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Instructions for Publishing Papers in Journal of Substance Abuse Addiction Research

- After mentioning the title and author(s), write the abstract as objective, method, results, conclusion, and keywords.
- Persian and English abstract of papers should include maximum 150 word and from three to five words should be included for keywords. The English abstract is required to be written exactly in agreement with the Persian version. The exact spelling of the author and co-authors’ names should be written in footnote of the English abstract.
- Bibliographical information should be inserted at the end of the paper in alphabetical order as follows:
  In accordance with APA style, put the English version of an author’s name in the footnote when mentioning it for the first time in the text. If the author has any colleagues (up to five persons), write their last names in the footnote. If the number of authors is higher than five, write the author’s name and then add the term et al.; the mention of all the authors’ names is obligatory in the reference section. If you are to mention an author and colleagues’ names for the first time, there will be no need to mention the colleagues’ names in the following times; in such cases, use the term et al.
- When necessary, write the author’s name and year of publication in parentheses in the text and insert the English equivalent of English terms at the end of that page. Add the name of all the instruments and expressions that are used in the text for the first time to the footnote. As much as possible, avoid using foreign words in the text.
- Final acceptance and publication of paper in the journal hinges upon the approval of the editorial board and expert reviewers. All the articles, to be eligible for publication, should enjoy the observation of the principles and framework for Scientific-Research criteria (introduction, main body of the paper including a theoretical or conceptual framework to explain or describe the variables and their relationships, method (population, sample, sampling method, and instrument), research results and findings, discussion and conclusion, acknowledgement, and reference).
- Mention your suggestions in the last paragraph of the paper without inserting the heading of suggestions.
- Briefly present the conclusion as the summary of the discussion.
- Each paper can contain up to 13 A4 pages, each containing 240 words.
- Papers should be necessarily typed in Microsoft Office Word Software with the font of Times New Roman and size of 11 and the related file should be forwarded accompanied by the paper.
- The author(s)’ name should be written in full. The author(s)’ affiliation, academic degree, and email address should be mentioned below the author(s)’ names.
As well, the corresponding author’s name along with the full address should be written below each article.

Meta-analyses and Reviews: - Only an article will be accepted whose author has expertise in the relevant area and refers to his/her own name in the reference section (at least four times).
- The general principles of writing such papers are similar to the above-mentioned ones.

Notes:
1. The contents published in the journal are not necessarily reflective of Drug Control Headquarters’ ideas. The responsibility of the contents lies with the authors are
2. Quoting the contents of this journal (Research on Addiction) with citing the source is allowed.
3. This journal, hereby, invites all the researchers, professors, and experts to submit their research papers on addiction and narcotic drugs.
4. The journal is allowed to edit, modify, and coordinate scientific terms of papers up to the point that concepts do not get distorted.
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First words

The success of nuclear energy negotiations was one of the most important events that happened this year which in itself reflects the intelligence and the will of the Iranian people. What was heard in the news was the fruition of 12 years of non-stop works of Iranian nuclear scientists which marked a turning point in the history of our country by the exercise of reason and hope. Therefore, it can be said that we will observe progress in the economic area (backed by the strength of the economy), political domains, industrial area, production, and technology as well as the production of science with regard to the new conditions produced in the post-sanction era with the wisdom of the eleventh government. This entails the detailed planning and policy making of the authorities and decision-makers more than ever. In fact, this wise and thoughtful view should be accompanied by the conversion of barriers to opportunities more than ever and this should include all aspects of society, especially addiction. In the meantime, the serious problem of narcotic and psychedelic drugs as a social ill can lead to serious concerns by targeting the young generation of our country since this group of the population will play an extraordinary role in the development of the current and future conditions due to the high capacity and potential they have. Therefore, given the importance of this issue, it is appropriate that the national professors and experts in this field seriously consider the careful study of various aspects of countering narcotics and psychedelics so that the results of such studies can assist the country's executive authorities in planning and decision-making in the field of holistic help with this phenomenon. It is believed that when strictly scientific studies are carried out in this regard, we will be able to gain significant success in the fight against narcotics and psychedelics and reach the summits of lofty development under the slogan "the state and the nation, empathy and compassion" as per the eleven-clause policies announced by the Supreme Leader. It is hoped that thinkers and scholars can bring about a dramatic change in this direction with the approach of problem-solving in research priorities, with careful attention to the role of Islamic-Iranian culture, and concurrent role of social, psychological and biological factors. Of course, this important goal, to come true, requires the conduct of interdisciplinary researches in related fields, such as sociology, psychology, medicine, and so on. Articles in this issue of the Journal, which are the result of the great efforts by the Iranian people, indicate research progress in some of the mentioned areas.

Ali Ebadian
Director General of the Department of Research and Education
Presidential Drug Control Headquarters
Abstract

Objective: The present study was an attempt to examine the difference in the profile of working memory, auditory working memory, and spatial working memory between drug, stimulant, and methadone abusers and normal people. Method: This study was a causal-comparative one with between-group comparison methodology. All the individuals addicted to opiates, stimulants, and methadone who had referred to Khomeini treatment centers of the city from September 2013 to February 2014 constituted the statistical population of the study. The number of 154 abusers (54 drug abusers, 50 stimulant abusers, and 50 methadone abusers) and the number of 50 normal participants were chosen as the sample of the study by purposive sampling method. The participants responded to Wechsler Memory Scale—third edition (WMS-III). Results: There was a significant difference between the normal group and drug, stimulant, and methadone abusers in terms of working memory, auditory working memory, and spatial working memory. Conclusion: Drug and stimulant use leads to sustained damage in cognitive processes such as working memory. However, research indicates that these cognitive processes will improve with the passage of time.

Keywords: Drug Abuse, Working Memory, Auditory Working Memory, Spatial Working Memory

The Difference in the Profile of Working Memory, Auditory Working Memory, and Spatial Working Memory between Drug, Stimulant, and Methadone Abusers and Normal People

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Introduction

Addiction is a complex disorder of the nervous system that happens to the people who suffer from certain biological, mental, and physical vulnerabilities. Addiction is a chronic relapsing disorder that is problematic for both the individual and society (Gordon, Tinsely, Godfrey & Parrott, 2006). The present neurological models regard addiction as a brain disorder that includes severe nerve damages and leads to persistent drug use despite its negative consequences (Moreno-López, et al., 2012; Baler & Volkaw, 2006). There is strong evidence that substance abusers suffer from large deficits in their neuropsychological functions. These defects are especially prominent in executive functions (Fernandez-Serrano & Perez-Garcia, 2011). In addition, research shows that these neuronal defects affect the nervous systems involved in motivation, emotion, learning, memory, and executive functions (Milton & Everitt, 2012; Ersche, Roiser, Robbins & Sahakian, 2008; Verdejo-Garcia & Bechara, 2009).

Although addiction to drugs is associated with changes in the whole brain, one of the key nervous systems in substance abuse is cortico-limbic-striatal circuit that plays some part in motivation, reward, learning, and memory. Amygdala, hippocampus, and lateral striatum (including nucleus accumbens and the prefrontal cortex) are among the key neural structures associated with addiction in cortico-limbic-striatal circuit that are effective in memory. These areas are extremely vulnerable to drug use (Milton, et al., 2012; Sanchis-Segura & Spanagel, 2008). Working memory is one of the most important cognitive processes that underlies thinking and learning and helps the maintenance and preservation of information in mind (Kasaeian, Kiamanesh & Bahrami, 2014). Working memory is a system that is responsible for temporary maintenance and processing of information on a series of cognitive tasks. This memory plays a very crucial role in learning and other cognitive tasks (Cheragh, Moradi & Farahani, 2008). Many studies have supported this hypothesis that substance abuse ruins the neural processes involved in memory and learning. For example, cocaine and heroin use can have an impact on the lateral amygdala and, thereby, influence memory consolidation (Luo, Xue, Shen & Lu, 2013; Li, et al., 2010). Furthermore, according to the research conducted in this area, the use of cocaine, which increases dopamine release, causes the loss of dopamine reserves of the brain in the long run. Then, some disorders occur to the functions of prefrontal cortex, cerebral cortex, and different areas of cortico-limbic-striatal circuit; therefore, the individual’s memory, cognition, and emotions undergo damages and craving for drug use raises (Aram, Bailey, Lavin & See, 2011; Hester & Garavan, 2004). Many researches have been conducted on the effectiveness of some of the cognitive abilities so far. For example, in a review study, Scott, et al. (2007) showed that methamphetamine users suffer from some defects in such areas as learning, executive functions, memory, speed of processing, and to a lesser extent from language compared to healthy individuals. In addition,
Indlekofer, et al. (2009) indicated that regular consumption of ecstasy has negative effects on learning, verbal memory, and complex attention functions. Other studies have shown that using drugs such as crystal is associated with defects and impaired cognitive executive functions at a higher level, including determination, purposive acts, problem solving, abstract thinking, and memory (Simon, Dean, Cordova, Monterosso & London, 2010; Salo, et al., 2007). Darke, Sims, McDonald & Wickes (2000) stated that methadone has a negative impact on information processing, visual working memory, verbal working memory, long-term verbal memory, attention, and problem solving. Karimian Bafghi, Alipur, Zare & Nahrvanian (2010) reported that addicts show weaker performance in implicit memory, concentration, and problem solving ability compared to the healthy people.

Due to the increasing growth of drug use in today's society, the examination of physical and psychological complications resulting from drug use (especially given the diversity that exists in the field of drug abuse) seems essential. Several studies have been conducted on the physical symptoms associated with drug use, such as the effects of different drugs on the gastrointestinal tract and respiratory system and such diseases as AIDS and hepatitis; however, more research is required to be carried out on the psychological effects of various substances, especially their effects on cognition and cognitive abilities. Therefore, research in this area and informing the people is essential to prevent substance abuse. The present study was an attempt to examine the difference in the profile of working memory, auditory working memory, and spatial working memory between drug, stimulant, and methadone abusers and normal people.

