Structural Equations of Emotional Self-Regulation, Behavioral Activation/Inhibition Systems by Mediating Thinking Styles in Addicted Patients' Psychological Well-being

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Abstract

Objective: The aim of this study was to determine the contribution of emotional self-regulation and behavioral activation/inhibition systems in addicted patients' psychological well-being under the mediating role of thinking styles. **Method:** The current research employed a descriptive correlational method. Hofmann & Kashdan's Affective Styles Questionnaire, Behavioral Inhibition Activation Inventory, Sternberg & Wagner's Thinking Styles Inventory, and Psychological Well-Being Questionnaire were used for data collection. A sample of 100 addicts in Nazarbad was selected by random sampling. The collected data were analyzed using PLS Software. **Results:** The results showed that self-regulation has a positive effect on thinking styles and well-being; and thinking styles have a positive impact on psychological well-being. Moreover, behavioral activation/ inhibition systems have a positive effect on thinking styles and on psychological well-being. **Conclusion:** The role of emotional self-regulation and behavioral/inhibition activation systems with the mediation of thinking styles is predictable in addicted patients' psychological well-being.

Keywords: emotional self-regulation, behavioral activation/ inhibition, thinking styles, psychological well-being

Introduction

Drug addiction is one of the important issues of the present age, which has become a global issue. In the study of human history, few countries can be found that has not been dealing with drug issues. According to the United Nations Office on Drugs and Crime (UNODC), 200 million people in the world suffer from drug abuse (Ebrahimi and Agahi, 2011). One of the factors that is closely associated with drug use is emotional self-regulation. Emotion regulation is a basic principle in initiating, evaluating, and organizing the adaptive behavior and also in preventing the negative emotions and maladaptive behaviors. This structure is a complex concept that covers a wide range of biological, social, behavioral, and conscious and unconscious cognitive processes (Garnefski, 2001). Since emotion regulation plays a central role in normal evolution and weakness, it is considered as an important factor in creating mental disorders. Thus, theorists believe that the individuals who are not able to manage their emotions against everyday events in a proper way show the diagnostic symptoms, and the internalization disorders such as depression and anxiety (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008).

Gray explains how brain-related personality traits make people susceptible to the psychological disorders and harms. In Gray's theory, there are two major brain systems that control the behavior and emotions (Gray, 1990). The Behavioral Inhibition System which is activated by a conditional stimulus that is related to the punishment or elimination of the rewards, and the Behavioral Activation System which is activated by a stimulus that is associated with the reward or the termination of the punishment in order to direct the organism to the stimulus. Those who have a high sensitivity in the behavioral activation system are more likely to experience the tendency behavior and positive affection in the stimulating conditions that are accompanied with rewards. (Carver & White, 1994; Dawe & loxton, 2004; & Fowles, 2000). Some studies conducted in the area of the relationship between the behavioral activation/inhibition systems and alcohol abuse problems have shown that there is a positive relationship between the high sensitivity of the behavioral activation system and alcohol abuse (Franken & Muris, 2006; Hundt, Kimbrel, Nelson, & Mitchell, 2008; & O'Connor, Stewart, & Watt, 2009). The behavioral inhibition system is activated by the conditional stimuli that are associated with the punishment or removing the reward and also by the new stimuli or the stimuli that inherently involve fear (Gray, 1994). It is predicted that people whose behavioral activation system is higher than the activity level of this system in normal people and the activity of their inhibition system is lower than that of the normal people are exposed to the highest risk of problems of substances and alcohol (Nathan et al., 2007). Rose and Musyler (2013) concluded that there was a positive correlation between the behavioral activation system and the tendency toward addiction (quoted by Sheikh-al-Eslami et al., 2016). Among the various

variables that play a significant role in explaining and predicting the tendency toward addiction, thinking styles can be mentioned. Being placed in the particular situations that direct a person to drug use can create a particular way of thinking that is specific to the life in these situations. The results of the research show that the addicted people have different thinking styles in comparison with non-addicted people. Soto (2007) and Lacy (2000) investigated whether prisoners with substance abuse problems have different thinking styles than prisoners without substance abuse problems. And also explored what specific thoughts and thinking styles are predominant in these individuals? The results of the research indicated that the prisoners with substance abuse problems use the confusing criminal thinking styles more than the prisoners without substance abuse problems. The thinking style is not an ability by itself, rather it refers to how the capabilities are used (Sternberg, 1997; quoted by Emamipourr, 2001). By introducing the theory of mental autonomy, Sternberg proposed thinking in the form of 13 styles which are categorized into five dimensions of function, form, level, scope, and learning. In brief, in the dimension of function, the individual with legislative style tends to develop inventions and designs and performs the works in his own way. A person with an executive style performs what is said to him, and the person with the judicial style tends to judge and evaluate people and things. In the tendency dimension, a person with a liberal thinking style tends to do things in new ways and also disagrees with the customs. A person with a conservative thinking style tends to do things in the predetermined and proper ways (Emamipour, 2001).

