described and explained the psychological loneliness. Sullivan believes that psychological loneliness is an experience and a feeling of alienation qualitatively and quantitatively that it is communication with others based on misconception about the environment (quoted by Khadra & Marketa, 2010). Chronic psychological loneliness leads to many basic problems in one's life. Depression, which usually occurs with addiction, is a very common outcome of psychological loneliness and insomnia and high pressure are other problems caused by psychological loneliness for an individual. Suicide occurs more often among those who experience loneliness. Psychological loneliness in the absence of social networks leads to the use of drugs and alcohol as loneliness decreases during drug use (Evans, 2010).

Therefore, when psychological loneliness is created in a person, the negative ways to get away from loneliness, such as drug use are sought. Hence, we can say that one's inability to properly understand the environment, and the inability to regulate emotions cognitively in certain situations, can lead to drug use. Therefore, another effective factor on the tendency of youth to drugs is the cognitive emotion regulation. Gross & Johan (2003) describe cognitive emotion regulation as representing psychological, physiological and behavioral processes that a person uses re-evaluation strategies, specific cognitive strategies on his feelings and others to change the negative feelings and the tendency toward positive emotions in order to avoid potential damages and to achieve the goal. In other words, cognitive emotion regulation is internal and external processes of response to inhibition and monitoring, evaluation and adjustment of emotional interactions, especially their temporary features to achieve the required goal (Goldberg et al., 2016).

The inability in cognitive emotion regulation is one of the problems of drug abusers and this leads to failure to manage the emotional state of substance abusers. Therefore, the examination of this variable can have an effective role in interpersonal behaviors of drug users. Reactivity and negative emotion regulation strategies increase the likelihood of substance abuse. Also, those who can not control their arousals in a positive direction are likely to be exposed to high substance use risk (Parker, Taylor, Eastabrook, Schell & Wood, 2008). It can be said that when a person has problem in cognitive emotion regulation in a social setting, he may be using narcotics to regulate his social mood, because the cycle of the brain reward system that is responsible for the enjoyment feeling network is reinforced by drugs in these individuals. Failure to achieve a reward, which is called drugs euphemism, leads to a the psychological and emotional imbalance, such as anger in one person, and creates negative emotions for him and this forces that person to use drugs.. Brain imaging of addicts and cigarette addicts implies this fact. Drug addiction leads to impairment of executive skills, impulse control, memory, and decision-making, along with abnormal brain function in the frontal, medial and ventrolateral cortex, and the ganglia circuit bases that are active permanently, and as the main actors in the cognitive emotions regulation may not work well. (quoted by Parvaz, MacNamara, Goldstein, & Hajcak, 2012).

Hence, addicts use drugs to improve their mood and they attempt to use drugs anyway due to the need of their body to drugs. These people experience problems due to negative emotions when they do not have access to drugs and this disturbs their cognitive emotion regulation, and when they use drugs, they can regulate their emotion cognitively. For this reason, drug addicts consider drug use as a mediator of cognitive emotion regulation (Martens & Gilbert, 2008). Researchers have conducted various field studies on the role of psychological loneliness and the cognitive emotion regulation on the tendency of youth to drugs use. Borjali, Azami and Jahan (2016) in their research showed

that cognitive emotion regulation strategies lead to decreased emotion seeking in drug dependent individuals and provides the basis for drugs withdrawal. Niño, Cai & Ignatow (2016) concluded that there is a relationship between social isolation, drunkenness and the use of cigarettes. Yarmohammadi Wassal, Ali Pour, Bastami, Zolfaghari-nia and Bazzazadeh (2015) have shown that cognitive emotion regulation is related to brain-behavioral systems, impulsivity and craving for drug addiction. Skelly, Chappell, Carter & Weiner (2015) have shown that social isolation is associated with the use of ethanol and post-traumatic stress, and adolescents who are more isolated and alone are more likely to drink alcohol. Jalali and Ahadi (2015) showed that there is a relationship between cognitive emotion regulation, self-efficacy, arousal and social skills with substance abuse in adolescents. Akerlind & Hörnquist (2006) in their study showed that there is a relationship between loneliness and the tendency to alcohol use. Abolghasemi, Allahghililo, Narimani and Zahed (2011) indicated that emotion regulation strategies have a significant effect on drug abusers with high and low reactivity. Nickmanish et al. (2015) in their study showed that there is a relationship between loneliness and drug use tendency. Savari and Bashlide (2012) in their research revealed that there is a relationship between loneliness and internet addiction. Özdemir, Kuzucu & Ak (2014) in a study showed that there is a relationship between psychological loneliness and low self-control and internet addiction in students. Świtaj, Grygiel, Anczewska & Wciórka (2015) indicated that there is a relationship between psychological loneliness and psychological and social problems. Fattore & Diana (2016) argue that drug addiction is influenced by the mood and cognitive function of one's emotions. Darie (2015) showed that parents' neglect to recognize children's emotions has a significant impact on drug use tendency among adolescents.