**Method**

**Population, sample, and sampling method**

A causal-comparative method and a multi group research design were used for the conduct of this study. In this study, the independent variable had four levels of drug users (opium and heroin), stimulant users (crystal), people under methadone treatment, and normal group who were compared in terms of the two dependent variables of working memory. All the substance and stimulant abusers who had referred to rehab centers of Khomeini Shahr from September, 2013 to February 2013 constituted the statistical population of this study. The sample of this study consisted of 154 abusers (54 narcotic users (opium and heroin), 50 crystal users, and 50 people under methadone treatment) who were selected via purposive sampling method. The criteria for the inclusion of participants in this study were as follows: membership in the 20-to-35-year-old age group, referring to psychiatrist or doctor based on the primary diagnosis of drug dependence in accordance with the diagnostic criteria of the fifth revised edition of the Diagnostic and Statistical Manual of Mental Disorders, no consumption of antipsychotic drugs, no history of physical and psychological
problems, history of at least one relapse, and the minimum primary school education. The comparison group contained 50 normal individuals who accompanied the patients who were matched with the first group in terms of age (P > .05, t=1.010), gender (P > .05, Chi-square=.98), and education (P > .05, Chi-square= .88). In addition, normal individuals did not have the history of drug abuse or use of antipsychotic drugs and did not suffer psychological or physical illnesses. To match them, clinical psychologists gave them diagnostic interviews.

Instrument

Working memory scale: It is one of the sub-scales of Wechsler Memory Scale—third edition that consists of two dimensions, namely letter-number sequencing and spatial span. Letter-number sequencing is a phonetic task wherein auditory working memory is measured while spatial span is a visual task wherein spatial working memory is measured (Wechsler, 1997; cited in Ramezani, Moradi & Ahmadi, 2009). This profile is administered individually. The subscale of letter-number sequencing includes seven items, and each item is composed of three attempts. In this subscale, a cluttered collection of numbers and letters is read to the participant and s/he should organize the numbers from smallest to largest and also organize the letters alphabetically in his/her mind, and recite them. The other subscale, i.e. spatial span includes forward and backward spatial spans. The reliability of this scale was obtained desirable through test-retest method (within a two-week interval). The correlation coefficients through this method were reported to be .53, .54, and .58 for letter-number sequencing, spatial span, and the total scale, respectively. Similarly, the Cronbach's alpha reliability of this test was obtained equal to .73, .76, and .74 for letter-number sequencing, spatial span, and the total scale, respectively (Zare, 2012).

Results

The descriptive statistics of the variables have been displayed for each group in the following table 1.

Multivariate analysis of variance was used to compare the mean scores of the four groups in working memory test. The equality of covariance matrix is one of the assumptions for using this test. Box test results suggest the satisfaction of this assumption (P > .05, F=.35). Another assumption of this test is the equality of variances. Levene’s test results are presented in the table 2.
Table 1: Descriptive statistics of the variables under study for each group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working memory</td>
<td>Drugs (opium and heroin)</td>
<td>15.02</td>
<td>5.34</td>
</tr>
<tr>
<td></td>
<td>Stimulant (crystal)</td>
<td>14.33</td>
<td>3.52</td>
</tr>
<tr>
<td></td>
<td>Methadone</td>
<td>20.75</td>
<td>2.89</td>
</tr>
<tr>
<td></td>
<td>Normal group</td>
<td>31.65</td>
<td>4.39</td>
</tr>
<tr>
<td></td>
<td>Drugs (opium and heroin)</td>
<td>8.4</td>
<td>2.04</td>
</tr>
<tr>
<td>Auditory working memory</td>
<td>Stimulant (crystal)</td>
<td>7.33</td>
<td>1.49</td>
</tr>
<tr>
<td></td>
<td>Methadone</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Normal group</td>
<td>16.8</td>
<td>2.01</td>
</tr>
<tr>
<td></td>
<td>Drugs (opium and heroin)</td>
<td>6.62</td>
<td>1.95</td>
</tr>
<tr>
<td>Spatial working memory</td>
<td>Stimulant (crystal)</td>
<td>7</td>
<td>1.53</td>
</tr>
<tr>
<td></td>
<td>Methadone</td>
<td>9.75</td>
<td>1.25</td>
</tr>
<tr>
<td></td>
<td>Normal group</td>
<td>14.85</td>
<td>1.84</td>
</tr>
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</table>

Table 2: Leven’s test results representing the equality of variances

<table>
<thead>
<tr>
<th>Variable</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working memory</td>
<td>.88</td>
<td>.39</td>
</tr>
<tr>
<td>Auditory working memory</td>
<td>1.99</td>
<td>.17</td>
</tr>
<tr>
<td>Visual working memory</td>
<td>.11</td>
<td>.75</td>
</tr>
</tbody>
</table>

The results of multivariate analysis of variance indicated the presence of a significant difference between the groups ($P<.05$, $F_{129/0}=\lambda$ Wilkes) ($P<.05$; $F=5.057$; Wilks Lambda=.129). To examine the difference in patterns, univariate analysis of covariance was used as follows.

Table 3: Results of univariate analysis of covariance representing difference in patterns

<table>
<thead>
<tr>
<th>Variable</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working memory</td>
<td>121.3</td>
<td>.0005</td>
</tr>
<tr>
<td>Auditory working memory</td>
<td>89.21</td>
<td>.0005</td>
</tr>
<tr>
<td>Spatial working memory</td>
<td>123.12</td>
<td>.0005</td>
</tr>
</tbody>
</table>

As it is observed in the table above, there is a significant difference at least between two groups in all the three components. Tukey test was used for the pairwise comparison of groups as follows.

As it can be observed in the table 4, there is a significant difference between the mean scores of the normal group with those of the other three groups in all the variables. However, there is no significant difference between the three groups of drug abusers, stimulant abusers, and methadone users in these three variables. Of course, there is a statistically significant difference between methadone users and the other two groups in working memory.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Mean difference</th>
<th>Standard error</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Working memory</strong></td>
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<td>Auditory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>working memory</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Narcotics</td>
<td>Stimulant</td>
<td>Methadone</td>
<td>.69</td>
<td>1.52</td>
<td>.231</td>
</tr>
<tr>
<td></td>
<td>Normal</td>
<td>Methadone</td>
<td>-5.73</td>
<td>3.58</td>
<td>.004</td>
</tr>
<tr>
<td></td>
<td>Normal</td>
<td>Normal</td>
<td>-16.63</td>
<td>2.25</td>
<td>.001</td>
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<td>Stimulant</td>
<td>Methadone</td>
<td>Normal</td>
<td>-6.42</td>
<td>2.70</td>
<td>.005</td>
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<td>Methdone</td>
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<td>Normal</td>
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<tr>
<td></td>
<td>Stimulant</td>
<td>Normal</td>
<td>-10.9</td>
<td>3.81</td>
<td>.001</td>
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<td></td>
<td>Normal</td>
<td>Methadone</td>
<td>1.07</td>
<td>5.25</td>
<td>.584</td>
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<tr>
<td></td>
<td>Methadone</td>
<td>Normal</td>
<td>-5.73</td>
<td>2.70</td>
<td>.041</td>
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<td>4.62</td>
<td>.359</td>
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<tr>
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<td>-8.4</td>
<td>3.31</td>
<td>.001</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>working memory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>.720</td>
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<td>2.87</td>
<td>.005</td>
</tr>
<tr>
<td>Methdone</td>
<td>Normal</td>
<td>Normal</td>
<td>-5.1</td>
<td>2.64</td>
<td>.009</td>
</tr>
</tbody>
</table>

**Discussion and Conclusion**

The results of the current study showed that all the groups including drug users, stimulant users, and the group under methadone treatment undergo much devastation in cognitive functions, such as working memory, auditory working memory, and spatial working memory compared to the normal group. The pairwise comparison of groups revealed that drug users and stimulant users had lower performance compared to the normal group. However, the comparison of the normal group and methadone users led to similar results. In fact, the findings of this phase indicate that drug abusers have a weaker working memory compared to the normal group. Based on these results, although patients treated with methadone outperformed the drug and stimulant users in terms of working memory, they are still placed in a lower level than the normal group in terms of working memory performance. These findings are consistent with the results obtained by Aram, et al. (2011), Simon, et al. (2010), Hester & Garavan (2004), Indlekofer, et al. (2009), Scott, et al. (2007), Salo, et al. (2007), Gruber, et al. (2006), Davis, Liddiard & McMillan (2002), Hepner, Homewood & Taylor (2002), and Darke (2000). In addition, the results of this study showed that cognitive disorder in auditory working memory and spatial working memory in patients treated with methadone is similar to cognitive disorders in drug users and stimulant users that is confirmed by the findings of the studies done by Davis et al. (2002) and Mintzer & Stitzer (2005). Several possible explanations can be given for the findings of cognitive
disorders in people addicted to drugs. Cognitive disorders in drug addicts may be caused by the direct impact of drug abuse. People with drug abuse and people under methadone maintenance therapy achieved lower scores in memory. The fact that drugs directly influence one’s central nervous system and brain as a result of passing through blood of the brain, has been confirmed in laboratory studies on animals. Studies have shown that drugs influence the hippocampus, which plays an important role in the formation of working memory, and also affect the lateral amygdala, which plays some role in memory consolidation (Luo, et al., 2013; Li, et al., 2010; and Kelley, Anderson & Itzhak, 2004). It is also found that drug addicts may also use or abuse various types of drugs at the same time. Thus, cognitive deficits in working memory of such addicts may be due to the interactions resulting from simultaneous use of more than one drug.

Cognitive damage in alcohol and cocaine users is more intense than that in drug users. Researchers have found little difference in cognitive functions between people under methadone treatment and drug abusers. The negative impacts of drug use still remain active even long after detoxification and withdrawal and these negative effects are not related to the amount of methadone they use. Although the findings of the already-conducted researches indicate that there is no change in cognitive function as a result of methadone withdrawal, it is possible that a recovery is met after a long period (Prosser, et al., 2006). In addition, there is the possibility that the cognitive defects identified in substance abusers is a manifestation of a disease that has already existed and continues through drug use and addiction treatment. That the current findings indicate that there is similar cognitive disorder in both people under methadone treatment and drug users reflects a situation that shows the investigation of drugs and their effects on cognition requires further research (Sorg, 2012; Mintzer, et al., 2005).

The results of this study have important clinical implications. Here, the previous findings that there is a cognitive disorder in chronic drug users was approved. It seems that the participants in substance abuse treatment programs will have still problems in attention and memory, and these defects may also be at play for months and even years after detoxification. Therefore, cognitive status may play an important role in the effectiveness of treatment. The defects in both groups of methadone receivers and drug users suggest that this population may benefit from further treatment programs based on training and retraining of cognitive skills such as memory rehabilitation skills and problem-solving skills. The lack of awareness of the memory function before substance abuse is one of the limitations of this study. In addition, the effect of factors such as mood or emotion on memory are uncontrolled while these factors affect memory performance.
Reference


Abstract

Objective: This study aimed at determining the role of academic burnout, resilience, and perceived stress in predicting students' addiction potential. Method: In this correlational study, the number of 200 high school students in South Khorasan province was selected as the participants through random cluster sampling and they responded to the four pertinent questionnaires, namely resilience scale, school burnout inventory, perceived stress scale, and addiction potential scale. Results: The results showed that academic burnout, perceived stress, and resilience were positively correlated with addiction potential. Similarly, there was a significant positive relationship between academic burnout and perceived stress. Conclusion: Dimensions of burnout (emotional exhaustion, cynicism, inadequacy), dimensions of perceived stress (negative emotional responses and coping ability level), and resilience could predict 20% of addiction potential. Among these dimensions, only coping ability level and resilience were significantly effective in predicting addiction potential; therefore, educational authorities are recommended to pay more attention to the prevention and treatment of addiction in students towards having a healthy society.