One of the important factors in explaining the individuals' mental health is paying attention to their psychological well-being; if it is at a low level, it can predict several psychological and social harms. Ryff (1998), inspired by Aristotle, states that some of the aspects of the optimal activity such as the realization of the individual's goals involve a lot of legitimacy and effort, and this may even be in complete conflict with short-term happiness. She believes that well-being should not be considered as an equivalent to more experience of pleasure against pain, but well-being includes efforts toward perfection and the realization of the individual's potential forces. King & Hinds (1998) in the development of the psychological well-being structure, focused on the individual's experiences and on the six aspects of the psychological performance associated with flourishing including autonomy, mastery, personal growth, positive relatedness, life purpose, and self-acceptance. Psychological well-being reflects how people feel about themselves and includes the individuals' emotional responses, satisfaction with life, and judgment about quality of life. Psychological well-being is an important structure that at the low levels leads to depression and social isolation and cause the lack of satisfaction, self-confidence, and feeling and also leads to the reduced mental and physical health (King and Hinds, 1998). Psychological well-being has been defined as the individuals' understanding of their own lives in the context of the emotional

behaviors and mental performances and the dimensions of mental health. Research on the psychological well-being has shown the areas of personality, motivation, and cognitive factors (perception, self-confidence, optimism), all of which contribute to the individuals' satisfaction with life (Diner, 2006).

There is a wealth of research evidence that indicate the unpleasant events of life can affect and distort the psychological well-being and lead to the psychological problems such as depression and anxiety. On the other hand, the relationship between the psychological well-being and the other factors such as emotion regulation and personality traits should be considered.

The role of affective styles has been discussed in a range of mental disorders including substance abuse (Hayes & Wilson, 1996) anxiety and mood disorders. Moreover, the individual differences in affective styles have shown to be associated with the biological correlates (Drabant, 2009). Such differences in affective styles and emotional regulation might predict the successful coping with the emotional challenges and also initiate the emotional disorders. Therefore, the question proposed regarding the emotion regulation is the difference between people in their habitual tendencies to use some affective and self-regulation styles more than others and also its relationship with the psychological well-being; especially if the preferred strategy have bad results. On the one hand, personality traits are among the factors affecting the individuals' vulnerability or well-being (Cooper, 2000). Therefore, the other question is the role played by the personality dimensions based on brain-behavioral systems in the psychological well-being. Therefore, the purpose of the present study was to identify the role of the psychosocial factors such as emotional self-regulation and also the personality biological components in predicting the psychological well-being with the consideration of the mediating role of thinking styles in the addicted patients.

On the other hand, with regard to the local conditions of the city of Nazarabad in terms of the extent of substance use especially in adolescents and young people, the existing economic and cultural problems in this area and the lack of sufficient skills regarding the immunity of young people and adolescents from drug use, it seems necessary and important to carry out studies especially regarding the identification of the biological and psychosocial factors making the background for drug use as an important factor in the prevention of addiction, as well as the necessary trainings to change each of the above mentioned factors in relation to the addiction treatment in the addicted. Accordingly, the present study seeks to investigate each of the hypotheses of the extent of the contribution of the psychological well-being based on the emotional self-regulation by mediating thinking styles in the addicted patients referring to the addiction treatment clinics. Furthermore, the extent of the contribution of the psychological well-being based on the behavioral activation/inhibition systems by mediating thinking styles in the addicted patients referring to the addiction treatment clinics is predictable.

Method

Population, sample, and sampling method

The method of this research is correlational through the structural equation modeling. Structural equation modeling, which is known as path analysis with the latent variables, is a commonly used method in behavioral and social sciences to illustrate the causal relationships in the multivariate data. By this method, we can study the fitting of the hypothesized model and the direct and indirect effects of the variables in that model. This method measures the estimations of the model parameters (path coefficients and error terms) and some goodness-fit indicators (Ebrahimi & Rahimi, 2013). The population of the present study is the complex of Medical Clinics of Nazarabad in 2016; the number of patients was estimated by the Healthcare Network of the city to be 700 people. With regard to the size and spread of the population, random cluster sampling was used and 3 clinics were selected as clusters, and 35 people from each clinic participated in the research. Finally, according to the sampling method of partial least squares, 100 people participated in the research correctly. An important feature of the partial least squares approach is to minimize the sensitivity to the sample size (N <100) and there is no need to use sample size methods; moreover, the normal distribution of the data is not an obstacle to use this software (Barklay et al. 2015).

Therefore, with regard to the proposed principle in PLS (Barklay et al., 2015), it is equal to the largest value obtained from two principles (Davari and Rezazadeh, 2016): 1- Multiplied by the number of indicators of the measurement model that has the highest index among the measuring models. 2- Multiplied by the highest relationships existing in the structural part of the model that end with a variable. According to the first principle, the highest index is related to the variable of thinking styles with 11 indicators, so the minimum sample is 110. And according to the second principle, the existing relations in the structural part that end with the dependent variable are 3; therefore, the minimum sample is 30. Thus, the first principle with 110 samples is considered for the current study. It should be noted that 150 questionnaires were distributed; however, due to the limited participation, 50 questionnaires were completed incorrectly, which was discarded.

