Structural Equation Modeling of Sensation Seeking with Addiction Potential Mediated by Self-Differentiation and Cognitive Emotion Regulation among Male Addicts under Treatment in Sari

Abstract

Objective: The aim of this study was to assess the structural equation modeling of the relationship of sensation seeking with addiction potential mediated by self-differentiation and cognitive emotion regulation among male addicts under treatment in Sari. **Method:** A correlational research design based on Structural Equation Modeling (SEM) method was used for the conduct of this study. The statistical population of this research included all male addicts in the city of Sari that amounted to a number of 500 addicts where a total of 350 sample units were selected via purposive sampling method. To measure the variables, Differentiation of Self Inventory (DSI), Emotion Cognitive Regulation Questionnaire, Addiction Potential Scale, and Sensation Seeking Scale were used. **Results:** In general, significant correlations were found between the research variables and the research model was approved where the total of 17% of addiction potential variable was explained by the research variables. **Conclusion:** The current findings have positive implications in the intervention centers of addiction.

Keywords: sensation seeking, addiction potential, self-differentiation, cognitive emotion regulation, addictin

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Introduction

Addiction is a psychosocial phenomenon which is caused by a variety of factors, including family relations, social occasions, sociocultural conditions, and psychological characteristics of the addicted person (Faramini, 2008). Goldesmite (2009), in an experimental study, manipulated emotion and showed people tend to use alcohol as a coping strategy and emotion regulation strategy. Mohammadifar, Kafi Anaraki, & Najafi investigated negative emotions and showed that depression and anxiety can predict changes in substance abuse behavior. Mack DorMate Matwell, Gratez, & Vellzooz (2009) supported the pivotal role of emotion regulation difficulty in the prediction of post-traumatic stress disorder among crack- and cocaine-dependent individuals. Foxx, Bergootsit, Cass, & Hong Wasinha (2010) showed that cocaine-dependent individuals exhibit significant deficits in emotion regulation that increase with response to stressors and are reduced by impulse control. The main characteristic of high sensation seekers is that they tend to take new experiences and risk to gain them. In other words, unlike low sensation seekers, these people are constantly looking for new and novel stimuli in their living environment and are willing to put them at risk under heavy pretexts and gain their own social prestige and credibility and even their physical health and vitality (Ryoo, 2001). Zuckerman believes that sensation seeking structure is related to the amount of stimulation that the central nervous system (brain and spinal cord) require to obtain from external sources. According to Zuckerman, sensation seeking is a trait that is characterized by diverse, new, and complex experiences, and the desire to take physical and corporal risks through these experiences. A sensation seeker prefers permanent external stimulation of the brain; gets bored with ordinary chores; constantly looks for some ways to increase stimulation through exciting experiences. The less sensation seeking person prefers a less continuous invasion of brain stimulation and tolerates normal tasks (Ryoo, 2001).

Lazarus, Sherer, and Wiener are three pioneers in cognitive perspective. To any of these theorists, cognitive activity will be eliminated, and emotion will disappear. In Lazarus's view, one's cognitive assessment from the meaning of an event (not that event alone) provides the grounds for experiencing an emotion (Reu, 2005). Moreover, in the acquisition of emotions, Lazarus lays emphasis on the information processing of the events that occur following the incidence of the consequences of a person's life. After achieving success, if we believe that we ourselves have gained it, there will be an emotion (pride), while if we believe that friends have made it, there will be a different emotion (thankfulness). Therefore, this is the attribution, rather than the event or outcome, that creates the emotion. The concept of differentiation is one of the basic concepts of Bowen's theory, which refers to one's ability to experience intimacy with others and, at the same time, the independence of others (Cloor, 2009). In Bowen's theory, all symptoms, such as mental illnesses, physical illnesses arising from

substance abuse, and social problems are interrelated with failure to adapt to the system, low self-differentiation, and exaggeration in the emotional process (Heras, 2008). The four components of emotional reactivity, I-position, emotional cutoff, and fusion with others have been proposed for differentiation, as follows:

