

Abstract

Objective: The aim of this study was to examine the causal relation of self-regulation and moral intelligence with addiction potential through the mediator role of sensation seeking among female students. **Method:** This study falls within the category of descriptive/structural equation modeling (correlational) research. The statistical population of this study consisted of all high school female students of Bushehr in the academic year 2016-2017. From among this population, 240 students were selected as the participants via multistage cluster sampling and responded to Addiction Potential Scale, Motivated Strategies for Learning Questionnaire, Moral Intelligence Scale, and Sensation Seeking Scale. **Results:** The results showed that the conceptual model of the research enjoys an acceptable fitness with the data. In this model, all direct, indirect, and general routes were obtained significant towards the prediction of addiction potential. In the same way, sensation seeking plays a mediating role in the relationship of self-regulation and moral intelligence with addiction potential. **Conclusion:** It can be concluded that it is essential to assign credit to psychological variables, like sensation seeking, self-regulation, and moral intelligence in adolescent drug prevention programs.

Keywords: sensation seeking, self-regulation, moral intelligence, addiction potential, adolescents

The Causal Relation of Self-Regulation and Moral Intelligence with Addiction Potential through the Mediating Role of Sensation-Seeking among Female Students

Keikhosravani, M., Dehghani, Y.,
Dehghani, A.

Keikhosravani, M.

Assistant Professor, Azad University of Bushehr, Department of Psychology, Bushehr, Iran, E-mail: Moloud.keykhosrovani@gmail.com

Dehghani, Y.

Assistant Professor, Persian Gulf University, Bushehr, Iran

Dehghani, A.

M.A Student of Psychology, Persian Gulf University, Bushehr, Iran



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Introduction

Adolescence is an important stage in physical, social, psychological and cognitive development. Teens make important choices about health, attitudes growth and health behaviors that affect their adulthood. Drinking alcohol and drugs use in adolescence is a public health problem and is associated with three major causes of mortality among adolescents, namely accident, murder and suicide (Zeinali, 2014). Various psychological and social reasons are mentioned for the tendency of teens to drug use. Some people seek to be accepted in the society, and others try to show themselves more effectively (Trinidad, Unger, Chou, & Johnson, 2004). Social effects, like the high prevalence of use by others, peer review, and the suggestion of use by their parents, contribute to increasing drug use. In fact, the society and people are mutually involved in increasing drug use, so that in some social groups, the substance use is a condition for acceptance by others (Graham, 2008). The social environment and cultural factors in interaction with individual characteristics are effective on risky behavior (Reed, Butelman, & Kreek, 2017). Depression, anxiety, attention deficit disorder, and so on, are among the drug use tendency factors. Since the realistic study of addiction suggests that drug abuse has existed centuries ago and continues to expand following the advent of science and the increase of people's awareness, every day, the number of users' increases. It can be concluded that addiction problem is not specific to our society, but is a global phenomenon and a major dilemma of the 21st century. In fact, addiction in the third millennium has become a terrible disaster. Gullotta, & Adams (2005) have pointed out that for some teens, transition from this stage is calm and enjoyable, but for most of them it is a crisis. It seems that these growth and ambiguity changes in responding to the question "Who am I?" along with the gender differences in how to express confusion, increases the intensity and frequency of behavioral problems in the second decade of life. Among all racial groups, this period is the most prevalent time to start high-risk behaviors (Tosh, & Simmons, 2007). Early onset of drug use among adolescent girls is a risk factor for the next drug use and is associated with other negative events such as motorcycle accident, substance abuse, unwanted pregnancy, depression and suicide (Bratberg, Nilsen, Holmen, & Vatten, 2007). Researches in most countries suggest that various factors play a role in the onset and continuation of addiction, of which the most important include: individual factors, that is, the existence or absence of personality traits that make a person vulnerable to it. Such as low self-esteem, high sensation seeking, lack of self-expression, etc. and social factors such as addicted parents, lack of control of parents, the availability of opioids, the presence of addicted peers, etc. (Shoai Kazemi, 2008). In addition to these factors, self and its derivatives, such as self-efficacy and self-regulation as the two structures of the sociological cognitive theory of Bandura (1997), play an important role in the emergence, abstinence, treatment and recovery of drug abuse. Self-regulation is

the ability to control, modify and adapt emotions, impulses, or desires (Magar, Phillips & Hosie, 2008). In self-regulation, an individual evaluates his behavior, and if his behavior is in accordance with his standards, his behavior is well-evaluated and pleased, and if this behavior is not consistent with the standards, he tries to change his behavior to achieve the standards. Then re-evaluate is performed to know if he has been able to reduce or eliminate the distance of behavior from the standards.