Keywords: Academic Burnout, Resilience, Perceived Stress, Addiction

The Role of Academic Burnout, Resilience, and Perceived Stress in Predicting Students' Addiction Potential

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Introduction

Addiction is a physical, mental, social, and spiritual illness (Galanter, 2014). Addiction to narcotics is one of the top four global crises of the third millennium and is considered one of the top social threats and ills, and also one of the most tragic problems that has challenged most of today's societies and its impact has an objective realization on the emergence of other social problems (Tabatabai Chehr, Ebrahimi & Mortazavi, 2013). Addiction is the result of drug use and is, indeed, a chronic state as a result of repetition of drug use which has these features: 1- Mental habits are created as a result of repeated drug use and these habits lead people to drug use due to the mental desire and need. 2- The dose of drugs steadily increases. 3- Deprivation symptoms such as aggression, tension, anxiety, etc. are created in the person as a result of cut of drug use. 4- Drug addiction brings a detrimental state to individuals or society (Clarke et al., 2013). According to Madadi & Nogani (2004), substance abuse is referred to as a maladaptive pattern of drug use that leads to frequent problems and negative consequences and encompasses a set of cognitive behavioral and psychological symptoms. Drugs not only threatens the health of drug users and society, but also paves the way to the moral and intellectual corruption that can have dangerous consequences for the health of the consumer (Sinha, 2001). Attempt to understand, predict, prevent, and treat substance abuse and mental illnesses is initiated with the answer to the question, why. Questions such as why do people take drugs? Why do they become depressed? Why do they keep on taking drugs and drinking alcohol even after seeing the consequences of drug and alcohol consumption? In addition, thousands of other questions can be raised in this area. However, a few decades ago, researchers turned their attention to the question, why not? Why don’t so many people who are at risk of drug use turn to it at all? Why don’t so many people who have experienced drug use get addicted to it? Therefore, the questions of this category have led to a wide range of exploratory and clinical observations on the concept of resilience (Glantz & Johnson, 1999). Resilience that is also referred to as stress resistance and post-traumatic growth is placed along a continuum with varying degrees of psychological trauma (Ingram & Price, 2001). According to this definition, resilience is beyond surviving stresses and hardships of life (Bonanno, 2005). Indeed, with positive growth, adaptability and the achievement of a level of equilibrium after the passage of disorders, resilience matches the previous balance (Richardson, 2002). Therefore, resilience is referred to as a successful compliance that comes into existence in the face of debilitating disasters and stresses. This definition of resilience is indicative of structural productivity and mobility that entails a complex interaction between risk and protective factors (Olsson, Bond, Burns, Vella-Brodrick & Sawyer, 2003). Resilience is defined as the potential adaptability of humans in the face of overwhelming pressures and disasters and humans’ advancement as a result of experiencing such experiences. This
attribute is protected with one’s inner strength and social skills and interaction with the environment and, then, it is reflected as a positive feature (Diener & Ryan, 2009). Simply, resilience is positive adaptation in response to adverse conditions (Waller, Okamoto, Miles & Hurdle, 2003). Arce et al. (2009) believes that people who have resilience often restore to the normal situation after experiencing positive emotions as a result of stressful encounters. Resilient individuals leave behind stressful events without facing any problems in mental health (Waugh, Fredrickson & Taylor, 2008). Clinical psychologists have recently examined models of resilience under conditions of loss, bereavement, depression, and pain (Charney, 2004; Zautra, Johnson & Davis, 2005; Southwick, Vythilingam & Charney, 2005). The harmonious results of that study confirmed the positive, productive and protective effects of resilience on the successful resistance with and developed adaptation to stressful situations. Conversely, low levels of resilience are interrelated with vulnerability and psychological disorders (Campbell-Sills, Cohan & Stein, 2006). This shows the importance of research on the factors affecting resilience. In this regard, studies have shown that substance abuse is correlated with low levels of resilience and mental health (Friedli, 2009). The results of a study indicated that people with high resilience benefit from better health status, higher self-esteem, more parental support, and are less exposed to drug use (Buckner, Mezzacappa & Beardslee, 2003). In another study, Fadardi, Azad & Nemati (2010) showed that there is a relationship between resilience and attitude to drug use.

In terms of drug addiction among students, different psychological, social, familial, and biological factors are involved (Magid, Colder & Stroud, 2009). Farjad (2006) classified the effective factors involved in addiction into three categories: Individual factors (pleasure, curiosity, individual and psychological problems, school dropout), family factors (presence of drug users in the family, the family's economic welfare, and parental discord), and social factors (availability of drugs, unemployment, economic inequality, the growth of industry). In addition, Esalamdoost (2010) classified the causes of addiction tendency into three categories, namely individual risk factors, interpersonal and environmental risk factors, and social risk factors. In this regard, individual risk factors include adolescence, hereditary predisposition, personality traits, mental disorders, positive attitude to drugs, aggressiveness, and risky situations; interpersonal and environmental risk factors include family, impact of friends, factors relating to school, and factors relating to residential place; and social risk factors include rules and regulations, drug market, drug use as a social norm, lack of sports, cultural, and leisure facilities, and lack of access to service, support, counseling, and therapeutic systems. Among these dimensions and factors, academic burnout as one of the individual factors among students is very important. Many researchers consider burnout as a state of emotional exhaustion that results from chronic stress syndrome, including role overload, pressure and time constraints, and lack of adequate resources to carry out the assigned
responsibilities (Maslach, Schaufeli & Leiter, 2001; Toppinen-Tanner, Ojaarvi, Vaananen, Kalimo & Jappinen, 2005). Academic burnout in educational situations is defined as feeling of fatigue due to the demands and requirements of education (exhaustion), possession of a cynical and reluctant sense to educational content and assignments (cynicism), as well as the feeling of weak personal progress in academic and educational affairs (reduced personal efficacy) (Zhang, Gan & Cham, 2007). Moreover, Bruce (2009) believes that burnout occurs when a person experiences stress for a long period. It seems that no studies have been conducted so far on the relationship between the variables of academic burnout and addiction tendency; however, the following studies can be referred to as, to some extent, related in this regard. Savari & Bashlideh (2009) concluded that personality traits of neuroticism and agreeableness are positively correlated with academic burnout whereas extraversion and openness are negatively correlated with academic burnout. In addition, there was no significant correlation between the personality trait, conscientiousness and academic burnout. Molavi & Rasoulzadeh (2004) showed that academic failure is predictor of tendency to narcotic drugs. Shafiea, Shamsi & Ghaderi (2012) found that drug use has negative effects on academic achievement.

It seems that perceived stress is one of the variables that can predict students' tendency to addiction. Perceived Stress is the body's reaction or response to a change that entails physical, mental or emotional adaptation. Stress can be caused by any stressful factors or stressors, even by communication with a patient (Morrow, 2011). Mojtabadi (1999) showed that unreasonable expectations of parents in comparison with others, economic problems, parents’ illiteracy, populated family, humiliation by family members, and parents’ ignorance of children's ideas constitute the most important stressors among secondary school students. Perceived stress is a psychological process or state in which a person perceives his/her physical and psychological well-being as threatening. In fact, stress production depends on how an individual perceives situations. It is possible that a situation will be perceived as a safe state by one person while the same situation may be perceived as a threat by another person (Clark, 2010). Different types of social, economic, and psychological stresses play some part in the preparation and emergence of addiction. Thus, the inability to cope with stressors and the belief that alcohol consumption and drug use will have good results constitute the basic reasons for turning to drug use (Samooea, Ebrahim, Mousavi, Hassanzadeh & Rafiea, 2000). Research findings show that there is a statistically significant positive correlation between stress and induced craving for drug use and also between stress and instant craving for drug use (Pourseyedi Mousayi, Mousavi & Kafi, 2012). Jones (2004) found that students’ stress has been the predictor of their recent smoking. In fact, stress is an important risk factor in the development and relapse of drug addiction (Sinha & Jastreboff, 2013).
Addiction and its unpleasant consequences are among the most important challenges for societies and one of the worst social ills; therefore, it has attracted the attention of experts of mental health and is considered as one of the key issues in relation to health of the youth (Botvin, 2000). Adolescents and young people in each country a central role in the inclusive development of the society in terms of social mobility and growth. Therefore, the identification of the young people at risk of substance abuse and other risky behaviors should be of major concern to the education authorities. Since adolescence is the time to gain experience and make personal choices and a person's identity is shaped at this time, adolescents and young people are very vulnerable against drug use and risky behavior. For this reason, the identification of factors effective in the prevention and protection of adolescents and young people from drug use and risky behaviors (Khalaj Abadi & Ebadi, 2003). Rahimi Movaghar & Sahimi Izadian (2005) conducted a study on students in the country and showed that drug use among students, including cigarette smoking, alcohol, opium, hashish, etc. has dramatically increased in recent years. Accordingly, it seems that research on the factors effective in students' tendency to addiction is essential. Although there is a rich literature on burnout and stress in working situations, the investigation of this phenomenon among students is still remarkable. On the other hand, given the importance and prevalence of addiction among students and the important role of resilience, the interaction of these variables requires more research. Therefore, the current study has also been conducted on this basis. Accordingly, this study is an attempt to determine the role of academic burnout, resilience, and perceived stress in predicting students' addiction potential.

Method

Population, sample, and sampling method

In this correlational study, all the male high school students of South Khorasan in the academic year 2013-2014 constituted the statistical population, out of whom the number of 200 students was selected from cities of Birjand, Qaen, and Nehbandan (70 participants from each city) as the participants through random cluster sampling. After data collection, the number of 10 questionnaires were left out from the final data due to incompleteness and the total of 200 questionnaires was analyzed.