Given the theoretical and empirical items mentioned above, drug dependence is now a prevalent problem in the world that covers all ethnic and class communities and 10% of the general population of the world have substance abuse problem (Lee et al., 2012). Therefore, considering the high prevalence of drug abuse in the world, individual and social variables such as psychological loneliness and inability to control behavior that are affected by cognitive emotion regulation can have a significant impact on drug use tendency. Therefore, individuals who suffer from psychological loneliness and have little ability in cognitive emotion regulation can be susceptible to drug use. The question that the study seeks to answer is whether psychological loneliness and cognitive emotion regulation tend to predict drug use tendency among addicts under abstinence?

Method

Statistical population, sample and sampling method

The present research is a descriptive-correlational study. The statistical population consisted of addicts who went to Leqman addiction center in Arak

city during September, October and November 2016 as 176 people. According to the Cochran formula, using criterion-based sampling method, 120 people met the Inclusion criteria (The use of traditional opium and sap, male aged 18 to 45 years, at least once quitting) and exclusion criteria included (having psychological disorders, not cooperating with the responding of questionnaires).

Instrument

1- Drug Use Tendency Questionnaire: This questionnaire was developed by Farjad (2006) to assess the addiction tendency with 16 questions. It has three environmental subscales including (1,2,3,4,5), individual items (6,7,8,9), and social categories including (10,11,12,13, 14,15,16). The responding is on Likert scae (very low 1, low 2, sometimes 3, High 4, and very high 5). In order to get the overall score of the questionnaire, we sum up the total score of all the questions. This score ranges from 16 to 80, and the higher the score, the greater the tendency of the respondent to addiction, and vice versa. Mirhasami (2009) reported the reliability of the questionnaire using Cronbach's alpha of 0.79.

2-Psychological Loneliness Questionnaire: This questionnaire was developed by Russell, Peplau, & Cutrona's (1980) and has 20 questions, 10 negative questions, including 1-10 items and 10 positive questions including (11 to 20), which is rated as 4 points (never 1, Rarely 2, sometimes 3, and always 4). Questions 20, 19, 16, 15, 10, 9, 6, 5, and 1 are scored inversely. Scores range from 20 to 80. A higher score indicates high severity of psychological loneliness. The reliability of this test has been reported in the new revised version of 0.78. The test re-test has been reported to be 0.89% (Russell, Peplau and Ferguson, 1987). This scale was translated by Shekarkan and Mİrderikvand and after the preliminary implementation of the preliminaries and corrections was used (quoted by Naderi and Haghsheenas, 2009).

3-Cognitive Emotion Regulation Questionnaire: This questionnaire was developed by Granfsky et al. (2002) with 36 items in which responding is based on Likert scale. The questionnaire includes 9 sub-scales of self-blame, other-blame, acceptance, planning, positive re-focusing, rumination, positive reappraisal, putting into perspective and catastrophizing and each one evaluates a specific strategy of cognitive strategies. Each subscale consists of 4 terms, and its score is ranging 4 and 20. The total score is in the range of 36 to 180. The alpha coefficient for the scales in this questionnaire has been reported by Granfsky et al. (2002) as 0.71 to 0.81. To evaluate the convergent and divergent validity of this questionnaire in Iran, depression, anxiety, and stress scales were used and the results were reported significant. Questions 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14 evaluate positive cognitive regulation and questions 1,2,3,4,5,6,7,8,9,10,12,29,30,31,32,33,34,35,36 evaluate negative cognitive regulation; Questions 22, 21, 20, 19, 18, 17, 16, 14, and 13 evaluate positive refocusing / planning. Questions 27, 26, 25, 24, 23, and 15 evaluate positive appraisal / putting into perspective. Questions 4, 2, and 1 evaluate self-