When there is no distance between behavior and standards, then this process stops the control or takes it out of his mind (Michel, 1996; quoted by Franzoi, 2000). Magura et al. (2008) believe that self-regulation is an important component in the etiology of substance abuse and some of the behavioral problems among children and adolescents. They concluded that low emotional self-regulation skills were associated with risk behaviors such as cigarette smoking, and low cognitive self-regulation led to an increase in the false cognitive evaluation of risky behaviors. Griffin, Scheier & Botvin (2009) found that increasing the substance use duration is associated with reducing self-management skills. Wills & Stoolmiller (2002) showed that low self-regulation is associated with increased drug use. From the above, it is seen that self-regulation as its derivatives is one of the effective factors in the onset and continuation of substance abuse and the present study evaluates its role in addiction potential. Recently, a new term "moral intelligence" has been introduced by Borba (2005; quoted from Lennick & Kiel, 2005) in psychology. He defines moral intelligence as the capacity and ability to understand right from wrong, and to behave based on the value that is believed to be right, and to behave in the right direction. Moral intelligence means attention to human life and the nature of economic and social well-being, free and honest communication and civil rights. Individuals with high moral intelligence do the right thing, their actions are consistent with their values and beliefs, they have high performance, and always link tasks with ethics. According to Borba (2005), seven principles are needed for moral intelligence, consciousness, sympathy, self-control, attention and respect, kindness, patience, tolerance and fairness. Also, some people consider moral intelligence as deep belief and values that guide all thoughts and activities of the individual. This type of intelligence is a sort of direction for appropriate action and the ability to apply the universal moral principles in interacting with others (Lennick and Kiel, 2005). Lennick and Kiel (2005) describe this kind of intelligence as the person's mental capacity to link universal human principles to their values, goals, and actions. They determine four necessary components of integrity, responsibility, compassion and forgiveness for moral intelligence and they are essential for individual and organizational success. Integrity means harmony between beliefs and actions of the individual. Responsibility means accepting the outcome of actions and their consequences. Compassion means respect for others without any expectation and forgiveness means to acknowledge our own imperfections and tolerate the

mistakes of others. The tendency to work with integrity, responsibility, compassion and forgiveness is inherently present in human being.

One of the important structures playing an important role in adolescents involvement with drug use is sensation seeking. Sensation seeking is a personality trait first introduced and described by Zuckerman, a biological theorist influenced by the perspective of Azing (Karimi, 1991). According to Zuckerman's theory, sensation seeking is defined as the need for varied novel, complex, exquisite, unprecedented experiences, and risk taking sensations. The individuals with sensation seeking are individuals who have characteristics such as extraversion, autonomy, courage and inconsistency, and their physiological responses to new stimuli are more severe than other groups (Schultz & Schultz, 2002). Gets's research (2006) showed that there is a positive correlation between high sensation seeking of adolescents and risky behaviors such as safe driving and sexual acts without contraceptives (Azimi, 2008). The results of research by Zuckerman (1979) show that sensation seeking is one of the personality traits that has 4 components: 1-Thrill and adventure, 2-experience, 3-Disinhibition, and 4-boredom susceptibility and it is related to drug use. Ball, Carroll, & Rounsaville (1994) indicate that individuals with high sensation seeking use illicit drugs less than the individuals with low sensation seeking. Also, mental disorder and using more than one type of drugs as the sever symptoms of drug use can be observed among them. Given the high prevalence and onset of smoking and other substances during high school and the role of people's knowledge and attitudes about their behavior, prevention of risky behaviors in adolescent health, especially prevention of drug abuse is of great importance. It can be said that adolescents are among the most vulnerable age groups. Therefore, considering the above issues, the main problem of the present research is to investigate the relationship between self-regulation and moral intelligence with addiction potential with the mediating role of sensation seeking in high school girl students in Bushehr city.