Instrument

1- Connor-Davidson Resilience Scale: This questionnaire contains 25 items that measure the construct of resilience in a 5-point Likert scale. It is noteworthy that each item is scored within the range of 0 (always false) to 4 (always true) and, thereby, the total score ranges from 0 to 100. The results of the studies pertinent to the psychometric properties of this questionnaire in normal subjects
and patients have confirmed the reliability and validity of the scale (Connor & Davidson, 2003). Mohammadi (2005) administered this questionnaire to 248 participants and reported the reliability of the scale via internal consistency to be .89. In the current study, the reliability of this scale was calculated via Cronbach’s alpha equal to .91.

2- School Burnout Inventory (SBI): This questionnaire was constructed by Salmela-Aro, Kiuru, Leskinen & Nurmi in 2009 and consists of 9 items and 3 factors. The first factor is exhaustion at school and contains 4 items, the second factor is cynicism toward the meaning of school and consists of 3 items, and the third factor is sense of inadequacy at school and contains 2 items. The items are responded and scored based on the following alternatives: strongly agree (6), agree (5), somewhat agree (4), disagree (3), somewhat disagree (2), and strongly disagree (1). Salmela-Aro, et al. (2009) obtained Cronbach's alpha for exhaustion, cynicism, and inadequacy equal to .80, .80, and .67, respectively. This questionnaire was translated and administered to senior high school students for the first time by Savari and Bashlideh (2009) and its Cronbach's alpha coefficient was reported to be .74. In the present study, Cronbach's alpha was obtained equal to .87 for the whole scale.

3- Perceived Stress Scale: This scale was constructed by Cohen, Kamarck & Mermelstein (1983) and consists of 14 items. Each item is responded on a 5-point Likert scale (never to always). These alternatives are assigned 0 to 4 points, respectively. This scale measures two sub-scales, namely negative perceived stress (7 items) and positive perceived stress (7 items). in a research on Japanese students, Mimura & Griffiths (2004) obtained Cronbach's alpha coefficients for negative and positive perceived stress equal to .88 and .81, respectively. The content validity of this questionnaire has been confirmed by ten professors of Mashhad university of Medical Sciences. The reliability of the Persian version of this scale has been reported through internal consistency equal to .74 (Bastani, Rahmatnezhad, Jahdi & Haghani, 2008). Mohammad Yeganeh, Bastani, Feizi, Aguilar Vafaee & Haghani (2008) also confirmed its reliability. In the present study, Cronbach's alpha coefficient for perceived stress was obtained equal to .74.

4- Addiction potential scale: This questionnaire consists of 16 items and generally aims to evaluate the tendency to addiction from three social, individual, and environmental dimensions in different people. This questionnaire was constructed by Farjad (2006). Items are responded and scored based on a 5-point Likert scale within the range of very little (1) to very much (5).

Items numbered 1 to 5 touch upon the environmental dimension, items numbered 6 to 9 measure the individual dimension, and items numbered 10 to 16 measure the social dimension. The total score of the whole scale ranges between 16 and 80. The higher the score, the higher will be the individual’s tendency to and potential for addiction. The content validity of the scale was confirmed by university professors and the reliability coefficient of the scale was
reported equal to .79 (Mirhesami, 2009). In the present study, Cronbach's alpha reliability was obtained .83.

**Results**

In terms of age group, about 5% of the participants was 14 years old, 42% was 15 years old, 20 % was 16 years old, 18% was 17 years old, and 15% was 18 years old. In terms of education, 47% was first-grade senior high school students, 20% was second-grade senior high school students, 18% was third-grade senior high school students, and 15% was fourth-grade senior high school students. The descriptive statistics of the variables of the study are shown in the table below.

**Table 1: Descriptive features of the variables under study**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Standard error of the mean</th>
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</thead>
<tbody>
<tr>
<td>Exhaustion</td>
<td>14.82</td>
<td>4.82</td>
<td>.34</td>
</tr>
<tr>
<td>Cynicism</td>
<td>10.56</td>
<td>3.98</td>
<td>.28</td>
</tr>
<tr>
<td>Inadequacy</td>
<td>6.92</td>
<td>2.56</td>
<td>.18</td>
</tr>
<tr>
<td>Academic burnout</td>
<td>32.34</td>
<td>8.97</td>
<td>.63</td>
</tr>
<tr>
<td>Negative emotional</td>
<td>12.52</td>
<td>4.58</td>
<td>.32</td>
</tr>
<tr>
<td>Coping ability level</td>
<td>12.50</td>
<td>5.23</td>
<td>.37</td>
</tr>
<tr>
<td>Perceived stress</td>
<td>25.02</td>
<td>5.76</td>
<td>.40</td>
</tr>
<tr>
<td>Resilience</td>
<td>52.81</td>
<td>15.23</td>
<td>1.07</td>
</tr>
<tr>
<td>Environmental factors</td>
<td>11.79</td>
<td>4.62</td>
<td>.32</td>
</tr>
<tr>
<td>Individual factors</td>
<td>10.08</td>
<td>3.70</td>
<td>.26</td>
</tr>
<tr>
<td>Social factors</td>
<td>18.19</td>
<td>6.01</td>
<td>.42</td>
</tr>
<tr>
<td>Potential for addiction</td>
<td>40.06</td>
<td>13.13</td>
<td>.92</td>
</tr>
</tbody>
</table>

The correlation matrix of the variables under study is presented in the following table.

**Table 2: Correlation matrix of the variables under study**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Academic burnout</th>
<th>Perceived stress</th>
<th>Resilience</th>
<th>Potential for addiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic burnout</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Perceived stress</td>
<td><strong>.33</strong></td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Resilience</td>
<td>.04</td>
<td>-.10</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Potential for addiction</td>
<td><strong>.26</strong></td>
<td><strong>.40</strong></td>
<td><strong>.32</strong></td>
<td>1</td>
</tr>
</tbody>
</table>

**p<.01**

Multiple regression analysis should be used to test the hypothesis which variables can play a more effective role in predicting potential for addiction. This analysis requires the stisfaction of such assumptions as normality of the data, the availability of no multi-collinearity between predictor variables, and independence of errors. Kolmogorov-Smirnov test was used as follows to examine the normal distribution of the variables.
As shown in the above table, the assumption of normal distribution has been met in all variables. It is required to use VIF index to check the absence of multicollinearity. For the satisfaction of this assumption, the value of this index must be lower than 2. The results showed that the value of this index was 1.98, 1.79, 1.27, 1.14, 1.97, and 1.66 for exhaustion, cynicism, inadequacy, negative emotional responses, coping ability level, and resilience, respectively. Therefore, this assumption has been met in all the variables and components. Another assumption for using the parametric test of regression analysis is independence of errors, for which the hypothesis of existing a significant correlation between errors must be rejected. Durbin-Watson test is used to check this assumption. For the satisfaction of this assumption, the value of this statistic should range from 1.5 to 2.5. This statistic was obtained equal to 1.75 in the current study, which suggests the assumption has been met. Considering the satisfaction of all the assumptions required for using the parametric test of regression analysis, it was conducted. The results showed that predictors accounted for 22% of the total variance of potential for addiction. The regression coefficients are given in the table below.

As shown in the above table, only coping ability level and resilience among all the predictors with the regression weight of -.61 and -.14 are significant predictors of potential for addiction.

**Discussion and Conclusion**

This study aimed to determine the role of academic burnout, resilience, and perceived stress in predicting high school students’ addiction potential in South Khorasan province. Substance abuse is one of the main problems ahead of human societies and has detrimental effects on the economic and social status of
society and substance users. Substance abuse causes the demolition of a person's moral foundations and provides the conditions for committing delinquency and crime. In this regard, students as young people of a country and as a core group with a pioneering role in the future careers of a society are of great importance, especially since this phenomenon prevalently happens to young groups. The first finding of this study was indicative of the fact that there is a significant positive relationship between burnout and addiction potential. Therefore, it is implied that addiction potential increases as school burnout increases. This finding is consistent with that of the studies conducted by Savari & Bashlideh (2009) and Shafiea, et al. (2012). To explain these findings, one can argue that having a cynical and reluctant sense to the school content and assignments (apathy), as well as feeling of weak personal progress in educational and school affairs are among the signs and symptoms of school burnout and lead to some sort of frustration and a sense of disappointment in people. This feeling can be a pressure to isolation and innovation adaptations. In isolation adaptations, addiction to alcohol and drugs is a good way to forget the present situation and escape from the pressures and tensions that a person is involved in; therefore, such a person tends to drug use.

Another finding of the current study was indicative of the existence of a significant negative relationship between and addiction potential. To account for this finding, one can argue that people with low resilience have no specific goals in life, have found no important meaning for their lives, get defeated with any trouble and difficulty, lose their motivation, are not flexible to changes in life, and always remain in fear and disappointment, and do not have the ability to cope with difficulties. Therefore, such people turn to drug use in threatening conditions and situations.

One of the other findings of this study was the existence of a significant positive correlation between perceived stress and addiction potential which shows that addiction potential increases with an increase in the level of perceived stress. This finding is consistent with that of the studies undertaken by Trinidad & Johnson (2002), Samooea, et al. (2000), Pourseyedi Mousayi, et al. (2012) who showed that there is a significant positive relationship between stress and addiction potential. To explain this finding, one can assert that when a person is placed in stressful conditions, s/he turns to drugs in order to feel relaxed and escape from those conditions. The impact of narcotic drugs leads one to detect that s/he is able to affect his/her pain and trouble which is the result of stress and mental pressure by means of narcotics. Thereby, his/her mental condition get transformed.

Results also showed that the dimensions of school burnout (exhaustion, cynicism, and inadequacy), dimensions of perceived stress scale (negative emotional responses, and coping ability level), and resilience have 22% ability to predict addiction potential in students. This finding is consistent with the findings of the previous studies. For example, Molavi & Rasoulzadeh (2004)
Research on Addiction Quarterly Journal of Drug Abuse showed that educational failure is a predictor of drug use tendency. Shafiea, et al. (2012) showed that drug use had a negative impact on educational achievement of students. Meanwhile, Fredrickson, Tugade, Waugh & Larkin (2003) showed that resilience was associated with positive feelings and plays a protective role in tendency to drugs. Isralowitz & Rawson (2006) also indicated that the employment of the theory of resiliency established a conceptual framework for the study of protective factors influencing drug use. Therefore, it is possible to increase and strengthen people’s resilience by identifying characteristics of resilience such as coping responses. Resilience can be considered as an effective factor in preparation for substance use or prevention from it (Connor & Davidson, 2003). Pourseyedi Mousayi, et al. (2012) showed that stress can be an important predictor of craving for drug use in addicts. In addition, Jones (2004) found that students’ stress is the predictor of their recent smoking.