Instruments

1. Affective Styles Questionnaire: This questionnaire was developed by Hofmann and Kashdan (2010) and consisted of 20 items. Answering the items is based on the 5-point Likert scale ranging from "It's not true about me at all (1)" to "It's completely true about me" (5) (Hofmann & Kashdan, 2010) . In addition to the subscales, this scale has a minimum score of 20 and a maximum score of 100 (that is, the subscales measure the concept together). The questionnaire consists of three components or subscales of secrecy, compromise, and tolerance, which have 8, 7, and 5 items respectively. In Karshaki's (2013) study, the above-mentioned questionnaire was translated and retranslated. Then,

it was given to the psychological experts to investigate its content validity. The content validity was confirmed. After collecting the data, factor analysis was used to verify the construct validity. The results of factor analysis showed that sample size is sufficient and the factors are interpretable. The value of 17.8% of the variance is explained by the first factor (compromise), 14.97% of the variance is determined by the second factor (secrecy), and 8.43% is explained by the third factor (tolerance). Of course, the items 18 and 20 of the secrecy component and the items 3 and 14 of the tolerance component were removed due to the factor loading of weaker than 0.30. The Cronbach's alpha for the subscales of secrecy, compromise, and tolerance were 0.70, 0.75, and 0.50 respectively, and it was 0.81 for the total scale. In sum, the validity and reliability indices were satisfactory (Karshaki, 2013). In the present study, the Cronbach's alpha and composite reliability were 0.65 and 0.75 respectively.

2. The Behavioral Inhibition Activation Inventory: This scale was developed by Carver and White (1994), and includes 24 self-report items and two subscales: 1. the subscale of behavioral inhibition (BIS) and 2. the behavioral activation subscale (BAS). The subscale of the BIS in this questionnaire consists of seven items that measure the sensitivity of the behavioral inhibition system or the responding to the threat and anxiety when confronted with the signs of threat. This subscale includes questions 2, 8, 13, 16, 19, 22, and 24. The subscale of BAS also includes 13 items and measures the sensitivity of the behavioral activation system; it includes three other subscales which are: Drive (BAS-DR consists of 4 items including the questions 3, 9, 12, and 21), the responding to reward (BAS-RR consists of 5 items including questions 5, 7, 14, 18, and 23), fun search (BAS-FS consists of 4 items including the questions of 5, 10, 15, and 20). In this scale, the responses are calculated on the basis of the 4-point Likert scale (4 = completely agree, 3 = somewhat agree, 2 = somewhat disagree, 1 = completely disagree). To obtain the score of each dimension, we should add up the total score of the questions related to that dimension. Of course, it should be noted that items 1, 6, 11, and 17 do not affect the scoring and are only added to the questionnaire in order to be consistent with the other items. Carver and White reported the internal consistency of the BIS scale and the subscales of drive, search for happiness, and responding to rewards to be 0.74, 0.73, 0.76, and 0.66, respectively. In a study conducted by Amiri and Hasani on 103 university students from Urmia and Kharazmi University, the internal consistency of the BIS questionnaire was 0.78 and the internal consistency of BAS subscales reported to be 0.82, 0.75, and 0.86, respectively. In that study, the Cronbach's alpha and composite reliability were 0.61 and 0.70 respectively.

3. Psychological Well-being Questionnaire: Short version (18 items). This questionnaire was designed by Ryff in 1989 and was revised in 2002. The short version including 18 items is used in the present study. This test is a self-assessment tool that is completed in a 6-point Likert scale of completely agree to completely disagree; a higher score indicates that the psychological well-

being is better. This version consists of 6 factors. The total score of these factors is calculated as the total score of the psychological well-being, with the minimum total score of 18 and the maximum of 108. The correlation of Ryff's short version of the psychological well-being questionnaire with the main scale ranges from 0.70 to 0.89 (Ryff, 2006). In the research conducted by Khanjani et al., the results of the reliability coefficients for the subscales of self-acceptance, environmental mastery, positive relationship with others, having a goal in life, personal growth, and independence were 0.51, 0.76, 0.75, 0.52, and 0.73; it was 0.72 for the total scale. In this study, the Cronbach's alpha and composite reliability were 0.69 and 0.81, respectively.

4. Thinking Styles Inventory: This questionnaire was designed by Sternberg & Wagner in 1991. It includes 104 items and 13 subscales. Each sub-scale has 8 items and measures one thinking style. Thirteen thinking styles are: Function (legislative, executive, judicial), forms (monarchic, hierarchic, oligarchic, and anarchic), levels (global and local), scope (internal and external) and leaning of government (liberal and conservative) (Matin Nejad, Mousavi, & Shams Esfandabad, 2010). A higher score in each of the styles reflects the individual's dominant thinking style. The afore-mentioned scale has a minimum total score of 104 and a maximum score of 728 (that is, the subscales measure the concept together). Fathollahi (2005) employed this scale for 276 managers of higher education institutions of Tehran including 169 men and 98 women. Cronbach's alpha for the total questionnaire was reported to be 0.927. Emami worked on the standardization of the questionnaire in Iran. The reliability coefficient of the sub-scales was 0.57 to 0.84. In this study, the Cronbach's alpha and the composite reliability were 0.80 and 0.83, respectively.

Results

The reasons for choosing the partial least squares approach in this study are as follows. Contrary to the first-generation approach, the second-generation approach based on the variance instead of reproducing the empirical covariance matrix, focuses on the maximization of the variance of the dependent variables that are predicted by the independent variables. And the reasons for using the PLS method in the present study is the small sample size and the lack of need for the assumptions of normal distribution of the data and solving the problem of the similarity of the measurement model. Furthermore, lack of sensitivity to the measurement scale, the range of variation, missed data, outliers, non-linearity of the data, and consequently the need to check the data is not through the graphical techniques and statistical tests to ensure that there is no problem in the data or to find a solution for it. (Mohsenin & Esfidani, 2014).