Emotional reactivity: It refers to a state in which one's emotions overcome his/her rationale and logic, and his/her decisions are thus made only on the basis of emotional reactions. I-position: It means having personal beliefs and opinions in life. Differentiated individuals take advantage of a strong specific identity or I-position, and do not change their behavior or beliefs to obtain others' satisfaction. Bowen shows differentiation on a hypothetical continuum, on the one end of which differentiation is placed; and fusion with others is on the other end. Fused individuals are strongly in need of approval and support of the surrounding people, and their behaviors are shaped under the influence of the emotional system of the environment and the reactions of the surrounding people (Scoron, 2004). The aim of this study was to model the structural relations of sensation seeking with addiction potential through the mediation of self-differentiation and cognitive emotion regulation among male addicts in Sari in 2016. Considering the importance of this issue in this research, it is attempted to respond to the following fundamental question: Is there any causal relationship between sensation seeking and addiction potential with the mediating role of self-differentiation and cognitive emotion regulation among male addicts under recovery? The development of the model involves the use of related theories, research findings, and the available information in the theoretical model.
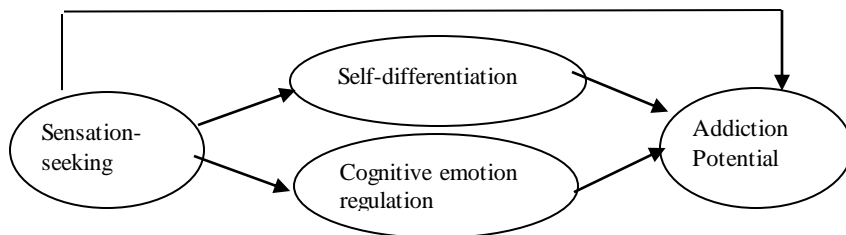

Fig. 1: Proposed Conceptual Model based on Research Background

Method
Population, sample, and sampling method
A descriptive correlational research method (structural equation modeling, in particular, structural regression equations (a mixture of path analysis and factor analysis)) was employed for the conduct of this study. The statistical population of this study included all drug addicts recovering from opioid drugs from 1 to 24 months in mid-term care centers in Sari. The number of eligible candidates was about 500 people. This approach was based on covariance based in AMOS software. This approach estimates path coefficients and factor loadings by

minimizing the difference between the sample-based covariance matrix and the model-based covariance matrix. The sample size was obtained equal to 350 by Klein method and the participants were selected via purposive sampling.

Instruments

1. Differentiation of Self Inventory: This questionnaire contains 43 items and 4 sub-scales, namely emotional reactivity, I-position, emotional cut-off, and fusion with others. The emotional reactivity component has 11 items and reflects the degree to which a person responds to an environmental stimulus with oversensitivity or emotional variability. I-position sub-scale consists of 11 items, and in addition to the clear definition of one's own sense, determines the degree of loyalty to personal beliefs when one has to do something contrary to his/her own beliefs. The emotional cut-off sub-scales contains 12 items and is indicative of a feeling of fear of intimacy and a feeling of extreme vulnerability in contact with others. The items pertaining to this sub-scale represent fear of intimate relationships, defensive behaviors such as excessive performance, distance, or denial. The component of fusion with others contains nine items and shows that one's involvement in an overly emotional relationship with others. To compute the total score, the scores of all the scores are summed (by considering reverse scores), and then the score is divided by 43.

2. Emotion Cognitive Regulation Questionnaire: This questionnaire was developed by Garnefski et al. (2001) and has 36 items that are scored based on a 5-point Likert scale (from all the time to never). Each of the four items evaluates one factor and, thereby, the whole scale consists of a total of nine factors, namely putting into perspective, self-blame, other-blame, catastrophizing, rumination, refocus on planning, acceptance, positive refocusing, and positive reappraisal. The Persian form of this scale has been validated by Samani and Jokar (2007). In this questionnaire, the respondent is asked to determine his/her reaction in the face of threatening experiences and stressful events that have just been experienced. This questionnaire has a special form for adults and a special form for children. The Cronbach's alpha coefficient for the scores of this questionnaire has been reported by Garnefski et al. (2002) in the range of 0.71 to 0.81.