To account for the role of academic burnout in predicting addiction potential, one can state that exhaustion, cynicism, and feeling of inadequacy are all the underlying individual and social factors (Eslamdoost, 2010) effective in addiction potential that cause one to turn to drug use. This finding is consistent with that of the study done by Kamali (2010). In terms of the role of perceived stress dimensions (negative emotional reactions and coping ability level) in addiction potential, it is possible to assert that negative emotional reactions and coping ability level, as one of the risky situations, are included among individual and environmental factors (Eslamdoost, 2010) effective in addiction potential and provide the conditions for addiction potential.

The last finding of this study revealed that only coping ability level and resilience had a significant negative impact on addiction potential. In fact, this indicates that addiction potential is reduced among students as these factors increase. This finding is consistent with the findings of other studies done on the effectiveness of resilience in preparation for drug use and addiction prevention (Thies & Travers, 2006; Miller, 2003). On the one hand, this finding is also consistent with the findings of other researchers (Bradizza, et al., 2009; Dejong & Langford, 2002; and Rohsenow, Martin & Monti, 2005) who have studied the effectiveness of coping skills in addiction potential and prevention.

As one of the limitations of this study, one can refer to the statistical population of the study and, thereby, care and caution should be exercised in generalizing these results and findings to other places of the country. In addition, there is room for reconsidering the reliability of the responses provide by participants since these instruments were all self-report. Furthermore, the conduct of research on both genders, i.e. male and female, and different age groups and educational programs is recommended. Future researchers are also recommended to include factors such as family environment, attachment styles, and social class of participants in future studies so that more accurate judgments can be made in predictive factors of addiction potential. According to the present results, the
higher attention of educational authorities to the prevention and treatment of substance abuse is essential for having a healthy society.

Reference


Abstract

Objective: The present study aimed at examining the mediating role of life satisfaction in determining the relationship between coping strategies for stress and attitudes towards addiction.

Method: This study was a descriptive-correlational study whose statistical population included all the high school students of Abadan. Then, the number of 400 students was selected by random sampling method as the sample and they filled in attitude towards addiction scale, coping responses inventory, and life satisfaction inventory.

Results: Problem-focused coping strategies could indirectly predict attitude towards addiction by means of life satisfaction. However, emotion-focused coping strategies could predict attitudes towards addiction neither directly nor indirectly.

Conclusion: If adolescents are not equipped with efficient coping strategies and have low levels of life satisfaction, they will be directed into a state with positive attitude towards addiction. It is possible to prevent addiction in adolescents via teaching life skills, including efficient strategies to cope with stress and high levels of life satisfaction.

Keywords: Life Satisfaction, Coping Strategies for Stress, Attitude towards Addiction
Introduction

Researchers consider adolescence as psychological self-actualization. This is a period in which people are free to experience and test many rules for their future before decision-making. Drug use may be an example of such experimentation. Since drug use has been restricted to the world and domain of adults, adolescents may view drug use as a relatively simple and effective means to experience the adult world (McCoy, Metsch & Inciardi, translated by Golparvar & Khal’atbari, 2002).

Addiction in adolescents and young adults is of great importance because this group of people constitutes more than half of productive forces of society. In fact, the prevalence of drug use among them is tantamount to the ignorance of more than half of the workforce (Mohammadi, 2008). On the other hand, addiction process that is moving from males to both males and females is alarming to family origin and future generations (Griesbach, Ams & Currie, 2003) since women as the core play the fundamental role in the health of family members and addiction prevention will be useful to the health and discipline of family and society (Ajilchi, Naderi, Ghaemi, 2009). For this reason, the need to identify predictive and preventive factors and measures of drug use, especially in adolescents and young people and the need to develop protective factors against addiction is more crucial than ever (Husseini al-Madani, Ahadi, Karimi, Bahrani & Ma’azedyan, 2012).

In terms of the reasons for adolescents’ tendency to drugs, a variety of studies have been done from psychological perspective. One of the factors used in many studies is stress (Gregory, Mary & Brian, 2001). Stress has now become an inevitable part of human life. As a moderating variable in the relationship between stress and consequences such as anxiety and depression, coping can be adaptive or maladaptive (Siqueira, Diab, Bodian, & Rolnitzky, 2000; Eftekhari, Turner & Larimer, 2004). Adaptive responses are mostly problem-focused coping methods that reduce stress and return the system to equilibrium. Maladaptive types of such methods that are more emotion-based bring about an increasingly vicious circle of anxiety and concern there-they have to intensify psychological pressure, reduced self-esteem, physical disease, anxiety, depression and turn to tobacco, alcohol and other drugs leads (Gregory, Mary & Brian, 2005). Studies have shown that addicts often turn to dysfunctional coping strategies such as opiate use instead of using problem-focused strategies to solve problematic situations when they face an environmental stressor. It is possible to argue that people’s inability in the selection of appropriate coping strategies is a factor that leads people to drug use and addiction in the end. Considering the inappropriate coping model of addicts who opt for an unhealthy method to deal with stressful situations, it seems that this pattern increases addiction potential, social, and psychological problems; and creates a vicious cycle (Ranjbar Noshari, Aliloo, Asadimajreh, Ghodrati & Najarmobaraki, 2013). Furthermore,
studies have shown that the adolescents who are not equipped with effective coping strategies and have little ability to understand their own emotions and others’ emotions will have less power in dealing with stress and crises pertaining to adolescence and will be involved in more behavioral problems such as aggression, depression, anxiety, and attitude to addiction (Elgar, Arlet & Groves, 2003). In general, it can be claimed that addicted people use emotion-focused and ineffective coping styles when exposed to stress (Brady, Tschann, Pasch, Flores & Ozer, 2009; Staiger, Melville, Hides, Kambouropoulos & Lubman, 2009; Ranjbar Noshari et al., 2012; Babamiri, Vatankhah, Masumi, Nemati & Darvishi, 2013; Rostami, Ahadi & Cheraghali Gol, 2013). On the other hand, people who take advantage of problem-focused coping strategies in stressful situations, in fact, employ regular and classified activities for cognitively rebuilding the problems. This causes the order and coherence of thoughts and reduces emotional disorder. In the shadow of the resultant intellectual coherence and emotional comfort, the source of stress is also detected and controlled in a better way. Therefore, the controllability of sources of stress causes one to benefit from better mental health and, to a lesser extent, turn to drug use (Psstein, Griffin & Botvin, 2000). Similarly, Pearlin & Schooler (1987) showed that the people who use efficient problem-focused coping style have low levels of tension and stress. Low levels of emotional stress cause a person to better use cognitive and dynamic skills for dealing with problems in the shadow of mental comfort and, thereby, achieve greater life satisfaction (Ghazanfari & Ghadampour, 2008).

Problem-oriented skills are the cognitive skills by means of which individuals carry out an accurate evaluation of their situations regardless of feelings and emotions and act realistically. As individuals employ these efficient coping methods, they distance themselves from physical and psychological symptoms, anxiety, and lack of life satisfaction and enjoy higher levels of well-being and positive affect. The use of emotion-focused coping styles makes people more vulnerable in coping with stressful situations and emotional disorders and provides the conditions for the prevalence of affective disorders, psychological incompatibilities, and lack of subjective well-being. The employment of emotion-focused coping strategies prevents one from effective direct involvement in problems and reduces one’s ability to solve problems. This situation impairs intellectual coherence, brings about emotional distress, and reduces mental well-being (Sarvaghd, Rezaei & Fadayi Dowlat, 2010). Therefore, if one’s life satisfaction is reduced, it can affect their ability in the workplace and relegate their economic and social conditions. Poor life satisfaction can also lead to the employment of ineffective coping mechanisms and inefficient compatibility in people. In consequence, stress and tension in such people increase that is directly interrelated with drug use (Agha Molaea, 2005). High life satisfaction can be a deterrent against drug addiction juvenile attitude (Tanaka, chaste, Vattenfall, Boyle and Macmillan, 2014). Subjective
well-being consists of two separate components: affective component that can be divided into positive and negative affects and cognitive component that usually refers to life satisfaction (Pavot & Diener, 1993). In fact, life satisfaction is regarded as one’s individual assessment of his/her present and past life. This assessment includes one’s emotional reaction to the events and judgments that one has about his/her life (Gallagher & Vella-Brodrick, 2008). People with high life satisfaction mostly hold positive emotions and have a positive assessment of life events. On the other hand, people with low levels of life satisfaction assess events and conditions negatively; therefore, they experience undesirable emotions such as anxiety, depression, and aggression. Such negative emotions increase the tendency of adolescents to addiction because they may take drugs in order to extricate from their pains and sufferings and gain comfort (Efati Divshali, Kafi Masouleh & Del Azar, 2011; Kaplan & Sadok, translated by Pour Afkari, 2010). Shek & Leung (2013) explored the relationship between life satisfaction and tendency to addiction in adolescents and found that the adolescents low life satisfaction have more intense tendencies to addiction. In fact, life satisfaction refers to the general sense of one’s perception (cognitive and emotional) of the whole life. For this reason, people with high life satisfaction experience more positive emotions from the past and future of themselves and others, remember more positive events, carry out positive evaluation of their surroundings, and describe them as pleasant (Tim, 2010).

According to the findings of the above-mentioned studies, the effect of life satisfaction and coping strategies, including problem-focused strategies and emotion-focused strategies on attitudes to addiction in a single model is examined in the current study. Thus, this study aims is to explore the mediating role of life satisfaction in the relationship between coping strategies with stress and attitudes to addiction.

Figure 1: Conceptual model of the mediating role of life satisfaction in the relationship between coping strategies with stress and attitude to addiction

Method

Population, sample, and sampling method

The present study is a descriptive-correlational study whose statistical population includes all the high school female students of Abadan in the second semester of the academic year 2013-2014. The whole population amounted to
the total of 10 thousand students, among whom the number of 400 students was selected by random sampling method for the purpose of this study based on Morgan table. The participants were in the 15-to-18-year-old age group who were selected from two districts in the city of Abadan, three schools from each district, and three classes from each school. After receiving the consent of the participants, the researchers distributed questionnaires among the students.

**Instrument**

1- Attitude towards addiction scale: This instrument is part of risk and protective factors questionnaire which has been prepared based on similar instruments in the field of assessing risk and protective factors, including Communities That Care Youth Survey (Pollard et al., 1996 cited in Mohammadkhani, 2007), index of individual protective factors (Springer & Philips, 1995 cited in Mohammadkhani, 2007), measuring resilience traits in youth (Constantine et al., 1999 cited in Mohammadkhani, 2007), studies conducted in social center of University of Utah (1998), and other tools. This instrument evaluates risk factors related to drugs in four individual, family, school, and community areas. This questionnaire was prepared and validated 3,000 middle and high school students by Mohammadkhani. Higher scores on this test indicate more positive attitudes towards drug use. Reliability of this questionnaire was reported .80 (Mohammadkhani, 2007). In the present study, Cronbach's alpha reliability of this scale has been obtained equal to .90.