The model of measuring the role of emotional self-regulation on the psychological well-being by mediating thinking styles

The mutual factor loadings and the reliability coefficients of the self-regulation model are presented in Table 1.

Table 1: Mutual Factor Loadings and Reliability Coefficients of the Self-regulation Model

Variables	*Dimensions*	*Self-regulation*	*Thinking styles*	*Well-being*	*Cronbach's alpha*	*composite reliability*
Self-regulation	Secrecy	0.538	-0.033	0.000	0.65	0.75
	compromise	0.853	0.025	0.117		
	Tolerance	0.858	0.068	0.091		
Thinking styles	Liberal thinking	0.000	0.764	0.587	0.80	0.84
	Outward looking	-0.104	0.410	0.273		
	Inward looking	0.064	0.395	0.163		
	Monarchic	0.116	0.618	0.343		
	Legislative	0.088	0.708	0.370		
	Judicial	-0.025	0.365	0.132		
	Oligarchic	0.024	0.658	0.302		
	Local	0.174	0.531	0.166		
	Global	0.064	0.457	0.015		
	Conservative	-0.015	0.438	0.110		
	Hierarchic	0.026	0.750	0.417		
Well-being	Autonomy	0.021	0.323	0.589	0.69	0.81
	Self-acceptance	0.117	0.369	0.780		
	Self-mastery	0.143	0.467	0.827		
	Personal growth	0.065	0.446	0.674		

According to the results of the above table, the correlation between the questions of a construct was compared with other constructs. As shown in the table, the correlation among the questions with their related structures (colorful numbers) is greater than the correlation between the questions and other constructs; it indicates the appropriate divergent validity in this model (Tabatabaei, Motahari Nejad, & Tirgar, 2016). According to the obtained results of the above table, Cronbach's alpha of higher than 0.7 represents the acceptable reliability. Of course, Moss et al. (1998) have introduced the value of 0.6 as the coefficient threshold for the variables with a small number of questions (Tabatabaei & Jahangard, 2016). Therefore, by removing the dimension of the purposeful life and positive relationships from the component of the psychological well-being, the Cronbach's alpha value reached to above 0.6. As a result, all variables have a coefficient of above 0.6, which is an acceptable coefficient for the variables with few questions. As a result, the coefficient of all the latent variables in Table 1 is above 0.75. According to the results obtained in Table 1, the convergent validity of higher than 0.5 is acceptable, and the value of 0.4 is also sufficient for the variables with a small number of questions (Davari & Rezazadeh, 2014). Therefore, by removing the executive and non-affective dimension from the component of thinking styles and the dimension of life and by removing the relationships from the well-being component the convergent validity reached to above 0.4. As a result, all variables have a coefficient of above 0.4, which is an acceptable coefficient. The correlational matrix and the

convergence and divergent validity of Fornell and Larcher are presented in Table2.

Table 2: Correlational Matrix and the Convergent and Divergent Validity of Fornell and Larcher

Components	*Convergent validity*	*1*	*2*	*3*
1. Self-regulation	0.529	0.73	-	-
2.Thinking styles	0.391	0.057	0.62	-
3.Well-being	0.523	0.126	0.565	0.72

According to the contents of the table, based on Fornell and Larker's view (1981), examining the divergent validity is done through a matrix. A component, in comparison to the other components, should have a higher differentiation and separation among its observed variables (questions) so that it can be stated that the given component has a high divergent validity. The listed numbers show an acceptable divergent validity in the Fornell and Larker's method.

The measurement model for the role of behavioral/inhibition activation systems in the psychological well-being by mediating thinking styles

Table 3: Mutual Factor Loadings and Reliability Coefficients of the Behavioral Inhibition Model

Variables	*Dimensions*	*Behavioral inhibition*	*Thinking styles*	*Well-being*	*Cronbach's alpha*	*Composite reliability*
Behavioral inhibition	BIS	0.852	0.361	0.268	0.61	0.71
	BAS_DR	0.554	0.117	0.147		
	BAS_FS	0.580	0.163	0.170		
Thinking styles	Liberal	0.202	0.721	0.582	0.69	0.81
	Outward looking	0.267	0.462	0.275		
	Inward looking	0.300	0.433	0.169		
	Monarchic	0.169	0.587	0.337		
	Legislative	0.260	0.732	0.372		
	Judicial	0.139	0.378	0.126		
	Oligarchic	0.119	0.657	0.304		
	Local	0.082	0.529	0.164		
	Global	0.336	0.531	0.016		
	Conservative	0.080	0.450	0.108		
	Hierarchic	0.269	0.732	0.416		
Well-being	Autonomy	0.265	0.314	0.612	0.80	0.84
	Self-acceptance	0.228	0.364	0.786		
	Personal growth	0.196	0.415	0.662		
	Environmental mastery	0.195	0.435	0.816		

According to the results of the above table, the correlation between the questions of a construct was compared with the other constructs. As shown in Table 3, the correlation among the questions with their related constructs

(colorful numbers) is higher than the correlation among the questions with other constructs; it indicates the appropriate divergent validity in this model. The correlational matrix and the convergent and divergent validity of Fornell and Larcher are presented in Table 4.