3. Addiction Potential Scale: This scale was developed by Weed and Butcher (1992) and some attempts have been made to validate it in Iran. This scale is the Iranian version of the Addiction Potential Scale which was constructed by Zargar according to the psychosocial condition of Iranian society (Zargar, Najarian, & Na'ami, 2008). It consists of two factors and consists of 36 items plus 5 lie detecting items. Each question is scored on a spectrum from zero (I strongly disagree) to 3 (I strongly agree). Of course, this method of scoring is reverse in questions numbered 6, 12, 15, and 21. The items numbered 12, 13, 15, 21, and 33 are lie detectors. To obtain the total score, the scores of all items should be summed (other than the lie detecting items). Therefore, the total score

ranges from 0 to 108. Higher scores represent the higher tendency of the person to addiction and vice versa. This questionnaire is a combination of active readiness and passive readiness. Active readiness is related to antisocial behaviors, desire for drug use, positive attitude to drugs, depression, and sensation seeking. In the second factor (passive readiness), most of the items pertain to a lack of self-assertiveness and depression. In the research carried out by Zargar et al. (2008), two methods were used to calculate the validity of this scale. In criterion validity, the scale discriminated between addicts and non-addicts very well. The construct validity of the scale was calculated by calculating its correlation with the 25-item index of clinical symptoms, which was significantly obtained equal to 0.45. The reliability of the scale was calculated using Cronbach's alpha (90/0) (Zargar et al., 2008).

4. Sensation Seeking Scale: This scale was developed by Jeffrey Arendt in 1992 and has 20 items and 2 subscales, namely novelty (items numbered 11, 1, 9, 7, 5, 3, 13, 17, 15, and 19) and intensity (items numbered 4, 2, 6, 8, 12, 10, 12, 14, 16, 18, and 20). Arendt's scale is characterized by the concept of sensation seeking with a need for novelty and the intensity of the stimulus as two sub-axes. Instead of focusing on any genetic and biological basis found in Zuckerman's fifth edition, this scale addresses the role of socialization and social interaction in the behavioral direction. Arendt's scale, in addition to enjoying a moderate reliability, has a high predictive validity and is well correlated with Zuckerman's sensation seeking scale. The psychometric properties of Arendt's Sensation Seeking Scale in Iran (Poorvafayi, 1997) have been reported acceptable and this scale has been introduced as a substitute instrument to be used by researchers interested in the scope of personality traits in sensation seeking.

Results

The correlation matrix of the research variables is presented in Table 1.

Table 1: Correlation Matrix of the Research Variables

Variables	1	2	3	4	5	6	7	8
Novelty	1	-	-	-	-	-	-	-
Intensity	**0.62	1	-	-	-	-	-	-
Emotional reactivity	*-0.11	*-0.18	1	-	-	-	-	-
I-position	*0.11	0.09	*-0.20	1	-	-	-	-
Emotional cut-off	*-0.16	*0.22	**0.33	**-0.23	1	-	-	-
Fusion	*-0.11	*-0.15	**0.45	**-.032	**0.34	1	-	-
Self-blame	-0.02	*-0.12	0.09	0.08	0.08	*0.13	1	-
Other blame	-0.01	-0.05	0.02	-0.07	-0.04	0.08	**0.20	1
Rumination	*-0.11	*-0.15	-0.01	0.09	0.01	0.01	**0.38	**0.24
Catastrophizing	0.06	-0.09	-0.01	-0.01	-0.04	0.01	**0.32	**0.24
Acceptance	0.01	0.04	-0.02	-0.04	-0.05	-0.06	**0.30	**0.62
Positive focus	0.01	*-0.11	0.03	-0.07	0.07	0.02	**0.33	**0.39
Positive reappraisal	0.01	-0.09	0.06	*0.11	-0.03	-0.02	**0.29	**0.26
Addiction potential	*0.12	**0.24	0.04	**-0.16	-0.04	0.10	0.02	*0.14
Cognitive emotion regulation	-0.02	*-0.15	0.04	-0.09	-0.03	0.02	**0.57	**0.52
Sensation seeking	**0.89	**0.91	*-0.16	0.11	**0.21	*-0.15	-0.08	-0.03
Self-differentiation	*-0.12	**-0.21	**0.69	*0.12	**0.69	**0.65	*0.11	0.08

