

Abstract

Objective: Substance abuse is affected by many biological, social, and psychological factors. Some personality traits, temperament, and self-control skills play an important role in it. The purpose of this study was to predict the tendency toward substance use in university students based on temperament-character and abnormal dimensions of personality with the mediating role of self-control. **Method:** A sample of 273 students of Azarbaijan Shahid Madani University was selected through random cluster sampling method and filled out Personality Inventory for Diagnostic and Statistical Manual of Mental Disorders–Fifth Edition (PID-5), Temperament and Character Inventory, Iranian Addiction Potential Scale, and Tangney Self-Control Scale. **Results:** The results showed that addiction tendency is related to novelty seeking, harm avoidance, cooperativeness, and self-directedness ($P < 0.05$). The obtained model showed that negative affectivity and cooperativeness could predict addiction tendency under the mediating role of self-control; and the dimensions of detachment, psychoticism, and antagonism were directly correlated with addiction tendency ($p < 0.05$). **Conclusion:** With regard to investigating the dimensions of personality in addiction, this study showed that abnormal personality dimensions and temperament-character dimensions have a significant role in drug use tendency in student population. With the identification of these dimensions and characteristics, it is possible to devise appropriate strategies for preventing this phenomenon in student environments.

Keywords: temperament-character, abnormal personality dimensions, addiction tendency, self-control

Relationship of Temperament-Character, Abnormal Dimensions of Personality, and Self-Control with Addiction Tendency in University Students

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Introduction

Substance abuse is one of the human problems that is related to the health of individuals and is experiencing an increasing trend (Beirami, Alizadeh, Hashemi, & Alilou, 2012). Drug abuse is a major problem in modern societies that affects the lives of millions of people and wastes great financial sources to fight and prevent further damage (Taheri, Amiri, Hosseini, & Mohsenpour, 2016). According to the published statistics, in recent years, the prevalence of substance abuse has increased in lower age ranges, especially from 15 to 26 years old (Taromian, 2010). On this basis, young people are the most vulnerable group of people regarding drug abuse. In particular, university students are among the groups highly exposed to the risk drug abuse due to their specific psychological and social characteristics. Various studies have shown that in this age group, alcohol is the most commonly consumed substance, and the use of psychoactive substances is also growing (Mohammadpour-Asal, Abbasi, Allahverdipour, & Augner, 2014; Tale'ea, Mokhberi, Fayyazi, Javanbakht, & Samari, 2008). Therefore, paying attention to the mental health of students, as future-makers and the elite community, is one of the intellectual needs of decision-makers and researchers in this domain.

It seems that many people with substance use disorder, especially young people, have been suffering from personality vulnerability for getting this disorder before the onset of drug use due to weak coping skills, emotional distress, and ongoing criticism against the society and related authorities (Hosein Khanzadeh, & Taher, 2014). Substance use may be facilitated by various factors, such as cultural issues (Stock et al., 2013), family dependence (Prado et al., 2009), as well as biological, psychological, and personality processes (Glantz, 1992). Since addiction is a psychological and social-biological disease, it has been attempted to address the individual characteristics contributing to this disorder. One of these characteristics is personality (Le Bon, Basiaux, Stree, & Hanak, 2004). According to many researchers, personality is the most important underlying factor in addiction in such a way that surveys indicate that personality traits play a major role in the onset, expansion, and continuity of drug dependence (Ball, 2004). Different theoretical perspectives have focused on explaining the personality structure. One of the most important views in this area is Cloninger's view. Cloninger (1996), with an emphasis on biological components, has developed a solid theoretical framework of personality that embraces both normal and abnormal personality. According to this view, personality has been composed of components of temperament and character. Character is a hereditary basis of those emotions and learning types that last throughout life and are acquired through emotional and automatic behaviors. Character can be seen as a visible habit in the early days of life. Cloninger has proposed in his neurobiological model that character systems in the brain have functional organizations and consist of different and independent systems for