Table 4: Correlational Matrix and the Convergent and Divergent Validity of Fornell and Larcher

Components	*Convergent validity*	*1*	*2*	*3*
1. Behavioral inhibition	0.456	0.67	-	-
2. Thinking styles	0.524	0.358	0.72	-
3. Psychological well-being	0.434	0.302	0.534	0.66

The numbers listed in the above table show the appropriate divergent validity in the Fornelland Larcker method. In this step, using the structural model, the relationship between the constructs is examined causally. In fact, considering the results of investigating the relationships between the independent and dependent constructs using the relevant coefficient, we can examine the significant effects among the research constructs. Moreover, the Bootstrap test (with 500 sub-samples) was used to calculate the values of T to determine the significance of the path coefficients; the construct level changes that was recommended in the partial least squares method was used in order to correct the errors (Esfidani & Mohsenin, 2014).

The structural model of the role of the emotional self-regulation on the psychological well-being by mediating the thinking styles

Table 5: Quality Indicators of the Structural Model

Dependent latent variables	*Prediction Power*	*Goodness of fit*
Thinking styles	0.016	0.28
Psychological well-being	0.078	

According to Table 5, the prediction power is not an appropriate coefficient. However, the goodness of fit is desirable; the obtained values represent the overall desirability of the model.

Table 6: The Structural Model of Mediating Thinking Styles in the Relationship between Emotional Self-regulation and Psychological Well-being

Hypotheses	*Factor loading*	*Significance*	*Coefficient of determination*	*Level*	*Hypothesis*
Emotional self-regulation→ thinking styles	0.357	3.232	0.003	P<0.01	Accepted
Emotional self-regulation→ psychological well-being	0.294	2.739	0.328	P<0.01	Accepted
thinking styles→ psychological well-being	0.559	4.218		P<0.01	Accepted

In the following, we examine the indirect effect and the significance of the Sobel test for the mediating effect of thinking styles in the relationship between self-regulation and well-being.

Table 7: Fitness of the Structural Model for the Mediation of Thinking Styles

Hypotheses	*Indirect effect*	*Sobel t-value*	*Coefficient of determination*	*Level*
Mediation of thinking styles in the relationship between emotional self-regulation and psychological well-being	0.199	2.225	0.328	P<0.05

As shown in Table 5, thinking styles have a positive and significant effect in the relationship between self-regulation and well-being (indirect = 0.199 and t = 2.255) (p <0.05). The factor load and the coefficient of determination of the structural model for the role of emotional self-regulation in psychological well-being by mediating the thinking styles are presented in Fig.

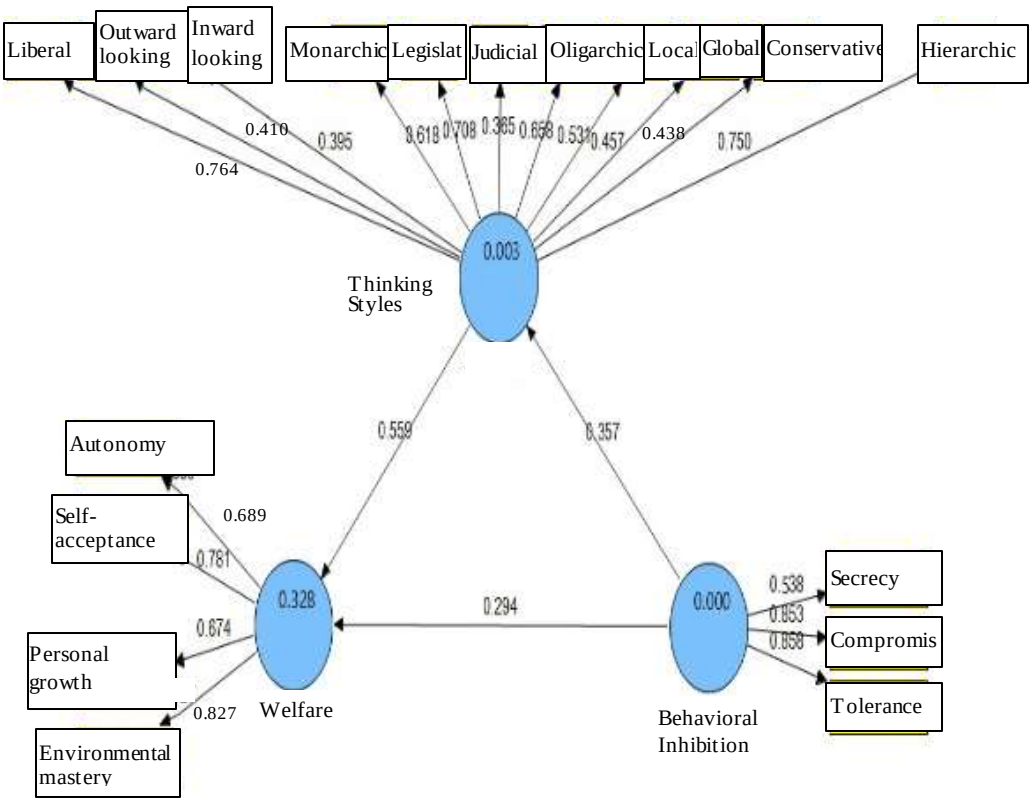

Figure 1: Factor Load and Coefficient of Determination of the Structural Model for the Role of Emotional Self-regulation in Psychological Well-being by Mediating Thinking Styles

Structural Model for the Role of Behavioral Inhibition System in Psychological Well-being by Mediating of Thinking Styles

The significance coefficient of the structural model for the role of emotional self-regulation in psychological well-being by mediating the thinking styles is presented in Fig. 2.