blame. Questions 36, 35, and 34 other-blame; questions 12, 11, 10, 9, and 3; rumination; questions 32, 31, 30, and 29; catastrophizing and questions 8, 7, 6, and 5 evaluate acceptance.

Procedure

The procedure of this study was to explain the purpose of the research after referring to Loghman addiction center and choosing people based on Cochran's formula using convenient sampling method. Then, the questionnaires were presented to the participants and they responded to the questionnaires individually, observing the ethical principles in winter 2016. Then, the data were analyzed.

Results

24 people (20%) were in the age range of 18-25 years old, 73 (60.8%) in the age range of 26-23, 14 (11.7%) in the age range of 34-40 years old and 9 (7.5%) were above the age of 4 years. Also, 34 (28.3%) had the use duration for 1 to 3 years, 58 (48.3%) 4 to 8 years, 10 (8.3%) 9 to 12 years old and 1518 (15%) had consumption duration over 12 years old. The descriptive statistics of the studied variables are presented in Table 1

Table 1: Descriptive Statistics of the Studied Variables in the Sample Group

<i>Variables</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>
Drug use tendency	120	50/23	11/24
Psychological loneliness	120	52/35	10/63
Cognitive emotion regulation	120	0/66	30/39
Rumination	120	19/80	4/11
Self-blame	120	11/41	20/36

To examine the normal distribution of variables, a one-sample Kolmogorov-Smirnov test was used. The results showed that drug tendency variables ($Z = 1.23$, $P > 0.05$), psychological loneliness ($z = 1.15$, $p > 0.05$), cognitive emotion regulation ($z = 1.88$, $p > 0.05$), rumination ($z = 1.52$, $P > 0.05$), self-blame ($z = 1.41$, $P > 0.05$) have normal distribution.

Also, the correlation between drug use tendency and psychological loneliness ($r = 0.595$, $P < 0.001$), cognitive emotion regulation ($r = -0.421$, $P < 0.01$), rumination ($r = 0.332$, $P < 0.001$) was significant and only the correlation between drug use tendency and self-blame ($r = 0.074$, $p > 0.05$) was not significant. The regression coefficients of drug use tendency based on the variables of psychological loneliness and cognitive emotional regulation are presented in Table 2.

Table 2: Regression Coefficients of Drug Use Tendency Based on Variables of Psychological Loneliness and Cognitive Emotion Regulation

<i>Variables</i>	<i>B statistics</i>	<i>Standard error</i>	<i>β</i>	<i>T statistics</i>	<i>Significance</i>
Constant	0/493	1/71	-	3/289	0/0005
Psychological loneliness	0/469	0/03	0/535	34/600	0/001
Cognitive emotion regulation	-0/304	0/01	-0/462	-16/508	0/003

Discussion and Conclusion

As drug addiction is a chronic and recurrent coercive disorder affecting the soul and body of individuals, this disease activates multiple brain circuits and provides a chain of thoughts, rewards, motivation and behavior as encrypted in one's brain. The addict gradually spends most of his energy to focus on seeking, finding, and then acquiring and using the substance (Gasbarri, Tomaz & Nishijo, 2016). The results showed that there is a positive relationship between psychological loneliness and drug use tendency. That is, the higher the sense of loneliness, the higher the drug use tendency, and vice versa. These results are consistent with the results of Shams-al-Dini, Tohidi and Asgari-zadeh (2017); Nikmanesh et al. (2015); Zar Bakhsh Bahri, Rashedi and Khademi (2012); and Nino et al. (2016). The results also showed that there is a negative relationship between cognitive emotion regulation and drug use tendency. This finding was consistent with the findings of the research of Esmaeili Shahna, Shalchi and Ahmadi (2016), Borjali, Azami and Jahan (2016); Zahed, Allah Ghalilu, Abolqasemi and Narimani (2010); and Hall (2013). Hall's research showed that drug-dependent individuals have lower cognitive regulation than their normal peers. The results showed that there is a positive relationship between rumination and drug use tendency, that is, the higher the rumination, the more the drug use tendency, and vice versa. This finding is consistent with the findings of Hosseinian, Farkhjestah, Abdollahi, and Noori-Poor Laywali (2015), which showed that risky behavior and emotion seeking are related to addiction tendency in delinquent women. Also, according to the results of Abolqasemi et al. (2011); and Mikaeli Moni, Issa Zadegan and Khalilzadeh (2017), which showed that there is a relationship between emotion regulation problems to craving, the path of emotion regulation problems to depression and the path of depression to craving. The results showed that there is no relationship between self-blame and drug use tendency.