activating, sustaining, and inhibiting behavior in responding to certain groups of stimuli. He introduced four dimensions of novelty seeking, harm avoidance, reward dependence, and persistence. Character also includes rational recipes about the self, others, and the world, such as the features that are influenced by environmental factors; in fact, three dimensions of self-directedness, self-transcendence, and cooperativeness exist in character (Cloninger, & Svrakic, 2005). Cloninger's theory is of importance regarding the dimensions of character and temperament, especially in terms of drug abuse because character dimensions are the hereditary traits that may act as mediators between genotypes and drug use behaviors (Elovainio, Kivimäki, Viikari, Ekelund, & Järvinen, 2005). The brain-behavioral system plays a key role in the way of responding with eagerness or abhorrence to new stimuli and acts as a foundation for the behavior of drug use by means of dopaminergic receptors (Chaudhri, Caggiula, Donny, Palmatier, & Liu Sved, 2006). Research has shown that high scores in the dimension of novelty seeking (Paavonen et al., 2016; Evren et al., 2012; Martinotti, Cloninger, & Janiri, 2008), high scores in harm avoidance (De Los Cobos et al., 2011), and low scores in self-directedness (Marquez-Arrico, López-Vera, Prat, & Adan, 2016) are significantly correlated with drug use, the rate of relapse, as well as drug use craving.

Concurrently with Diagnostic & Statistical Manual of Mental Disorders-5th edition in 2013, personality workshops proposed an alternative model for personality disorders. The purpose of presenting this model was to implement a new method for assessing personality disorders without multiple problems of prior approaches in addition to the continuity of clinical-based services. According to the alternative model, personality disorders should also have two criteria, namely creating deficiency in individual functions and pathological personality dimensions (American Psychiatric Association, 2013). The abnormal dimensions of personality are organized in five areas of negative affectivity, detachment, antagonism, disinhibition, and psychoticism (Esbec, & Echeburúa, 2015). Negative affectivity correlates with anxiousness, separation insecurity, and depression. Detachment is closely related to withdrawal, anhedonia, and intimacy avoidance. Antagonism is correlated with deceitfulness and grandiosity. Irresponsibility and impulsiveness are the main characteristics of the disinhibition dimension; and components, such as unusual beliefs and experiences have been raised under the heading of psychoticism (Bastiaens et al., 2016). Based on evidence, abnormal dimensions of personality, such as negative affectivity MacIntyre, Ruscio, Brede, & Waters, 2018; Szasz, Szentagotai, & Hofmann, 2012; Berking et al., 2011), antagonism and detachment (Creswell, Bachrach, Wright, Pinto, & Ansell, 2016; Creswell et al., 2015; Few et al., 2013), and disinhibition and psychoticism (Marmeta, Studera, Rougemont-Bückinga, & Gmel, 2018; Sellbom, Smid, De Saeger, Smit, & Kamphuis, 2013) have a significant relationship with tendency to substance abuse. In a meta-analysis, Schütz, Sahoo, & Krausz (2014) reported that people

with substance abuse obtained higher scores in impulsivity, especially cognitive impulsivity and lack of planning, compared to the normal group.

Self-control is another important component of personality that has been shown to have a high correlation with substance abuse tendency. Gottfredson and Hirschi's self-control theory (1990, as cited in by Mowlaie, Abolghasemi, & Aghababaei, 2016) stated that the self-control construct is correlated with alcohol drinking, cigarette smoking, and driving accidents. Further research has shown that self-control is one of the most important constructs in the study of drug addiction and substance abuse (Weinberg, 2013; Volkow, Wang, Tomasi, & Baler, 2013; Berkman, Falk, & Lieberman, 2011). Turanovic, & Pratt (2014) have argued that self-control does not directly lead to substance abuse and delinquent behaviors, but can play such a role in interaction with other variables, such as personality factors and provide grounds for delinquent behaviors, such as substance abuse.

Regarding what has been mentioned earlier, substance abuse tendency is a consequence of inefficient and abnormal personality traits. Since the biological dimensions of personality and personality traits are the factors influencing the emergence of different methods of coping with stress, it can be concluded that the presence of certain dimensions of temperament-character along with the increasing incidence of abnormal personality traits, the grounds for the advent of ineffective coping strategies will be provided. On the other hand, student period and early adulthood are highly stressful and sensitive periods for most young people and they are faced with a wide range of vulnerable and stressful factors in these periods. The existence of some abnormal personality traits of temperament-character can act as important risk factors for personal control against cravings and provide grounds for ineffective coping with stress. Accordingly, it is necessary to identify the characteristics of temperament-character and abnormal personality dimensions that have a high correlation with the tendency to substance abuse, and to investigate their interactive model with personal control ability. Thus, it is possible to provide the necessary preventive and coping measures to identify students susceptible to substance abuse and to provide the necessary interventions with desired features. Therefore, the present study was conducted with the aim of investigating the relationship of temperament-character, abnormal dimensions of personality, and self-control with addiction tendency in university students in the form of examining the fitness indices of the proposed hypothesized model.