Method

Statistical population, sample, and sampling method

The research method was descriptive correlational. The statistical population of the study consisted of 2nd grade high school female students in Bushehr during the academic year of 2016-2017. The age range of these students was between 18 and 15 years old. Based on randomized cluster sampling, in the first stage, 8 high schools were randomly selected among the second grade of high school. In the second stage, a class was of each high school was selected randomly from among the second-grade classes. According to many researchers, the minimum sample size for modeling is 200 (Hu, 2008; quoted by Naseri Palangard, Sadeghi Boroujerdi, Yousefi and Sadeghi Kalani, 2016). Durbin, & Klein also suggest at least 10 and at most 20 people for each variable in the exploratory factor analysis.

In this research, the sample size was 240 people and responded to the research questionnaires.

Instrument

1- Addiction Potential Scale: The English form of addiction potential scale is one of the three subscales of Minnesota's multiphasic questionnaire second edition by Weed, Butcher, McKenna, & Ben-porath (1992), quoted by Zeinali, Vahdat and Jesus, (2008) and has 39 items that were not reliable in Iran. So, in Iran, Zargar (2006) developed an addiction potential scale with respect to Iranian culture. This scale consists of 36 items with 5 lie assessment items, and the score of each

question is ranging from zero (strongly disagree) to 3 (strongly agree) and has two active and passive potentials. The participant should respond to strongly agree (3), agree (2) disagree (1) and strongly disagree (0). The minimum and maximum scores are 0 and 123, respectively. In the present study, the total score of scale has been considered. The reliability of this scale was calculated in Zararg and Ghaffari's (2009) study with Cronbach's alpha of 0.90. Eshrati (2010) also used the addiction potential scale on the third year high school students in Mashhad, and obtained the reliability of this scale using the Cronbach's alpha for the total scale of 0.70. Zargar (2006) used the criterion and construct validity to calculate the validity of this scale. In criterion validity, this scale was applied to a number of clients of the addict center in Ahwaz city, and the mean score of them was compared to the mean score of the staffs of an industrial company in Ahwaz, which showed a difference at the level less than 0.001. Thus, the score of addicts was higher than the normal group. Also, in order to verify the construct validity, the correlation coefficient between the Iranian addiction potential scale and the 25- Symptom Check List (SCL)

was 0.45 which was significant at the level 0.001. In this study, Cronbach's alpha method was used to determine the validity and reliability of the scale and the Cronbach's alpha coefficient was 0.69 and 0.73, respectively.

2- Motivated Strategies for Learning Questionnaire: This questionnaire was developed by Pintrich, & De Groot (1990) on the evaluation of self-regulation strategies and motivational beliefs

Became In the present study, a version that Alborzi and Samani (1999) have used on male and female students of guidance schools (smart students) in, Shiraz, Iran. The questionnaire has two parts: motivational beliefs (25 items) and self-regulation learning strategies (22 items) and totally it is 47 items. The motivational beliefs scale has three sub-scales of self-efficacy, internal value and test anxiety, and self-regulation scale also has two subscales of cognitive and self-regulation strategies. Participants responded on a 5-point Likert scale (strongly disagree), 2 (disagree), 3 (I have no idea), 4 (agree), and 5 (strongly agree). The score of each scale is the average of the constituents of scale. In existing literature, good validity and reliability this instrument have been

reported. For example, in a study conducted by Alborzi and Samani (1999) in Shiraz, the validity

of the questionnaire was reported by test re-test of 0.76. In the present study, Cronbach's Alpha was used to determine the reliability and validity of the scale as 0.76 and 0.81.