Also, the results of multiple regression analysis showed that psychological loneliness has a positive relationship and cognitive emotion regulation has a negative relationship with drug use tendency. Chronic psychological loneliness leads to many basic problems in one's life, such as: insomnia and high pressure. Suicide and tendency to more abnormal social behaviors occur among those who experience loneliness. Psychological loneliness in the absence of social networking with others leads to the substances and alcohol use which reduces this feeling when consuming substances at its peak (Evans, 2010). Hence, drug-dependent individuals use substances to improve their mood, and these people due to the need of body to drugs are forced to use drugs by any method. Based on the results of this research, one of the factors of drug use tendency is psychological loneliness; while a person experiences psychological loneliness in the society. Therefore, freedom from psychological loneliness is a way of preventing drug addiction. The experiences of each of these feelings weaken the will and expression of the individual against important decision-making.

Because of their negative emotions, these individuals have problems in their emotion regulation when they do not have access to drugs, and when they use drugs, regulate their emotion cognitively and due to this fact, the addicts can not regulate their emotion cognitively and improve their relations by using drugs and thus leading to addiction. In fact, addiction is a mediator in cognitive emotion regulation for these individuals (Martens & Gilbert, 2008). So when people have problems in their cognitive emotion regulation in a social environment, they may resort to regulating their social mood by using drugs, because the brain reward system that is responsible for a pleasure network in these individuals is reinforced by drugs. Failure to achieve rewards, which is called drug poisoning, leads to the psychological and emotional imbalance such as anger in one person, and creates negative emotions for him and this forces that person to use drugs.. Brain imaging of addicts and cigarette addicts implies this fact that drug addiction leads to impairment of executive skills, impulse control, memory, and decision-making, along with abnormal brain function in the frontal, medial and ventrolateral cortex, and the ganglia circuit bases that are active permanently, and as the main actors in the cognitive emotions regulation may not work well and leads excessive drugs use is occurred (McRae, Hughes & Javyra quoted by Parvaz et al., 2012). It can be said that when one experiences loneliness, s/he seeks to get rid of this loneliness, and usually selects abnormal solutions to escape the sense of loneliness and thus drug use tendency is created. On the other hand, the cognitive emotion regulation of a person is disturbed and this leads to drug use. Hence, when psychological loneliness is experienced at high levels and as a consequence, cognitive emotion regulation is not achieved in the person, one needs drug use severely. The results of this study confirm this explanation.

Like most researches, the present study, has some limitations including: the cross-sectional nature, the probability of choice bias due to the lack of cooperation of some samples and the possibility of unrealistic responses due to the use of the self-report questionnaire and single-sex (male) of the studied population. The sample group was also selected in Arak, so the generalization of results for other regions and cities should be done with caution due to the cultural and racial extent. It is suggested that in addiction quitting clinics, counselors pay attention to the training of appropriate skills to reduce psychological loneliness and to bring people into society and emphasize on interpersonal communication so that people are more resistant to drug use and not returning to it. Also, strategies for cognitive emotional regulation in clinics can be taught to drug addicts in order to be more resistant to returning to drug use and have a greater commitment to withdraw drugs and use positive cognitive regulation strategies to increase the efficiency and dynamics of this class of society.