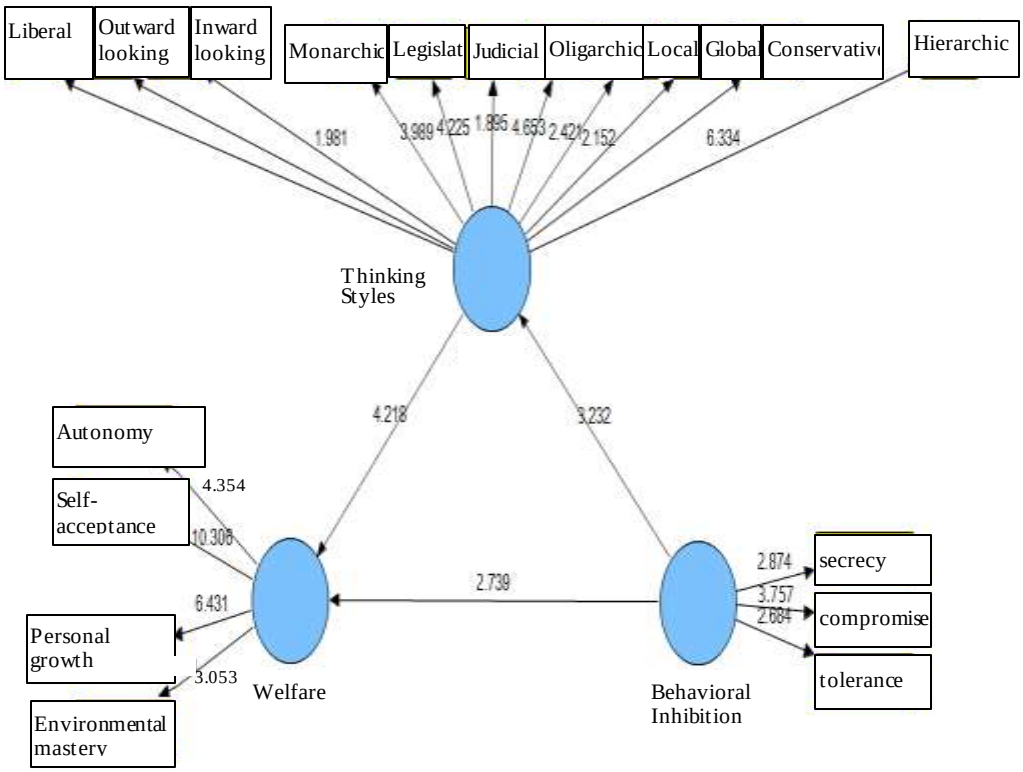

Figure 2: The Significance Coefficient of the Structural Model for the Role of Emotional Self-regulation in Psychological Well-being by Mediating of Thinking Styles

The quality indicators of the structural model for the behavioral inhibition model are presented in Table 8.

Table 8: Quality Indicators of the Structural Model for the Behavioral Inhibition Model

Dependent latent variables	*Prediction power*	*Goodness of fit*
Thinking styles	0.042	0.13
Cognitive well-being	0.031	

As can be seen, the obtained prediction power is not a suitable coefficient. However, the value of goodness of fit is a desirable coefficient that reflects the overall desirability of the model. The structural model of the mediation of thinking styles in the relationship between the behavioral inhibition and cognitive well-being is presented in Table 9.

Table 9: Structural Model of the Mediation of Thinking Styles in the Relationship between the Behavioral Inhibition and Cognitive Well-being

Hypotheses	*Factor load*	*Significance*	*Coefficient of determination*	*Level*	*Hypothesis*
Behavioral inhibition→ thinking styles	0.358	3.24	0.128	P<0.001	Accepted
Behavioral inhibition→ psychological well-being	0.227	2.826	0.299	P<0.01	Accepted
Thinking styles→ psychological well-being	0.489	3.58		P<0.001	Accepted

The fitness of the structural model for the mediation of thinking styles is presented in Table 10.

Table 10: Fitness of the Structural Model for the Mediation of Thinking Styles

Hypotheses	*Indirect effect*	*Sobel t-value*	*Coefficient of determination*	*Level*	*Hypothesis*
The mediation of thinking styles in the relationship between behavioral activation/inhibition and the psychological well-being	0.175	2.36	0.299	P<0.05	Accepted

Considering the investigation of the indirect effect and the significance of Sobel for the mediating effect of thinking styles on the relationship between behavioral inhibition and well-being. According to the table, the thinking styles have a positive and significant effect in the relationship between the behavioral inhibition and well-being (indirect =0.175 and t =2.36). Factor load and coefficient of determination of the structural model for the role of the behavioral inhibition/activation system in psychological well-being by mediating thinking styles is presented in Fig. 3.