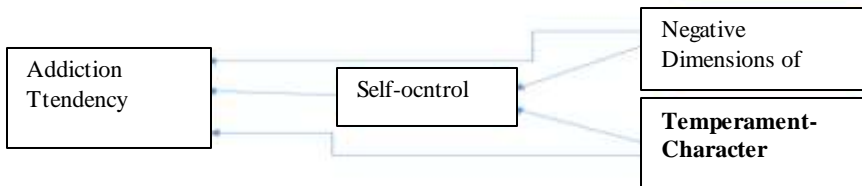


Fig. 1: Initial Model of Relationship of Temperament-Character, Abnormal Dimensions of Personality, and Self-control with Addiction Tendency

Method

Population, Sample, and Sampling Method

The present study was a descriptive correlational one. The statistical population of this study consisted of Azarbaijan Shahid Madani University students in the academic year of 2017-18 where there were a number of about 7000 students. Through convenience sampling method and by taking into account the structural equation modeling method that the sample size can be determined from 5 to 15 observations per variable (Houman, 2005), a sample size equivalent to 300 male and female university students was estimated for the current study. Finally, the faulty questionnaires were excluded and the data obtained from 273 questionnaires were analyzed. The mean age of the sample was 24.00 ± 5.20 years; 79 participants were male and 194 ones were female; and 65 ones were married and 217 ones were single. The number of 109 sample units were bachelor-level students, 112 ones were master-level students, and 52 ones were doctoral students. In this study, the terms of the Helsinki Declaration (the World Medical Association, as a statement of ethics in medical research) were observed. Among these terms, we can refer to the explanation of the research objectives to participants and obtaining informed consent from them, voluntary participation in the research, confidentiality the responses and information filled by subjects, and participants' becoming aware of the results if they are willing.

Instruments

1. Short form of Personality Inventory for Diagnostic and Statistical Manual of Mental Disorders–Fifth Edition (PID-5): This instrument has been developed by Krueger and Marcon (2014) to measure the DSM-5 personality traits model. It has 25 items and measures five dimensions of abnormal personality traits, including negative affectivity (such as anxiousness and separation insecurity), detachment (such as withdrawal, anhedonia, and intimacy avoidance), antagonism (such as manipulateness, deceitfulness, and grandiosity), disinhibition (such as irresponsibility, impulsivity, and distractibility), and psychoticism (such as unusual beliefs and experiences, eccentricity, and perceptual dysregulation). Krueger and Marcon (2014) reported the internal consistency coefficients of 0.91, 0.96, 0.97, 0.93, and 0.89 for the

mentioned dimensions, respectively. The psychometric properties of this version in Iran have been confirmed by Abdi, & Chalbianlou (2016) and the total reliability value of 0.86 has been reported for this scale while the internal consistency coefficients of its factors have been reported to range from 0.76 to 0.89. In this study, Cronbach's alpha coefficient for the whole scale was obtained equal to 0.81.

2. Addiction Potential Scale: This is a questionnaire for Iranian addiction readiness scale, which was constructed by Zargar (2006, as cited in Zargar, Najarian, & Bahrami, 2008) in line with the psychological social state of Iranian society. It consists of two factors, and 36 items plus five lie detecting items. The construct validity of this scale has been obtained equal to 0.54 by correlating it with SCL-90, which is significant at the level of 0.001. The reliability of this scale was calculated using Cronbach's alpha (0.90) (Zargar, 2006, as cited in Zargar et al., 2008). In this study, Cronbach's alpha coefficient for the whole scale was obtained equal to 0.78.

3. Temperament and Character Inventory: This scale was designed by Cloninger, Svrakic, & Sadock (1993) based on the theory of bio-social systems in a 125-item format, and consists of four temperament dimensions, including novelty seeking, harm avoidance, reward dependence, and persistence; and three character dimensions, namely self-directedness (SD), cooperativeness (CO), and self-transcendence (ST). Pelissolo et al. (2005) administered this questionnaire to a 482-participant sample, and the Cronbach's alpha coefficients for all sub-counts were above 0.8. In Iran, Kaviani et al. (2005) reported the Cronbach's alpha for the sub-scales between 0.73 and 0.90. In this study, Cronbach's alpha coefficient for the whole scale was obtained equal to 0.78.