2- Coping Responses Inventory (CSI): This questionnaire was constructed in 1981 by Billings and Moos to investigate the way people respond to stressful events and consists of 19 items. The alternatives pertaining to each item have been arranged based on a Likert scale from 0 = never to always = 3. This questionnaire contains problem-focused coping with eight items and emotion-focused coping with 11 items. The maximum score participants can obtain in this questionnaire is 57, which includes 33 points from problem-focused coping and 24 points from emotion-focused coping. Billings & Moos (1981; cited in Samari, Lalifaz & Asgari, 2006) obtained Cronbach's alpha reliability coefficients of .44 and .88 for problem-focused coping and emotion-focused coping, respectively. In addition, Rabani Bavojdan, Nik Azin, Kaviani & Khezri Moghadam (2012) reported the Cronbach's alpha coefficients for problem-focused coping and emotion-focused coping as .79 and .78, respectively. In the present study, Cronbach's alpha reliability coefficient for emotion-focused coping was obtained equal to .54 and for problem-focused coping was obtained equal to .68.

3- Satisfaction with Life Scale: This scale was constructed by Diener, Emmons, Larsen & Griffin (1985) and consists of five items that are answered by respondents based on a 7-point Likert scale. The total score of this scale ranges from 5 to 35. Diener et al. (1985) reported Cronbach's alpha coefficient
of the questionnaire equal to .87 and retest reliability coefficient of it as .82. Moreover, Bayani, Koocheki & Goudarzi (2007) reported Cronbach's alpha coefficient and retest reliability coefficient of this scale as .83 and .93, respectively. Validity of this scale was reported significant with Beck Depression Inventory (r = .60) and Oxford Happiness Inventory (.79). In the present study, Cronbach's alpha reliability coefficient of the scale was obtained .85.

Results

The relationship between coping strategies, life satisfaction and attitudes towards addiction was explored by path analysis in Mplus 5 software (Mouthen & Mouthen, 2007). At first, the main model included all the paths available in the test. In the second stage, all the predicting paths that had a role in the model’s goodness of fit were considered stable. It should be noted that the indirect impacts of coping variables on attitudes to addiction were investigated through the mediating variable of life satisfaction. Pearson correlation was used to determine the relationship between variables. Descriptive statistics of the variables of the study are presented in the table below.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Problem-focused coping</td>
<td>14.53</td>
<td>4.37</td>
<td></td>
<td>**.55</td>
<td>**.30</td>
<td>**.13</td>
</tr>
<tr>
<td>2. Emotion-focused coping</td>
<td>17.19</td>
<td>4.48</td>
<td>-</td>
<td>1</td>
<td>*.11</td>
<td>-.04</td>
</tr>
<tr>
<td>3. Satisfaction with life</td>
<td>21.65</td>
<td>8.34</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>**-.14</td>
</tr>
<tr>
<td>4. Attitude to addiction</td>
<td>15.16</td>
<td>7.96</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

*P< .05, **P< .01

Overall, the results showed that the final model fits well the data $\chi^2$ (3) = 5.58, CFI = .96, TLI = .91, RMSEA = .04, 0SRMR = .03 and problem-focused coping is positively correlated with life satisfaction ($\beta = .31$).

This means people who use problem-focused coping strategies have higher life satisfaction. Although the relationship between emotion-focused coping strategies and life satisfaction were negative, this relationship was insignificant ($\beta = -.08$). Similarly, life satisfaction was negatively correlated with attitudes to addiction ($\beta = -.14$) which means that people with a higher life satisfaction have more negative attitude towards drugs.
In conclusion, the results showed neither problem-focused nor emotion-focused coping strategies have the direct predictive power of negative attitude towards drugs. Indirect effects of variables of coping strategies on attitude towards drugs through life satisfaction showed that only problem-focused coping ($\beta = -0.08$) has the indirect predictability of attitude towards drugs. Emotion-focused coping could not predict attitude towards drugs through the mediating variable of life satisfaction.

Table 2: Direct and indirect effects of the variables of this study

<table>
<thead>
<tr>
<th>Path</th>
<th>Life satisfaction</th>
<th>Attitude towards addiction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct effect</td>
<td>Indirect effect</td>
</tr>
<tr>
<td>Problem-focused coping</td>
<td>0.31*</td>
<td>-0.09</td>
</tr>
<tr>
<td>Emotion-focused coping</td>
<td>-0.08</td>
<td>-0.03</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>-</td>
<td>-14*</td>
</tr>
</tbody>
</table>

Discussion and Conclusion

This study was an attempt to examine the relationship between exogenous variables of coping with stress and the endogenous variable of attitude to addiction with the mediation of life satisfaction. Based on the related theoretical and empirical literature, a model was developed and tested using path analysis. The results of path analysis on the proposed model fit the data well. According to the findings of this study, life satisfaction was revealed to have a significant mediating role in the relationship between problem-focused coping strategies and attitudes towards addiction. It was also shown that problem-focused coping strategies could indirectly predict life satisfaction with the mediating role of attitude to addiction although these strategies did not have the ability to directly predict attitude towards addiction. However, emotion-focused coping could neither directly nor indirectly predict attitudes toward addiction. The investigation of the relationship between problem-focused coping strategies and...
life satisfaction showed that it is possible to positively predict life satisfaction based on problem-focused coping strategies. This finding is consistent with the results of the studies carried out by Sarvghad et al. (2010), Perez-Garcia, Olivan & Bover (2014), and Zhou, Wu & Lin (2012). To account for this finding, one can refer to the fact that the problem-focused coping strategies engage people in finding solutions to issues and problems and, thereby, lead to intellectual integrity for the identification of source of stress and the assessment on how to control it (Momeni, Karami & Shahbazi Rad, 2012). People who use these strategies are dynamic and this dynamism provides them with the required conditions to actively cope with stressful situations. This status calls for the person's full potential for positive coping and problem-solving and increases the likelihood of his/her success. Thus, efficient coping strategies increase confidence, improve problem-solving skills, and lead to higher levels of life satisfaction (Ghazanfari & Ghadampour, 2008). People who use problem-focused coping styles try to process the information related to stressful events in a way that it leads to the lowest levels of unpleasant experience and highest degrees of happiness. These people have a sense of control over life, positive mood, and active approach in stressful situations. Problem-focused coping style raises the possibility of one’s success in reducing pressures via the increase of his/her skills to manage stress; furthermore, this style reduces one’s stress and leads to higher life satisfaction by one’s concentration on his/her cognitive, emotional, social, and behavioral abilities in problem-solving and also actively coping with stressful situations (Seddiqi Arfaea, Tamanaeafar & Abedin Abadi, 2012).

In addition, another result of this study showed that attitudes to addiction can be negatively predicted based on life satisfaction. This finding of this study is consistent with the results of the studies done by Shek & Leung (2013), Rooks (2010), and Tanaka et al. (2014). To explain this finding, one can argue that people with high life satisfaction are more likely to take part in society, create more enthusiastic leisure time, and mostly have positive emotions. They also use the positive assessment of the events taking place in the neighborhood and are more hopeful about the future (Mirzaei Teshnizi, Pourshahriari & Sheibani, 2009). These people have high pleasure and little sadness and feel satisfied with their lives (Diener, 2000). The presence of these features makes one not develop addictive tendencies. It must be considered that high school students are in adolescence and, during this period, the emergence of abstract thoughts provides adolescents with the possibility to go beyond the real world and imagine the ideal world and perfectionism. This perfectionism lead them to the great dream of building a perfect world free from error and discrimination. Therefore, it is possible that adolescents set unrealistic goals and face multiple failures. Decrease of adolescents’ life satisfaction brings pessimistic attitudes to the surrounding events and causes them to look at the neighboring events with a negative attitude (Mazaheri & Mohajer Badkoobeh, 2012). As a result,
adolescents take refuge in using drugs to escape these events (Shek & Leung, 2013; and Rooks, 2010).

This study did not examine the role of social, economic, familial, and cultural factors because there was the possibility that the results would be influenced by these factors. It is also noteworthy that cognitive aspect of life satisfaction was merely examined due to the large number of questionnaires. Future researchers are recommended to investigate both positive and negative affective aspects to gain a more thorough understanding of the subject. According to the above research findings, it can be concluded that the adolescents’ inability to manage everyday stress and low satisfaction with life are very important factors in the adolescents’ attitudes to addiction. Since prevention, as an affordable and easy way, is always prior to treatment, it is suggested to identify people who have a positive attitude to addiction, teach them life skills, including how to cope with stress, and increase their life satisfaction so that the social and psychological ills resulting from addiction can be avoided and addiction can be prevented.

References


Abstract

Objective: The present study aimed to examine the predictive role of difficulties in emotion regulation and self-control in potential for addiction among drug-dependent individuals.

Method: This was a correlational study which falls within the category of descriptive studies. The statistical population of the current study included all patients under treatment in outpatient health centers in Bam, among whom 315 individuals were selected through cluster sampling method as the participants of the study. Difficulties in Emotion Regulation Scale, Self-Control Scale, and Addiction Susceptibility Questionnaire were used for data collection purposes.

Results: The results indicated that difficulties engaging in goal directed behavior, impulse control difficulties, lack of emotional awareness, and lack of emotional clarity (dimensions of difficulties in emotion regulation) had a significant positive correlation with potential for addiction. In addition, there was a negative significant relationship between self-control and potential for addiction among drug-dependent individuals.

Conclusion: In addition to common methods of abstinence from drug dependence, teaching self-control and emotional control techniques to addicted patients can help them reduce their dependence.

Keywords: Emotion Regulation, Self-Control, Potential for Addiction
Introduction

Health-threatening behaviors are placed among the most important psychosocial health-related challenges that most countries are involved in and impose widespread and serious problems on society (Center for Disease Control and Prevention, 2008). In a broad sense, risk behaviors can be considered as behaviors with potentially negative consequences (Baumgartner, Valkenburg & Peter, 2010). Aggression and physical conflict, suicidal thoughts, alcohol consumption, drug abuse, and sexual activity are included among high-risk behaviors (Springer, Parcel, Baumler & Ross, 2005). Several studies have shown that only a small part of the population that turns to the chronic use of nicotine, alcohol, and opium comes down with addiction to these substances. These studies have clarified some points as follows: All the individuals dealing with addictive substances do not become addicted; in fact, the long-term use of drugs is not a sufficient condition for addiction. Despite the prolonged use of cigarettes, alcohol, and opium, some consumers do not become addicted. On the other hand, some people become addicted only after several encounters with substances. Those who are prone to addiction tend to multiple substance use (Hiroi & Gatsuma, 2005). Addiction susceptibility theory suggests that some people are predisposed to addiction and if they get exposed to it, they will become addicted. However, if someone is not susceptible, s/he will not become addicted (Gendreau & Gendreau, 1970).