3. Moral Intelligence Scale: In the present study, the Lnick & Kiel's (2005) moral intelligence Questionnaire was used. This questionnaire has been validated in Iran by Arasteh, Azizi, Shamami, Jafarirad and Mohammadi Jozani in 2011. The moral intelligence questionnaire includes 40 items. Scoring is based on Likert scale (never, 1; rarely; 2; sometimes; 3; in most cases; 4; in all cases; 5;). In Iran, reliability was obtained through internal consistency of 0.89 (Bahrami, Asami, Fateh-Panah, Dehghani Tafti and Ahmadi Tehran, 2012). Also, the face and content validity and the internal consistency of its components were confirmed by experts. Factor analysis results showed that integrity has a factor load of 0.64, responsibility of 0.81, compassion of 0.84 and forgiveness of 0.83, and they are in common for total of 80% and this common factor is called moral intelligence (Sayyidat, Mokhtypour and Kazemi, 2009). In this study, Cronbach's alpha and internal consistency were used to determine reliability and validity of the scale. The Cronbach's alpha coefficient was 0.78 and 0.84, respectively.

4- Sensation Seeking Scale: In the present study, a short form of Zuckerman's Emotional Questionnaire (40 questions) was used. The questionnaire includes questions for assessing a person's willingness to engage in thrill and adventure seeking, experience seeking, disinhibition and boredom susceptibility. This questionnaire provides a general description of the sensation seeking trait by measuring four sub-factors (thrill and adventure seeking, experience seeking, Disinhibition and boredom susceptibility), and for each of the factors, 10 items are considered. The questionnaire consists of 40 two-part items that in each item, one of the two components, expresses the amount of sensation seeking of the individual, and the second part is opposite. The participant should choose an option that more reflects his interests and feelings. The test scoring system follows the zero and one system. The correlation coefficient between two scales is 0.55, which is significant at the level of 0.05 and indicates the desirable validity of this scale. To measure the validity of Zuckerman's sensation seeking construct, this scale correlates with Arendt's sensation seeking scale. The correlation coefficient between these two scales was 0.29 for addicts, 0.55 for non-addicted and 0.46 for all people. These correlation coefficients are significant at the level of 0.01. Also, the reliability coefficients of Zuckerman's sensation seeking scale were obtained by Cronbach's alpha for addicts 0.55, non-addicted individuals 0.66 and for all individuals 0.73 (Fathi and Mehrabizadeh Honarmand, 2008). In this study, the reliability of the total score of the questionnaire was 0.79 by Cronbach's alpha.

Results

The descriptive statistics of the studied variables are presented in Table 1.

Table 1: Descriptive Statistics of the Studied Variables

<i>Variables</i>	<i>Mean</i>	<i>SD</i>	<i>Minimum score</i>	<i>Maximum score</i>
Self-regulation	132.05	14.56	72	151
Moral intelligence	60.39	7.06	27.5	89
Sensation-seeking	7.24	2.77	0	14
Addiction potential	61.49	10.89	26	123

The correlation matrix of the studied variables is presented in Table 2.

Table 2: Correlation Matrix of Research Variables

<i>Variables</i>	<i>Self-regulation</i>	<i>Moral intelligence</i>	<i>Sensation seeking</i>	<i>Addiction potential</i>
Self-regulation	1	-	-	-
Moral intelligence	**0.51	1	-	-
Sensation-seeking	** -0.50	** -0.40	1	-
Addiction potential	** -0.56	** -0.54	**0.52	1

** $P \leq 0/01$

As shown in Table 2, the highest correlation coefficient is related to self-regulation with addiction potential (-0.56) and the lowest is related to moral intelligence with sensation seeking (-0.40). In order to test the relationship between self-regulation, moral intelligence with addiction potential, with the mediating role of sensation seeking in female students, path analysis was used. Therefore, the present proposed model consists of a combination of self-regulation, moral intelligence, sensation seeking and addiction potential. The results of the proposed model are presented in Fig. 1.