4. Tangney Self-Control Scale: This questionnaire was designed by Tangney, Baumeister, & Boone (2004) in the form of a 36-item questionnaire to measure individuals' self-control and impulse control. Cronbach's alpha coefficient for the total scale has been reported equal to 0.77 (Nęcka, 2015). In this study, Cronbach's alpha coefficient for the whole scale has been obtained equal to 0.88.

Results

The analysis of statistical assumptions constitutes an important part of structural equation modeling and prevents obtaining unrealistic and biased results. One of the main assumptions of this statistical approach is the univariate and multivariate normality. Usually, the univariate normality is evaluated by examining the skewness and kurtosis of the evident variables. The skewness of variables ranges from 0.03 to 2.08 and their kurtosis ranges from -0.29 to 1.65. Chou & Bentler (1995) consider the cut-off point ± 3 appropriate for skewness. For the cut-off point of kurtosis, values greater than ± 10 are problematic (Klein, 2011). Relative Multivariate Kurtosis, which is calculated to evaluate the assumption of multivariate normality, was obtained equal to 2.02. Bentler (1998) believes that if the magnitude of this index is not larger than 3, then the

multivariate normality has been observed. The correlation matrix of the evident variables can show the existence of multicollinearity among them. The correlation coefficients above 0.85 create problem in the correct estimate of the model (Klein, 2011). The descriptive statistics of the research variables are presented in Table 1.

Table 1: Descriptive Statistics of the Research Variables

| <i>Variables</i> | <i>Mean</i> | <i>SD</i> | <i>Variables</i> | <i>Mean</i> | <i>SD</i> |
|------------------------|-------------|-----------|-----------------------------|-------------|-----------|
| Addiction | 31.38 | 18.41 | Reward dependence | 10.19 | 2.32 |
| Self-control | 85.04 | 14.75 | Self-directedness | 14.29 | 4.67 |
| Novelty seeking | 15.75 | 2.73 | Cooperativeness | 13.63 | 3.55 |
| Harm avoidance | 11.60 | 4.07 | Self-transcendence | 6.10 | 2.69 |
| Persistence | 7.11 | 4.3 | Negative Affectivity | 9.86 | 3.20 |
| Psychoticism | 9.24 | 2.80 | Detachment | 8.44 | 2.67 |
| Antagonism | 8.67 | 2.96 | Disinhibition | 8.54 | 2.68 |

In order to examine the relationship between research variables, Pearson correlation method has been run and its results are presented in Table 2.

Table 2: Correlation Matrix of the Research Variables

| <i>Variables</i> | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> | <i>6</i> | <i>7</i> | <i>8</i> | <i>9</i> |
|--------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 1. Addiction | 1 | - | - | - | - | - | - | - | - |
| 2. Self-control | 0.31 | 1 | - | - | - | - | - | - | - |
| 3. Novelty seeking | -0.19 | -0.04 | 1 | - | - | - | - | - | - |
| 4. Harm avoidance | -0.15 | 0.04 | 0.07 | 1 | - | - | - | - | - |
| 5. Reward dependence | 0.11 | -0.03 | -0.16 | -0.01 | 1 | - | - | - | - |
| 6. Self-directedness | 0.46 | -0.03 | -0.37 | -0.27 | 0.09 | 1 | - | - | - |
| 7. Cooperativeness | 0.09 | 0.11 | -0.17 | -0.06 | 0.14 | 0.37 | 1 | - | - |
| 8. Self-transcendence | 0.03 | 0.02 | 0.09 | -0.07 | 0.22 | 0.01 | 0.12 | 1 | - |
| 9. Persistence | 0.05 | 0.04 | 0.08 | -0.04 | 0.9 | 0.15 | 0.11 | 0.9 | 1 |
| <i>Variables</i> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | - | - |
| 1. Addiction | 1 | - | - | - | - | - | - | - | - |
| 2. Self-control | 0.31 | 1 | - | - | - | - | - | - | - |
| 3. Negative Affectivity | 0.36 | 0.21 | 1 | - | - | - | - | - | - |
| 4. Psychoticism | 0.37 | 0.11 | 0.32 | 1 | - | - | - | - | - |
| 5. Detachment | 0.31 | 0.22 | 0.39 | 0.45 | 1 | - | - | - | - |
| 6. Antagonism | 0.30 | 0.14 | 0.52 | 0.50 | 0.61 | 1 | - | - | - |
| 7. Disinhibition | 0.28 | 0.12 | 0.49 | 0.54 | 0.61 | 0.76 | 1 | - | - |

Amos₂₂ software was used to investigate the proposed hypothetical model on the relationship of temperament-character and abnormal dimensions of personality with drug use tendency with the mediating role of self-control. Fig.