Table 1 (Cont.): Correlation Matrix of the Research Variables

Variable	9	10	11	12	13	14	15	16
Novelty	-	-	-	-	-	-	-	-
Intensity	-	-	-	-	-	-	-	-
Emotional reactivity	-	-	-	-	-	-	-	-
I-position	-	-	-	-	-	-	-	-
Emotional cut-off	-	-	-	-	-	-	-	-
Fusion	-	-	-	-	-	-	-	-
Self-blame	-	-	-	-	-	-	-	-
Other blame	-	-	-	-	-	-	-	-
Rumination	1	-	-	-	-	-	-	-
Catastrophizing	**0.30	1	-	-	-	-	-	-
Acceptance	**0.40	**0.40	1	-	-	-	-	-
Positive focus	**0.40	**0.32	**0.29	1	-	-	-	-
Positive reappraisal	**0.40	**0.42	**0.38	**0.34	1	-	-	-
Addiction potential	*0.16	0.07	0.04	0.07	*0.12	1	-	-
Cognitive emotion regulation	**0.68	**0.63	**0.63	**0.75	**0.72	*0.15	1	-
Sensation seeking	*0.14	-0.02	-0.02	-0.07	-0.06	**0.31	*-0.12	1
Self-differentiation	0.01	-0.03	-0.09	-0.02	-0.04	*-0.19	0.08	**-0.19

After examining the obtained relationships, the statistical assumptions of the research, including skewness, kurtosis, and normality of data distribution were checked by box's test. Then, the outliers were corrected via Mahalanobis test. Finally, Kolmogorov-Smirnov test was run and the normality of data was confirmed. Afterwards, the model was designed and its fit indices were examined. The fitness indices of the model are presented in Table 2.

Table 2: Fitness indices derived from the analysis of data and variables after three stages of correction

Test	Description	Acceptable range	Value
χ^2/df	Relative Chi-square	<3	2.036
RMSEA	Root Mean Square Error of Approximation	<0.1	0.057
GFI	Adjusted Fitness Index	>0.9	0.936
NFI	Normed Fit Index	>0.9	0.828
CFI	Comparative Fit Index	>0.9	0.902

As it has been shown in Table 2, RMSEA value equals 0.015; which is less than 0.1 and it indicates that the RMSEA of the model is appropriate and that the model is acceptable. In the same way, the chi-square to freedom degree (1.088) is between 1 and 3, and the values of GFI, CFI, and NFI are greater than 0.9, which indicate that the model of research variables is appropriate. In Table 3, the model assumptions have been examined using a structural model.

Table 3: Direct Estimation of the Model

Variable	Value	Lower bound	Upper bound	Sig.
Sensation seeking on addiction potential	1.900	-	0.204	0.0005
Self-differentiation on addiction potential	0.496	-0.77	1.208	0.13
Cognitive emotion regulation on addiction potential	-1.472	-3.996	-0.651	0.004

According to the above table, only the direct effects of the two paths (cognitive emotion regulation on addiction potential) and (sensation seeking on addiction potential) are significant.

Table 4: Indirect Estimation of the Model Using the Bootstrap Estimation Method

Variable	Value	Lower bound	Upper bound	Sig.
Sensation seeking by mediating self-differentiation and cognitive emotion regulation	-0.569	-1.272	-0.120	0.012

As it can be observed, the indirect path of sensation seeking is mediated by self-differentiation and the cognitive emotion regulation. However, with regard to the general acceptability of the model, a structural model of the relations between the covert and overt variables can be drawn. In general, all the research variables have the predictive power ($R2 = 0.17$) of addiction potential variable.
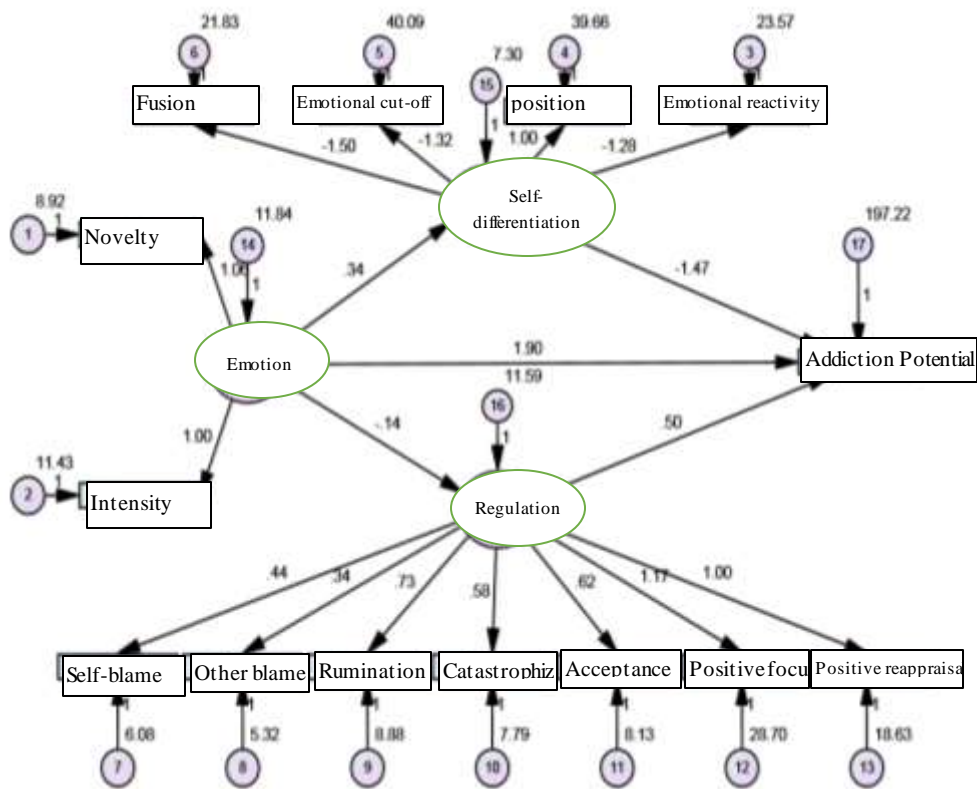