Emotional self-regulation is one of the factors that is closely related to substance use. Self-regulation or self-control refers to the organized efforts towards the regulation of thoughts, feelings, and actions to achieve specific goals (Myber, 2011). Emotional regulation refers to all approaches that are applied to reduce, boost, and increase emotions. Emotional regulation approaches are a combination of personality, social development, cognitive, and emotional approaches. In fact, emotional regulation includes a wide range of conscious, unconscious, physical, cognitive, and behavioral processes (Butt, Sanam, Gulzar & Yahya, 2013). Self-regulation is a complex phenomenon which is influenced by factors such as motivation, personality traits, temperament, gender, and cultural and environmental factors. Disorder in self-regulation is the cause of many addictive behaviors, including eating disorders, substance abuse, and depression. Self-regulation is the main cause of effective response in the area of issues such as impulse control, time management, and coping with emotions and stress. Many clinical conditions, such as anxiety, depression, and attention deficit hyperactivity disorder are considered as a person's limited ability in self-regulation (Murtagh & Todd, 2004). Positive emotions facilitates self-regulation while negative emotions harm it (Myber, 2011). Parker (2006) noted that addicted people encounter some difficulties identifying their own and others’ emotions that cause such people to undergo some abnormalities in making a positive, constructive, and directive communication with others. Such
abnormalities lead to drug use tendency. The results of a study on the relationship between substance abuse and emotional intelligence showed that low levels of emotional regulation that are produced as a result of the inability to effectively cope with and manage one’s emotions play some role in the initiation of drug use (Parker, Taylor, Eastabrook, Schell & Woo, 2008). In a study on the relationship between emotional intelligence and addiction, it was revealed that the youth and adolescents who received high scores in Multifactor Emotional Intelligence Scale test others have achieved very low levels of drug use, smoking, and alcohol consumption (Kun & Demetrovics, 2010).

Self-control is among other variables that can influence drug abuse. Self-control refers to a state wherein one controls his/her behaviors, feelings, and instincts despite motivation to action (Friese & Hofmann, 2009). Mayer & Salovey (2003) introduced self-control as the correct application of emotions and believe that the power to regulate feelings leads to the increase of personal capacity to soothe oneself and understand anxiety, depression or common impatience. People with the internal self-control believe that success or failure depends on their effort or ability; however, people with external self-control believe that other factors such as luck or difficulty of tasks are effective in their success or failure. People with internal self-control believe that the reinforcement they receive is under control of their own behaviors and characteristics. In contrast, people with external self-control believe that reinforcement is controlled by others, fate, or chance. They have become convinced that they are incapable in terms of such external forces. These people believe that their behaviors and abilities have no effects on the reinforcements that they receive. They often attach little value to any attempt for the improvement of their own conditions. When they think they have little control over their present or future lives, for what reason they should work hard (Schultz, translated by Sayed Mohammadi, 2005). In a longitudinal study, Adalbajarnardotir and Rafnsson (2002) examined anti-social behavior and substance abuse in adolescents. The results of this study showed that the students with more anti-social behavior have lower levels of self-control are at higher risk of substance and alcohol abuse. Sussman, Dent & Leu (2003) showed that there was a significant negative relationship between self-control and cigarette smoking, alcohol consumption, marijuana use, and use of other drugs. Allahverdi Pour, Shafie, Azad Fallah & Emami (2006) reached the conclusion that adolescents with low self-control are at high risk of drug use. Taylor, Hiller & Taylor (2013) showed that both impulsivity and low self-control have a significant positive relationship with substance abuse. Visser, de Winter, Veenstra, Verhulst & Reijneveld (2013) reported that alcohol abusers had low self-control in comparison with non-abusers.

Emotion regulation plays an important role in one’s adaptation with stressful life events. The increase of control and emotion regulation leads to the capability of effective mood management, increase of problem solving, and utilization of
emotions. Thus, this study aims to answer the following question: Are difficulties in emotion regulation and self-control predictors of susceptibility to addiction in drug dependent people?

**Method**

**Population, and method, and sampling method**

The current study is a correlational one which falls within descriptive design categories. All patients under treatment in outpatient health centers in Bam in 2004 constituted the statistical population of this study. According to statistics from the city centers, the statistical population amounted to the total of 1500 individuals. From among addiction treatment centers and clinics across the city of Bam, four centers were selected in the draw. Then, the number of 34 participants was randomly selected from each center while the number of 33 participants was randomly selected from one of these four centers, which amounted to the total of 135 participants. After receiving the consent of subjects for participation in this study, the researchers provided them with Difficulties in Emotion Regulation Scale, Self-Control Scale, and Addiction Susceptibility Questionnaire. The items of the questionnaires were read to illiterate participants by the researcher, but the literate ones were asked to carefully complete the questionnaires.

**Instrument**

1- Difficulties in Emotion Regulation Scale (DERS) (Gratz & Roemer, 2004): It is a self-report scale that was constructed for the evaluation of difficulties in emotion regulation in a more comprehensive format with respect to the existing conditions. This scale consists of 36 items and 6 sub-scales, namely non-acceptance of emotional responses (NONACCEPTANCE), difficulties engaging in goal directed behavior (GOALS), impulse control difficulties (IMPULSE), lack of emotional awareness (AWARENESS), limited access to emotion regulation strategies (STRATEGIES), and lack of emotional clarity (CLARITY). The response of each participant ranges from one to five (Alavi, 2009). Higher scores indicate greater difficulties in terms of emotional regulation. The items numbered 1, 2, 6, 7, 8, 10, 17, 20, 22, 24, and 34 of this scale are scored in reverse. In terms of the validity of this scale, the studies indicated the desired construct validity and predictive validity of the scale (Gratz & Roemer, 2004). The results pertaining to the validation suggest that this scale has high internal consistency (.93) and Cronbach's alpha coefficients in the subscales of non-acceptance, goals, impulse, awareness, strategies, and clarity were equal to .85, .89, .86, .80, .88, and .84, respectively. In addition, the reliability of this scale was obtained via test-retest method, which was equal to .88 for the total scale, and it was .69, .69, .57, .68, .89, and .80 for the subscales.
of non-acceptance, goals, impulse, awareness, strategies, and clarity, respectively. In this study, Cronbach's alpha coefficients were obtained equal to .79, .60, .67, .70, .80, and .75 for non-acceptance, goals, impulse, awareness, strategies, and clarity, respectively.

2- Tangney, Baumeister & Boone’s self-control scale (2004): Although no research was found to have specifically examined psychometric properties of this questionnaire, Tangney, et al. (2004) investigated the reliability of this scale and reported the Cronbach's alpha coefficient of the full 36-item self-control scale equal to .89. They also reached similar results for the 13-item version of this scale. Items of this scale are responded based on a 5-point Likert scale (1 point for never and 5 points for very much). Higher scores indicate greater self-control. Brief self-control scale consists of two subscales, namely inhibitory and initiatory self-control. Ridder, Deboer, Lugtig, Bakker & Van Hooft (2011) conducted a study to assess the internal consistency of the two sub-scales. The results suggested that both sub-scales enjoyed high and similar internal consistency (.86). Furthermore, the correlation coefficient between the two sub-scales was equal to .68.

3- Addiction Susceptibility Questionnaire: This is an Iranian addiction potential scale which was constructed by Zargar in 2006 with respect to the mental state of Iranian society (cited in Zargar, Najarian & Na’ami, 2008). This questionnaire consists of two factors and 36 items in addition to 5 lie detecting items. All the items are yes/no questions in which the answer yes is assigned one point while the answer no is assigned no point. The total scores ranging from 1 to 18 indicate a very low potential for addiction, scores from 19 to 20 represent a low potential for addiction, scores from 21 to 22 indicate moderate susceptibility to addiction, scores from 23 to 24 represent a high potential for addiction, and score 25 or higher indicates a very high potential for addiction (cited in Zargar et al., 2008). Two methods were used to calculate the validity of the scale. Criterion validity distinguished potential for addiction between addicts and non-addicts. Construct validity of the scale was calculated by correlating it with the 25-item Symptom Check List (SCL-25) that was obtained equal to .45. Cronbach's alpha coefficient of the scale was reported equal to .90 which is a desired value (Zargar, 2006 cited in Zargar et al., 2008). It is noteworthy that Cronbach's alpha of the scale in this study was obtained equal to .72.

Results

Out of the sample, the number of 23 participants (17%) was placed in the 15-25-year-old age group, the number of 74 participants (54.8%) was placed in the 26-36-year-old age group, the number of 35 participants (25.9%) was placed in the 37-47-year-old age group, and the number of 3 participants (2.2%) was placed in the 48-58-year-old age group. In terms of education, 4 participants
(3%) were illiterate, 63 participants (46.7%) had secondary school degrees, 54 participants (40%) had diploma degrees, 6 participants (4.4%) had associate’s degrees, and 8 participants (5.9%) had bachelor’s degrees.

Correlation matrix of the variables under study is presented in the table below.

Table 1: Correlation matrix of the variables under study

<table>
<thead>
<tr>
<th>Variable</th>
<th>Addiction potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-control</td>
<td>***-.42</td>
</tr>
<tr>
<td>Clarity</td>
<td>***.80</td>
</tr>
<tr>
<td>Strategies</td>
<td>**.17</td>
</tr>
<tr>
<td>Awareness</td>
<td>***.25</td>
</tr>
<tr>
<td>Impulse</td>
<td>**.19</td>
</tr>
<tr>
<td>Goals</td>
<td>***.22</td>
</tr>
<tr>
<td>Non-acceptance</td>
<td>.12</td>
</tr>
</tbody>
</table>

**P< .01, ***P< .001

To investigate the predictive role of difficulties in emotional regulation and self-control in potential for addiction, stepwise regression was used as follows. Only self-control could enter the equation that accounted for 18% of potential for addiction. Regression coefficients are given in the table below.