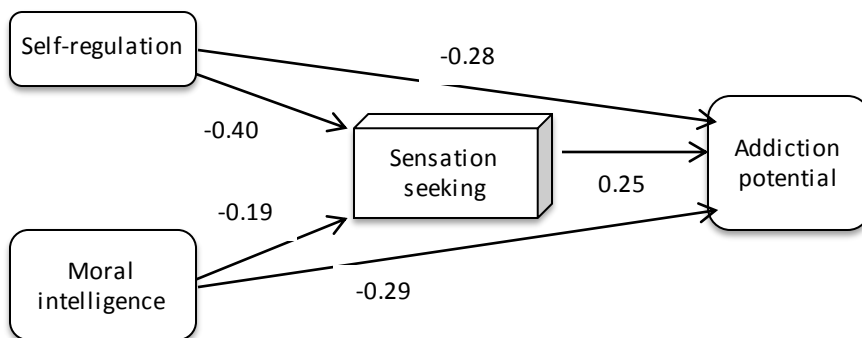


Chart 1: Standard Coefficients of Self-Regulation and Moral Intelligence Relationship with Addiction Potential with the Mediation of Sensation-Seeking

The paths of self-regulation to sensation -seeking and self-regulating to addiction potential were significant. Also, moral intelligence paths to sensation-

seeking and moral intelligence to addiction potential were significant. Also, the path of sensation-seeking to addiction potential was significant. Table 3 shows the paths and standard coefficients of the direct relations of variables in the proposed model.

Table 3: The Coefficients of Direct Paths of Research Variables in the Proposed Model

Variables	β	Standard error	.C.R	Significance
Self-regulation to sensation seeking	-0.40	0.01	-7.54	0.001
Self-regulation to addiction potential	-0.28	0.03	-5.39	0.001
Moral intelligence to sensation-seeking	-0.19	0.02	-3.67	0.001
Moral intelligence to addiction potential	-0.29	0.07	-6.12	0.001
Sensation-seeking to addiction potential	0.25	0.21	4.68	0.001

According to Table 3, it is noted that all direct paths are significant. After considering the fitting of path coefficients, the fitness of the proposed model was studied. To determine the fitness adequacy, the proposed model with data and a combination of fitness indicators was used. The fitting indices of the proposed model are presented in Table 4.

Table 4: Fit Indices of the Proposed Model in the Present Study

Indices	χ^2	GFI	AGFI	NFI	CFI	IFI	TLI	RMSEA
Proposed model	118.95	0.95	0.91	0.89	0.92	0.98	0.97	0.07

As shown in Table 4, after considering the direct path coefficients, the fitness of the proposed model was investigated. First, the fitting of the proposed model is evaluated based on fitness indicators. According to table 4, the values of the fitness indicators of the proposed model, including the chi-square index (118.95), the goodness of fit index (0.95), comparative goodness of fit index (0.91), incremental fitness index (0.98), Tauker-Lewis fitness (0.97), comparative fit index (0.92), Normative fitness index (0.89), and root mean square error of approximation (0.07) showed that the proposed model had suitable fit. Therefore, the general hypothesis of the present study was supported.

Discussion and conclusion

The purpose of this study was to investigate the relationship between self-regulation and moral intelligence with addiction potential with the mediation of sensation-seeking in female students in Bushehr. The results showed that all direct paths and mediators were significant. Also, the values of fit indicators of the proposed model showed that the proposed model has suitable fit. Therefore, the general hypothesis of the present study was confirmed. This finding is supported by researches by Roos, & Witkiewitz (2017), Duke & Montag, (2017), Cho, & Lee (2017), Cole, Logan, & Walker(2011) and McMahan, & Renken(2011), as well as the studies of Ghanadi, Fernood and Allylu (2014), Mahmoudi, Heydari and Abdi (2011); Besharat et al., (2012), Ghahvchechi and Mohammad Khani (2012); Esmaeili Shahna; Shalchi and Ahmadi (2017);