Fig. 1: Final Tested Model along with Non-standardized Statistics
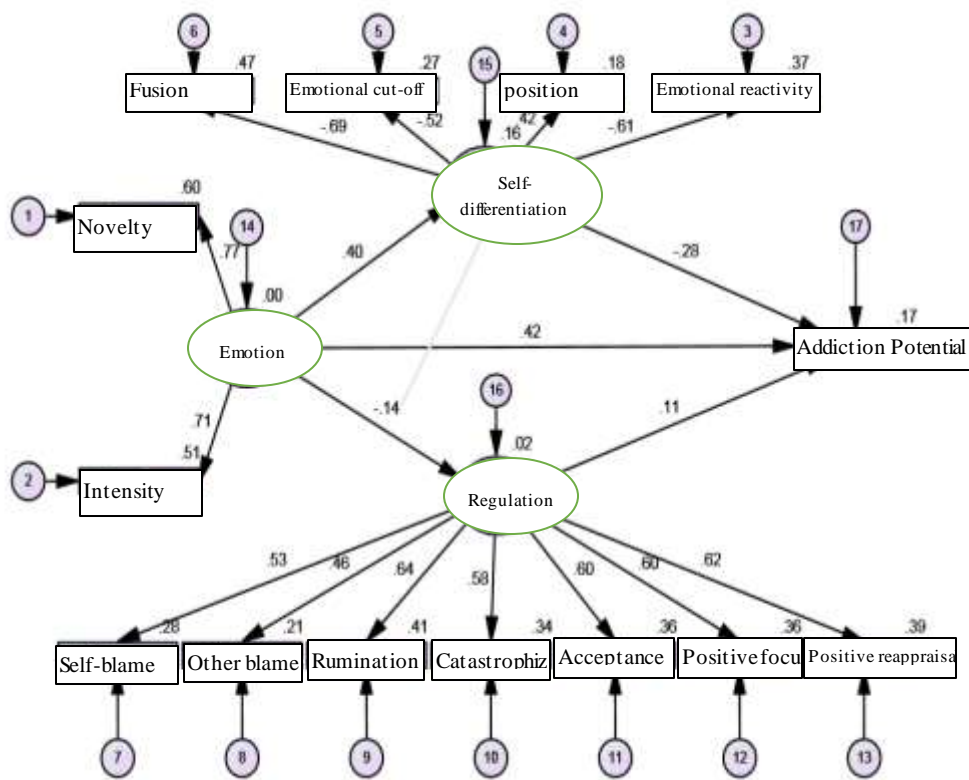
Fig. 2: Final Tested Model along with Standardized Statistics

Discussion and Conclusion

To explain the results, it is possible to argue that the term addiction potential (addiction tendency) means to assess the readiness for or vulnerability to substance abuse, whether or not the person is currently undergoing substance abuse. New clinical findings have shown that unhealthy developmental areas and addiction potential play an essential role in the formation of addiction. Addiction potential theory states that some people are susceptible to addiction and if they are exposed to it, they will get entrapped into it. On the other hand, if they are not exposed to it, they will not get addicted (Ghadimi, Karami, & Yazdan-bakhsh, 2014). Many substance abuse clients have certain thought patterns that can lead to the continued disorder in them and may prevent any changes. These patterns of thought include one's beliefs associated with expectations and one's beliefs about substance use (Beck & Wright, 1993). The findings of this research confirm Yang's early maladaptive schema theory and the schema-based cognitive behavioral therapy model. In this theory, behaviors, such as addiction

are formed to reduce the negative emotions resulting from the activity of maladaptive schemas.