2 shows the structural pattern, paths, and their standard coefficients in the research model. In this study, all relationships among abnormal dimensions of personality, temperament-character, and self-control with students' addiction tendency were revealed to be significant. The present model showed that the most important predictors of addiction tendency are cooperativeness, self-control, self-transcendence, negative affectivity, antagonism, detachment, and psychoticism, respectively. Negative affectivity and cooperativeness have indirect effects through the mediating role of self-control. The other factors directly affected addiction tendency and had no significant relationship with self-control. The results of the goodness of fit for the model are presented in Table3.

Table 3: Fitness Indices of the Model Presented in the Research

| <i>Fitness indices</i> | <i>X²</i> | <i>NFI</i> | <i>DF</i> | <i>GFI</i> | <i>AGFI</i> | <i>CFI</i> | <i>RMSEA</i> |
|------------------------|----------------------|------------|-----------|------------|-------------|------------|--------------|
| Value of indices | 65.69 | 0.93 | 35 | 0.96 | 0.96 | 0.96 | 0.05 |

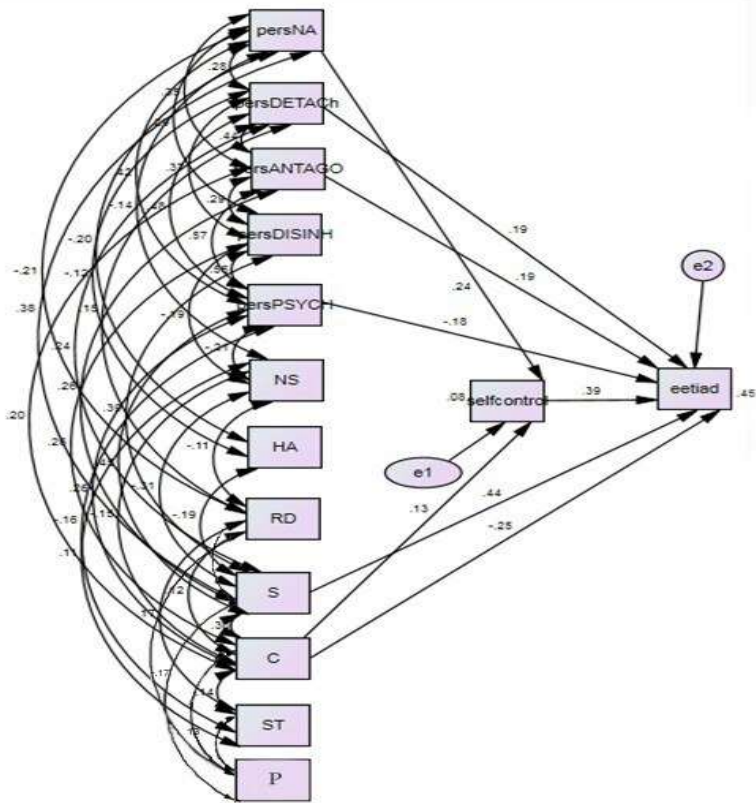


Fig. 2: Standardized Model Loads for Explaining Addiction Tendency based on Abnormal Dimensions of Personality, Temperament-Character with the Mediation of Self-control (pers NA: negative affectivity, pers Detach: detachment, persAntago: antagonism, persdisinh: disinhibition, pers psych : psychoticism, NS: novelty seeking, HA: harm avoidance, RD: reward dependence, P: persistence, S: self-directedness, C: cooperativeness, ST: self-transcendence, self-control: Self-control, eetiad: addiction)

Goodness of fit index (GFI), comparative fit index (CFI), and normative fit index (NFI), which are ratios of observed covariance, indicate that the model enjoys desired fitness by considering the numerical value larger than 90%. Also, the root mean square error of approximation (RMSEA) shows the remaining variance of the model, and values smaller than 0.08 represent the rationality of the model fitness.