Reference

- Abolghasemi, A., Allah Ghulliu, K., Neramani, M., & Zahed, Z. (2011). Emotion regulation strategies for drug abusers with high and low reactivity. *Journal of Guilan University of Medical Sciences*, 20(77), 15-25.
- Akerlind, I., Hörnquist, J. O. (2006). Loneliness and alcohol abuse: A review of evidences of an interplay. *Social Science & Medicine*, 34(4), 405-414.
- Borjali, A., A'zami, Y., & Chopan, H. (2016). The Effectiveness of Emotion Regulation Strategies on Emotional Reductions in Narcotics. *Clinical Psychology*, 8(2), 33-42.
- Darie, N. (2015). Child's Exposures to Emotional Neglect in Drug users Families. *Procedia - Social and Behavioral Sciences*, 180(5), 1590-1598.
- Evans, T. J. (2010). *Sober and alone: aphenomnological exploration of the loneliness experiencedby recovering alcoholics*, Liberty University, 29-88.
- Fattore, L., Diana, M. (2016). Drug addiction: An affective-cognitive disorder in need of a cure. *Neuroscience & Biobehavioral Reviews*, 65, 341-361, DOI: 10.1016/j.neubiorev.2016.04.006.
- Garnefski, N., Kommer, T. van den, Kraaij, V., Teerds, J., Legerstee, J., & Onstein, E. J. (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.
- Gasbarri, A., Tomaz, C., Nishijo, H. (2016). Transitionality in addiction: A ‘temporal continuum’ hypotheses involving the aberrant motivation, the hedonic dysregulation, and the abberant learning. *Medical Hypotheses*, 93, 62–70, DOI: 10.1016/j.mehy.2016.05.015.
- Goldberg, X., Cardoner, N., Alonso, P., López-Solà, C., Real, E., Jiménez-Murcia, S., ..., Soriano-Mas, C. (2016). In ter-individual variability in emotion regulation: Pathways to obsessive e compulsive symptoms. *Journal of Obsessive-Compulsive and Related Disorders*, 11, 105–112, DOI: 10.1016/j.jocrd.2016.10.002.
- Hall, F. S. (2013). What do Differences in Emotional Regulation in Individuals Addicted to Different Substances Tell us About Addiction Treatment? *International Journal of High Risk Behaviors and Addiction*, 2(2), 92-93, DOI: 10.5812/ijhrba.14630.
- Heinrich, L. M., Gullone, M. (2006). The clinical significance of loneliness: A literature review. *Clinical Psychology Review*, 26, 695–718.
- Hosseinian, S., Farkhojasteh, V., Abdollahi, R., & Nouri Pourliyavli, R. (2015). Relationship between risky and sensation-seeking behaviors and addiction tendency in delinquent women. *Information and Criminal Investigations*, 10(1), 9-28.
- Isma'ili Shahna, M., Shalchi, B., & Ahmadi, E. (2016). The role of difficulty in emotion reguation as an intermediary variable in explaining the relationship between family functioning and satisfying basic psychological needs with addiction. *Journal of Addiction Studies*, 11(42), 230-248.
- Jalali, I., & Ahadi, H. (2015). The Relationship between Cognitive Emotion Regulation, Self-efficacy, Arousal and Social Skills with Substance Abuse in Adolescents. *Quarterly Journal of Addiction Research*, 9(36), 95-105.
- Khadra, M., Marketa, C. (2010). *Effect of loneliness on elderl y people s lives, Degree Programme in Nursing Tampereen ammattikorkeakoulu Tampere*. Ph. D. dissertation of University of Applied Sciences, 18-33.
- Koob, G. F. (2015). The dark side of emotion: the addiction perspective. *European journal of pharmacology*, 15(753), 73-87, DOI: 10.1016/j.ejphar.2014.11.044.
- Lee, W. C., Lin, H. L., Kuo, L. C., Chen, C. W., Cheng, Y. C., Lin, T. Y., ..., Chan, H. M. (2012). Early predictors of narcotics-dependent patients in the emergency department. *The Kaohsiung journal of medical sciences*, 29(6), 319-324, DOI: 10.1016/j.kjms.2012.10.002.