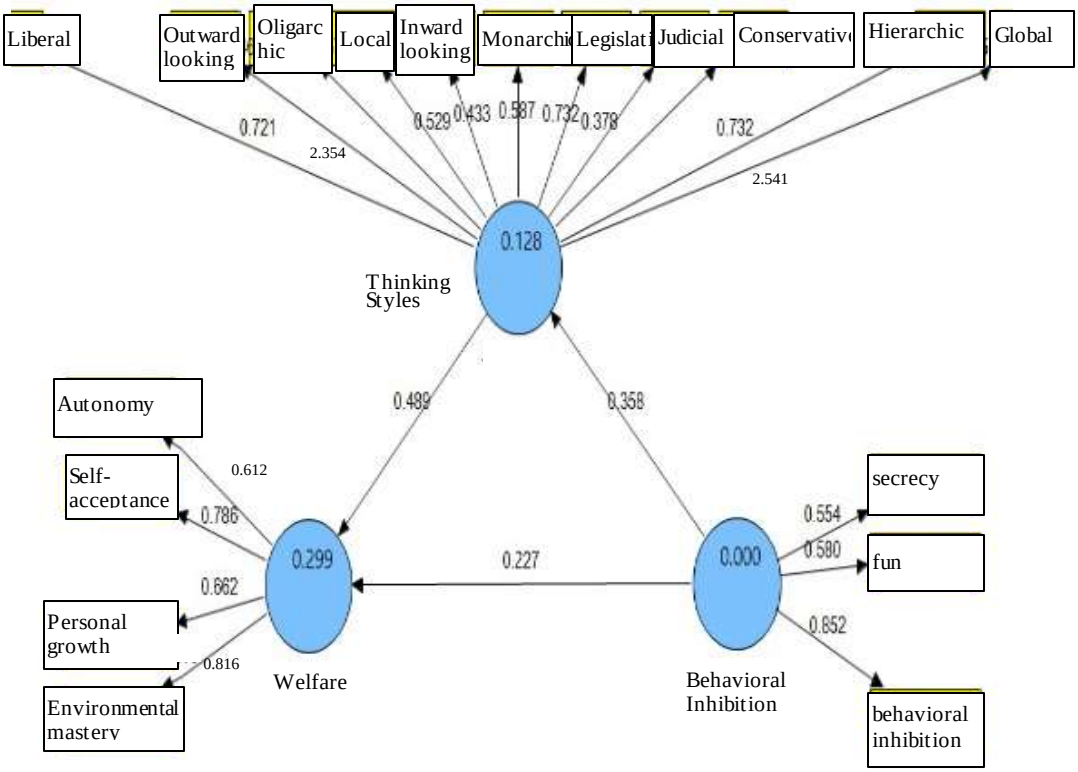

Fig. 3: Factor Load and Coefficient of Determination of the Structural Model for the Role of the Behavioral Inhibition/Activation System in Psychological Well-being by Mediating thinking styles

The significance coefficient of the structural model for the role of the behavioral inhibition/activation system in psychological well-being by mediating thinking styles is presented in Fig. 4.

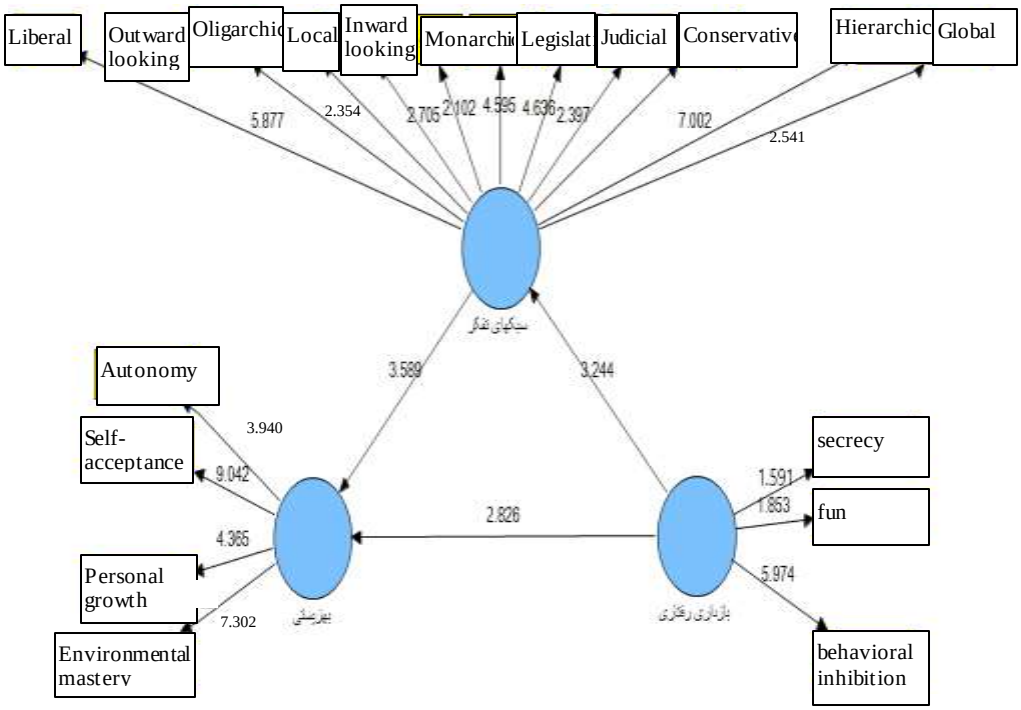

Fig. 4: Structural Model's Significant Coefficient for the Role of the Behavioral Inhibition/Activation System in Psychological Well-being by Mediating Thinking Styles