Bootstrap test was used to determine the significance of intermediate relationships. Table 4 shows the results of Bootstrap in the relationship of abnormal dimensions of personality and temperament-character with addiction tendency toward addiction with the mediating role of self-control.

Table 4: Bootstrap Test Results (2000) for Checking the Mediator Path

| <i>Mediator path</i> | | <i>Bootstrap</i> | <i>Lower bound</i> | <i>Upper bound</i> | <i>Confidence interval</i> |
|---|---|------------------|--------------------|--------------------|----------------------------|
| Independent variable | Mediator variable Dependent variable | | | | |
| Abnormal dimensions of personality and temperament-character | Self-control Addiction tendency | 0.0005 | 0.020 | 0.444 | 95% |

According to the above table, the lower bound (0.020) and the upper bound (0.444) of the intermediate test with the 95% confidence interval indicate that this mediating relationship is significant.

Discussion and Conclusion

The aim of this study was to investigate the dimensions of temperament-character and the role of abnormal personality dimensions in predicting students' drug use tendency through the mediating role of self-control. The results of this study showed that addiction tendency is predicted by cooperativeness and self-control, self-transcendence, negative affectivity, antagonism, detachment, and psychoticism. Negative affectivity and cooperativeness have indirect effects through the mediation of self-control. The other factors directly influenced the addiction tendency and did not have any significant relationship with self-control.

The results showed that the mean value of cooperativeness scores in people with addiction tendency was negatively significant and it was significantly lower in them than that in non-addicts. This finding is consistent with the research findings supported by Purper-Ouakil et al., 2010; Oberien, 1996; Kim et al., 2010). It is concluded that the individuals with addiction tendency show low levels of cooperativeness. To explain this finding, it can be argued that low levels of cooperativeness in these participants represent response inhibition and this issue places addicted people more at risk of impulsivity and behavioral difficulties (Biederman et al., 2008). Low levels of cooperativeness are related

with high levels of behavioral difficulties, impulsivity, depression anxiety, attention deficits, and violent behaviors in people with addiction tendency.

The path of abnormal personality dimensions towards addiction tendency are significant in three components, namely detachment, antagonism, and psychoticism. Regarding the relationship between substance abuse and the detachment dimension, one can claim that these people are very sensitive and they choose loneliness since they feel secure in their loneliness and believe that nobody can harm them when they are alone. This makes them highly introvert, inert, and lacking in social skills and it can cause them to grow up alone and turn to drug abuse to get rid of the pains caused by this loneliness. Other possible causes of drug use in these people can be their failures in life that have resulted in their reduced self-esteem and, thereby, they take refuge in narcotics in order to cope with the unpleasant feelings of this condition (Armstrong, 2002).

In terms of the antagonism dimension, the fact that they do not have the ability to tolerate monotony makes them ready to try anything. This diversity seeking along with their general impulsivity and deficiencies in the inhibition system and affective inhibition creates the potential for consuming almost any narcotic drugs (Alcorn et al., 2013).

With regard to the psychoticism dimension and its relationship with substance abuse, it can be argued that the characteristics of these individuals are loneliness and eccentricity. The reason for their loneliness is that they feel safe in solitude. This may orient them to grow alone and to take refuge in narcotics in order to relieve their pains. Another possible cause of drug use in these people can be their failures in life, which can damage their self-esteem and, thereby, they turn to drug use to cope with the unpleasant feelings of this condition (Armstrong, 2002).

The results also suggested that the self-control mediator variable is correlated with addiction and self-control is related to negative affectivity and cooperativeness. Low self-control is a central driver for substance abuse among adolescents. This finding is consistent with those of the studies conducted by Cheung (2010); Weinberg (2013); Volkow, Wang, Tomasi & Baler (2013); Berkman, Falk & Lieberman (2011); and Turanovic & Pratt (2014). Cheung found that self-control has a significant role in deviant behaviors, including alcohol consumption. Self-control skills are trainable and there are numerous experiences in this field that support the effectiveness of self-control training in reducing behaviors, such as smoking and drug use in adolescents. The results of a study in this domain showed that the participants in the intervention group with self-control skills training had experienced a significant improvement in smoking awareness and intention compared to the control group. Those who have low levels of self-control can get easily angry at others (Jillian, Turanovic, Travis, & Pratt, 2013).

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