According to Yang's theory (1990), maladaptive behaviors are created in response to early maladaptive schemas and, then, are stimulated by the schemas themselves. When an inappropriate schema is triggered, people usually experience a high level of negative emotions, such as intense anger, anxiety, grief, and guilt. Therefore, people often use maladaptive behaviors to avoid the stimulation of the schemas so that they will not experience the affection associated with these schemas. Thus, they embark on showing maladaptive behaviors, such as opioid use, in order to reduce the unbearable pain caused by their initial schemas (Yang, translated by Sahebi and Hamidpour, 2005). Since the path pertaining to the cognitive emotion regulation schema and addiction potential is the most powerful route in this model, one can argue that emotion and its regulation have always been at play in the field of addiction. Even addiction has been referred to as a mechanism for emotion regulation (Wu, 2015). Moreover, cognitive emotion regulation strategies are among the most important determinants of individuals' responses to their personal emotions; in this regard, the increased use of maladaptive strategies is associated with pathology and the growth and continuity of disorders. A number of studies have shown that difficulty in emotion regulation is associated with a wide range of disorders, including drug abuse (Gratz, & Romer, 2004). In the area of addiction, various models and theories with biologic, social, and environmental tenets have been proposed to date (Ewasik & Summer, 2010). One of the theoretical approaches that addresses this issue psychologically is Hampson, Andows, & Barckley's self-care theory (2008). Khantzian believes that since substance users view negative emotions and restlessness as unbearable and distracting; and these individuals cannot manage these emotional states without drug use. Hence, they use the physiological and psychological properties of drugs to achieve emotional stability. According to this theory, drug addiction is considered as a means for regulating stressful emotions. This theory is stipulated based on the assumption that many people turn to addiction due to their low distress tolerance and emotion regulation disorder (Hampson et al., 2008).

These findings are reminiscent of more recent psychiatric insights on addiction which introduce addiction as the essential deficiencies in the individual's growth and affection. Drugs are taken to reduce the bothersome emotional states or to act as a defense mechanism in relation to internal conflicts. In fact, drugs act as a temporary external aid to maintain a sense of well-being (Beirami, 2014). The employment of ineffective cognitive emotion regulation strategies also leads to an increase in negative emotions and these negative emotions increase the degree of addiction potential because they have found comorbidity with substance abuse over years. In fact, substance abuse is an ineffective mechanism to cope with emotional disturbance, which mutually reinforces and continues early maladaptive schemas. The other variable in the

model is coping strategies whose mediating role with the schema in addiction potential was indirectly confirmed according to the findings of this research. As a result, it can be argued that one of the variables that plays an important role in the relationship between factors related to personality and psychological outcomes is coping strategies with stress. According to phenomenological theory, coping styles with stress refer to the cognitive-behavioral responses that individuals use in an attempt to manage the internal or external dimensions of stressful situations (Lazarus, & Folkman, 1984; as cited in Beigi, Mohammadifar, Farahani, & Mohammadkhani, 2011). These coping strategies are divided into two problem-focused and emotion-focused categories. The obtained results show that early maladaptive schemas are correlated with the processes in which people assess or respond to stressful and problematic events and, ultimately, predict addiction potential (Dehghani, Izadikhah, Mohammadtaghi-Nasab, & Rezaei, 2014). One of the other research variables that, as a mediator, predicts addiction potential in the path of schema and attachment is loneliness. From Yang's point of view, schemas are one's deep and firm beliefs about him/herself and are the result of the teachings of the early years of life. Schemes are our knowledge of ourselves and the world, and tell us how we are and how the world is (Reddy, Pickett, & Orcutt, 2006). Therefore, it is suggested that transdiagnostic and supportive treatments be employed by specialists in these centers in order to save time since addiction has usually comorbidity with other disorders and there is an increasing incidence of addiction in Iran.

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