- Lopez, M. F., Laber, K. (2014). Impact of social isolation and enriched environment during adolescence on voluntary ethanol intake and anxiety in C57BL/6J mice. *Physiology & Behavior*, 148, 151-156, DOI: 10.1016/j.physbeh.2014.11.012.
- Martens, K. M., Gilbert, D. G. (2008). Marijuana and tobacco exposure predict affect regulation expectancies in dual users. *Addictive Behaviors*, 33(11), 1484-1490, DOI: 10.1016/j.addbeh.2008.07.002.
- Mikaeli Manie, F., Isa Zadegan, A., & Khalilzadeh, N. (2017). The Relationship between Emotion Regulation problems and Negative Affect with Craving Due to Depression Mediation. *Quarterly Journal of Addiction Research*, 11(42), 198-212.
- Mirhessami, Sh. (2009). *Investigating the role of the family in the tendency of youth and adolescents to addiction*. Master's Degree, Payame Noor University, Tehran.
- Naderi, F., & Haghsheenasht, F. (2009). The relationship of impulsiveness and loneliness with the rate of student use of mobile phones. *New findings in psychology*, 4(12), 111-121.
- Nikmanesh, Z., Kazemi, Y., Khosravi, M. (2015). Role of Feeling of Loneliness and Emotion Regulation Difficulty on Drug Abuse. *International Journal of Medical Toxicology and Forensic Medicine*, 5(4), 185-191.
- Niño, M. D., Cai, T., Ignatow, G. (2016). Social isolation, drunkenness, and cigarette use among adolescents. *Addictive Behaviors*, 53, 94-100, DOI: 10.1016/j.addbeh.2015.10.005.
- Özdemir, Y., Kuzucu, Y., Ak, S. (2014). Depression, loneliness and Internet addiction: How important is low self-control? *Computers in Human Behavior*, 34, 284-290. DOI: 10.1016/j.chb.2014.02.009.
- Parker, J. D., Taylor, R. N., Eastabrook, J. M., Schell, S. L., Wood, L. M. (2008). Problem gambling in adolescents: relationship with internet misuse, gaming abuse and emotional intelligence. *Personality and individual differences*, 45(2), 174-180, DOI: 10.1016/j.paid.2008.03.018.
- Parvaz, M. A., Mac Namara, A., Goldstein, R. Z., & Hajcak, G. (2012). Event-related induced frontal alpha as a marker of lateral prefrontal cortex activation during cognitive reappraisal. *Cognitive, Affective, & Behavioral Neuroscience*, 12(4), 730-740.
- Shams al-Dini, L., Tohidi, A., & Asgari-zadeh, Q. (2017). The causal relationships of attachment styles, loneliness and self-esteem with readiness for addiction. *Quarterly Journal of Addiction Research*, 11(42), 162-180.
- Skelly, M. J., Chappell, A. E., Carter, J. L., Weiner, J. L. (2015). Adolescent social isolation increases anxiety-like behavior and ethanol intake and impairs fear extinction in adulthood: Possible role of disrupted noradrenergic signaling. *Neuropharmacology*, 97, 149-159, DOI: 10.1016/j.neuropharm.2015.05.025.
- Świtaj, P., Grygiel, P., Anczewska, M., Wciórka, J. (2015). Experiences of discrimination and the feelings of loneliness in people with psychotic disorders: The mediating effects of self-esteem and support seeking. *Comprehensive Psychiatry*, 59, 73-79, DOI: 10.1016/j.comppsy.2015.02.016.
- Yarmommmadi Wassel, M., AliPour, F., Bastami, O., Zolfaghari-nia, M., & Bazzazadeh, N. (2015). The intermediary role of cognitive emotion regulation in the relationship between behavioral brain system and impulsivity with craving in drugs addiction. *Quarterly Journal of Psychosocial Neuroscience*, 1(2), 51-67.
- Zahid, A., Allah Gholilu, K., Abul Ghasemi, A., & Narimani, M. (2010). Relationship between emotion regulation strategies and interpersonal behavior in substance abusers. *Journal of Addiction Studies*, 3(11), 99-113.
- Zarhash Bahri, M. R., Rashedi, V., & Khademi, M. (2012). Loneliness and Internet addiction in students. *Management of Health Promotion*, 2(1), 32-38.