Discussion and Conclusion

The purpose of the present study was to determine the contribution of the psychological well-being on the basis of the emotional self-regulation by mediating thinking styles and to determine the contribution of the psychological well-being on the basis of the behavioral inhibition/activation systems by mediating thinking styles in the psychological well-being of the addicted patients. The findings of this study are consistent with the previous studies that show that the addicted people use drug abuse as a generalized coping method due to the deficiencies, lack of the adaptive skills, and positive expectations from the effects of psychedelic drug (incorrect beliefs about the effects of drugs) (Matin Nejad, Mousavi, & Shams Esfandabad, 2010). Emotional processes interact with the aspects of cognition in such a way that the capabilities of the emotional stimuli influence a wide range of cognitive operations, and also the human ability is influential to apply the cognitive mechanisms in regulating the emotional responses (Ray and Zald, 2012; quoted by Motamedi & Amirpour, 2012). The majority of the previous studies have investigated the effects of the emotional stimuli on the cognitive functions such as working memory, conflict processing, and response inhibition (Shokri et al., 2006; quoted by Motamedi &

Amirpour, 2012). In the research conducted by Motamedi and Amirpour about the effect of thinking styles on the patterns of anger expression and control in university students, the obtained data of the research showed a significant difference between the liberal thinking style and the style of outward looking thinking in girls and boys.

Therefore, based on the results of this study as well as the previous studies, it can be concluded that considering the two-way relationship between cognition and emotion and the effect of each on the other, thinking as one of the components of cognition can influence the qualitative and quantitative domains of the emotions; meanwhile, the type of person's thinking has been a determinant of the way of emotional processing, expression and management of emotions. In addicts, both sides of this relationship are faced with problem because these individuals have developed a particular type of thinking due to their inability to manage emotions, and in another direction, the type of the developed thinking influences the way of expressing and regulating the emotions. . Therefore, these people have always been exposed to the mutual effect of these two elements in relation to themselves and the surrounding world and always struggle with numerous psychosocial-social damages. This mutual relationship between emotional regulation and thinking in relation to the psychological well-being can also be explained. Akhlaghi Yazdinejad and Hossein Sabet in their study showed that emotional regulation training can be effective in increasing the self-efficacy and psychological well-being of drug dependent individuals. In Esmaeili and Azadparvar's researches about the effectiveness of the emotional adjustment intervention in self-acceptance, the purposeful life, and positive relationships with others in veterans' children, it was shown that the two groups of experiment and control differ in their self-acceptance rates and the positive relationships with others. The findings of this study suggest the intervention based on emotion regulation in order to increase the self-acceptance and positive relationships with others in veterans' adolescent children. In Amiri and Sepehrian Azar's research, there was a positive correlation between the affective styles and psychological well-being in the affective styles such as compatibility and tolerance. Johnson, Turner, and Iwata (2003) showed that high scores of the behavioral activation predict substance abuse and dependency to it. Moreover, with respect to the behavioral inhibition activation systems, Abdollahzadeh Jeddi, Hashemi, Moradi, and Farzad (2010) showed that there is a relationship between brain/ behavioral systems and substance abuse. In explaining the relationship between the behavioral inhibition activation systems, emotional regulation, and thinking styles, we can refer to the results of Masoumi's (2013) study that indicated that there is a relationship between brain / behavioral systems, emotional regulation, and maladaptive schemas in the temptation toward drug use in the addicted people. Furthermore, Atadokht, Ranjbar, Gholami, and Nazari in their study on the tendency of university students to high-risk behaviors and its relationship with the individual-social variables and psychological well-being revealed that

psychological well-being had a negative relationship with high-risk behaviors and also with almost all aspects of the high-risk behavior dimensions. That is, the levels of psychological well-being decreases with increasing the level of tendency towards a variety of high-risk behaviors. The results of Amiri and Sepehrian Azar's research indicated that affective styles, personality traits based on brain-behavioral systems, and emotional regulation have a significant role in predicting psychological well-being. In Gross and John's research, it is stated that people who use re-evaluation as a regulatory strategy show better social performance and higher well-being. In addition, investigating the relationship between personality traits based on brain-behavioral activation and behavioral inhibition with psychological well-being generally indicates a positive correlation between the behavioral inhibition system and psychological well-being.

Nikzad's research, the effectiveness of the psychodrama theater therapy on psychological well-being and false beliefs of addicts (Case Study: Addiction treatment Center of Persian Gulf, Bushehr), showed that the psychological psychodrama could significantly increase the psychological well-being of the experimental group in establishing positive relationships with others, autonomy, self-acceptance, environmental domination, personal growth, and purposeful life; it reduced the irrational beliefs such as emotional irresponsibility, avoidance to deal with problems, helplessness against change, and the expectation of confirmation from others. One of the limitations of the present study was that it was a correlation research and thus the inference about the causal relationships between variables is based on probability, i.e., in addition to the relationships obtained in this study, the interventional variables such as social and cultural issues as well as other psychological variables might influence the results. Furthermore, another limitation was the lack of concentration and consciousness of the addict population in the participation and completion of the questionnaires, which resulted in the loss of a large number of questionnaires. Thus, the sample was small and the PLS software was used for the analysis with a small sample.

Regarding the fact that the sample consisted of the male addicts, not using the both genders is another limitation of the present study. It is suggested that future studies use both genders, men and women, since there might be a difference between the two genders in each of the variables studied in this study. It is suggested that addiction therapists and healthcare administrators in the area of addiction hold programs and training workshops about the avoidance of drug use for drug addicts and other community members in order to change their thinking styles and also with regard to the trainability of emotional self-regulation. Especially considering the context of the current study and addiction in low ages, as well as lack of adequate information and skills in the family in preventing and confronting with the addiction, the proposed trainings are more necessary.

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