Ghasemi; Rabiei; Haghayegh and Palahang (2011). In explaining this finding, it can be said that the probability of the involvement of adolescents in risky behaviors such as drug abuse is considerably influenced by individual and environmental factors. Risk factors increase the likelihood of suffering and the protective factors reduce this probability (Miller, & Mercer, 2017). Sensation-seeking is a kind of hereditary desire to start an eager activity in response to new stimuli. People with high sensation-seeking are usually diverse, bored, impulsive in achieving reward, unable to accept failure and generally are not based on discipline (Smorti, 2014). In fact, sensation seeking is a mood related talent for risk taking and a personality trait with biological roots that is defined by the need for sensation and intense, new and complex experiences. These experiences and emotion are in the fields of physical, social, legal and financial behaviors. Individuals who get high scores in sensation-seeking are likely to be drawn to risky behaviors such as unsafe driving, risky sexual behaviors, and substance abuse and psychedelics (Scalese et al., 2014, Cyders, & Smith, 2008). One explanation for involvement in these risky behaviors is that people with high sensation-seeking will estimate the risk and harm of these behaviors less. So as emotion-seeking describes the degree of person's openness to new experiences, can be an important explanation for the etiology of students' addiction potential. Emotional intelligence and low emotional self-awareness reduce self-concept, control and self-expression skills, and thus addiction tendency is reduced (Savari and Shanchi, 2017). Therefore, considering the explanations provided and the results of previous research, it seems logical that sensation-seeking is related to addiction potential. As the results of this study confirm the relationship between sensation seeking and addiction potential. In explaining the relationship between self-regulation and addiction potential of high school girl students, two explanations can be made. One is that people with low self-regulation have less ability to control their drug use. Second, people try to use drugs to regulation their own emotions. Both hypotheses have received significant support (Kobulsky, 2017). Various studies have shown that drug use among people with lower self-regulation is higher. Studies have also shown that people with low self-regulating skills use more drugs than those with higher self-regulation skills. Studies have shown the relationship of the increase of drug use and poor self-control (Duke & Montag, 2017). In explaining this finding, it can be said that self-regulation failure due to false self-regulation and incomplete self-regulation may lead to an increase in the severity of substance abuse disorder. It is possible that weakness in self-regulation in the context of weakness or lack of self-control may increase drug use and increase drug-related problems. The weakness in self-regulation may increase the likelihood of substance use increase in order to regulate emotions and avoid negative emotions. The use of drugs for their relieving or exhilarating effects has been confirmed (Roos, & Witkiewitz, 2017). As previously mentioned, the weakness in self-regulation may increase the perception of stress, and this may increase the severity of substance use disorder,

while high self-regulation can reduce psychological distress in case of exposure to stressors, and possibly based on severity reduction, substance abuse is justified.

In explaining the relationship between moral intelligence and addiction potential, people with moral intelligence always associate their work with ethical principles, which increases their commitment and responsibility and improves individual and group efficiency, which is an important component in volunteer groups. Amonini, & Donovan (2006) state that many teenagers consider drug use, alcohol, and marijuana as moral mistakes due to their current conditions. Adolescents who use drug decide to use it based on moral judgment (good / bad). Kuther '(2000) study also highlights the role of moral intelligence in predicting drug use. Accordingly, weakness in self-regulation mechanisms plays an important role in directing a person to adopt abnormal moral behaviors such as risky sexual behavior or substance abuse.

Finally, these findings can be explained within the framework of self-contempt theory. Based on this theory, one's general self-esteem is the main factor in drug abuse and its prevention. Teens who feel rejected by others and do not have acceptable social performance show that some responses first: they feel that they must symbolically make chaos against the common standards and values. Second, they avoid conventional social patterns; third, they feel that they can enhance their self-esteem by doing abnormal behaviors and ultimately connect with delinquent peers that strengthen their sense of value. This view by introducing concepts of self-esteem, isolation and alienation and communicating with deviant peers and by relying on internal features and concepts of commitment and dependence theories as well as social learning explains drug use. Mental and personality weaknesses with unsuitable social, family conditions, and lack of proper human relationships, gradually cause that the person is faced with mental and psychological problems. In the study of the life of addicts, the disturbances of the family situation are clearly seen in most cases, and many addicts seek refuge in addiction to escape these disturbances and psychological problems (Pazany, Borjali, Ahadi and Kraskian Mojembari, 2016).

This study also had some limitations. This research was conducted on high school female students, so the generalization of the results to male students as well as other levels of education should be done with caution. It is recommended that the present study be repeated on high school boy students and compare their results with girls' groups. It is also recommended that students who achieve high scores for addiction potential scales and sensation-seeking scales be identified and receive to drug prevention counseling.

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