Table 3: Regression coefficients of potential for addiction based on emotion regulation and self-control

<table>
<thead>
<tr>
<th>Predictor variable</th>
<th>B</th>
<th>SD</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-control</td>
<td>-.14</td>
<td>.03</td>
<td>-.42</td>
<td>-2.170</td>
<td>.0005</td>
</tr>
</tbody>
</table>

Discussion and Conclusion

The aim of this study was to investigate the predictive role of difficulties in emotional regulation and self-control in potential for addiction among drug-dependent people. Results showed that the potential for addiction has a significant positive relationship with difficulties engaging in goal directed behavior, limited access to emotion regulation strategies, impulse control difficulties, lack of emotional awareness, and lack of emotional clarity. On the other hand, it was revealed that there is a significant negative correlation between self-control and potential for addiction. In addition, the results of multiple regression analysis on the prediction of potential for addiction also indicated that self-control, in itself, could predict .17 of variance in potential for addiction in the first step. These results are consistent with the results of the studies conducted by Allahverdi Pour et al. (2006), Parker et al. (2008), Kun & Demetrovics (2010), Taylor et al. (2013), and Visser et al (2013). Positive emotions facilitate self-regulation while negative emotions damage self-regulation (Myberg, 2011). Addicts encounter difficulties in identifying their own emotions and others’. This causes them to face problems in establishing positive, constructive, and directive relationship with other people. This is the
cause of attitudes towards drugs (Parker 2006). In a research entitled emotional intelligence as a moderator of stressor–mental health relations in adolescence, Sarah & Davis (2012) found that emotional intelligence acts as a source of protection against environmental stressors and prevents people from tendency to drugs. In a study, entitled on the relationship between emotion regulation strategies and interpersonal behavior among substance abusers, Abolqasemi, Zahed, Elah Gholilo & Narimani (2010) stated that one of the possible reasons for the tendency to substance use is the difficulties and shortcomings in the area of emotions. In the face of stressful events, people encounter emotional failures which originate from basic cores of psychopathology. Khantzian (1997) believes that disorders in emotional regulation and low tolerance are the main causes of addiction. It seems that low tolerance of people force them to find an immediate way to get rid of emotions. Since lack of emotional clarity takes up the highest variance among all the variables, one can argue that these people may have more difficulty in identifying emotions rather than in controlling them. Taylor et al. (2013) showed that both impulsive state and low self-control have a significant positive relationship with substance abuse.

Chauchard, Levin, Copersino, Heishman & Gorelick (2013) found that people with low self-control have difficulty in predicting long-term negative consequences of their own behavior; therefore, they review the consequences of their addictive behaviors to a lesser extent. In contrast, people with high self-control feel guilty to a greater extent and are motivated for treatment since they can easily recognize their future abusive behaviors as risky and costly ones. Rachline (1995) believes that people with high self-control benefit from greater commitment as well. For example, they feel committed to refrain from drinking alcohol or taking other drugs. Therefore, it seems that if people with higher levels of self-control have pledged themselves not to use drugs, they can remain faithful to their commitments more easily. However, people with lower self-control levels are likely to be less loyal to their commitments and easily violate their commitment not to use drug.

The results of this study suggest that people with lower self-control contemplate the outcome of their behavior to a lesser extent and try to immediately their own desires. Therefore, these people do not reflect upon the consequences of drug use and seek instant pleasure in drinking alcohol and using other drugs. People with lower levels of self-control are less likely to adhere to their commitments and easily break their commitment to restraint from drug use. To account for the relationship between alcohol consumption and self-regulation, one can argue that people with low self-control are unable to control their use of drugs, therefore, they turn to alcohol in order to regulate their emotions. Various studies show that there is a higher number of alcohol users among the individuals who have weak self-regulation skills. Alcohol consumption also brings about difficulties for self-regulation by affecting attention, cognition, and emotion. When people are under pressure to use drugs,
poor management of emotions increases the risk of substance abuse. On the contrary, effective management of emotions reduces the risk of substance abuse. The ability to manage emotions causes the individuals to use appropriate coping strategies when placed in situations involving high risk of substance abuse. In the same way, people who have a high level of positive emotional regulation are equipped with a greater ability to anticipate the needs of others. They understand the unwanted pressures of other people and prepare their own emotions in a better way and, thereby, they show more resistance to drug use. In contrast, those who have low positive emotional regulation are often oriented to substance abuse to deal with their negative emotions. Therefore, one can suggest this possibility that disorder in emoting regulation and self-regulation whether behavioral or executive self-regulation is correlated with substance abuse. One of the limitations of this study regards the generalizability of these results since only the addicts of Bam city constituted the participants of the sample. Therefore, care and discretion should be exercised in generalizing these results. Psychotherapists and specialists of addiction treatment are recommended to assist their patients reduce degree of dependence on drugs by teaching emotion regulation and self-control techniques along with conventional addiction treatment techniques.

Reference


Abstract

Objective: The present study was conducted to identify risk and prediction factors of suicide attempts among drug abusers.

Method: This causal-comparative study was conducted on 91 drug abusers that included 42 male and female suicide attempters and 49 male and female counterparts. Millon multi-axial personality inventory-II (MCMI-II), Dass-42 (depression, anxiety, stress), and coping styles inventory were used for data collection purposes.

Results: The highest rate of suicide attempt was found in young male drug abusers with these characteristics: single, junior school graduate, unemployed, suicide history, sex and physical abuse history during childhood, legal problems, suicide and self-injury witness, and violence and suicide in family members. Compared to non-attempters, suicide attempters obtained higher scores in depressive, obsessive, masochistic, and borderline personality disorders; clinical somatoform symptoms, alcohol abuse in addition to drug use, major depressive disorder, and stress. Suicide attempters also used lower levels of task-focused and avoidance-focused strategies and higher levels of emotion-focused strategies to cope with stressors.

Conclusion: The findings of this study can contribute to suicide identification and prevention among drug abusers.

Keywords: Suicide, Drug Abusers, Strategies
Introduction

Suicide is the third cause of death after accidents and homicide between the ages of 24-15 years old (Kaplan & Sadock, 2007). Suicide is a complex decision wherein many factors are involved. The factors that appear to be associated with the increase of suicide risk include depression, hopelessness, pessimism, deficits in problem solving, cognitive distortions, attributional styles, attitudes or early maladaptive schemas. As these factors are associated with the vulnerability of suicide, they are also considered as useful goals for clinical intervention. Some factors, such as depression appear to be stable and relatively good predictors of suicidal behavior. Other factors may be actually concomitant of depression and suicide. Accordingly, substance abuse is one of the important reasons for the increase of suicide rate since about half of the suicides are made by people suffering from substance abuse. There is the history of substance abuse in both male and female suicide attempters (Claassen, 2007; Guillaume, et al., 2010; Simon, et al., 2007). In a study on people who set themselves on fire, Zarghami & Khalilian (2002) reached the conclusion that most of these people suffer from a physical condition and one or more psychiatric disorders, whose commonest ones are adjustment disorders, nicotine dependence, major depression, dysthymia, and anxiety disorders, respectively. In general, there is the history of drug and alcohol abuse and psychiatric disorders, including major depression, bipolar disorders, anxiety disorders, and physical illnesses in both male and female suicide attempters (Guillaume, et al., 2010; Schneider, et al., 2009).

Defects in coping strategies can be a predisposing factor for both substance abuse and suicide attempts. Stress is an inevitable part of human life. Stress, in itself, is not what impacts human health, but the model of coping with stress is of importance.

Coping strategies as the factor related to stress and psychiatric disorders have received attention. Therefore, the investigation of dimensions of coping strategies assume great importance for the prediction of substance abuse, the frequency of drug use, completion of treatment program and relapse process among addicts (Ball, 1998). In stressful situations, addicts use non-adaptive coping strategies, such as drug or alcohol use to reduce stress or depression. Therefore, emotion-focused and avoidance coping strategies constitute the most frequent coping strategies used by these individuals (Forys, McKellar & Moos, 2007; Ireland, Brown & Ballarini, 2006). Considering coping skills in suicide attempters are important for both prevention and treatment of suicidal attempts because suicide attempters have difficulty in coping skills which play a significant role their mental health (Shamsi Khani, Rahgooy, Fallahi Khoshknab & Rahgozar, 2006). There is a significant relationship between defect in problem solving and suicide (Hasking, et al., 2010; Kidd & Carroll, 2007). In addition to the problems of dealing with stressful life events, suicide attempters also experience some problems in dealing with negative mood. Given these
problems, people become involved in the behaviors that can quickly relieve their emotional stress (such as alcohol or drug abuse, self-harm, and suicide). They lack the necessary skills to quickly adjust their negative mood and, thereby, behavior is often impulsive (Claassen, 2007; Koller, Preub, Bottlender, Wenzel & Soyka, 2002). The incidence of suicide among drug abusers is increasing and drug dependence increase the risk of suicide in the future (Schneider, et al., 2009). Among the risk factors of suicide attempts in substance abusers, one may refer to depression, troubled family relationships, lack of social support, loneliness, physical and sexual abuse, and the above-mentioned psychiatric problems, among which depression is most greatly associated with suicide (Pagura, et al., 2010). In addition to other psychiatric disorders, substance use disorder has a positive relationship with suicide (Flensborg-Madsen, et al., 2009). However, this question is raised why some addicts have committed suicide, while others do not do either. In addition to drug use, there are many factors that may increase the risk of suicide; for example, mental illness is one of the potential factors leading to suicide (Sheykholeslami, Kanni & Ziaee, 2007). In addition to substance use disorder, some other problems such as mood disorders, anxiety disorders, high impulsivity, stress and suicidal thoughts (Maloney, Degenhardt, Darke & Nelson, 2009; Li, Page Martin & Taylor, 2010), and borderline personality disorder (Giegling, et al., 2009; Cerutti, Manca, Presaghi & Gratz, 2010) are prevalent among suicide attempters. In a study entitled the comparison of borderline personality traits, anger, hostility, and aggression between addicts with and without suicidal ideation, Mohammadifar, Zare‘ea Mateh Kola‘ea, Najafi & Manteghi (2013) concluded that borderline personality traits, anger, hostility, and aggression were higher in addicts with suicidal ideation than those in addicts without suicidal ideation. People suffering from substance use disorder are more likely to attempt suicide in their lifetime compared to patients without substance use disorder (Schneider, et al., 2009). Suicide can be a serious risk factor in patients with addiction and interfere in the process of treatment programs. Therefore, the development of secondary and tertiary prevention programs for continuation of treatment and reduction of damages requires serious attention to the issue of suicide in addicted patients. The aim of this study was to examine the risk factors of suicide in substance abusers.

**Method**

**Population, sample, and sampling method**

This study was a causal-comparative one wherein all the addicted suicide attempters who were hospitalized in Imam Khomeini hospital of Kermanshah constituted its statistical population. From among this population, the number of 42 male and female suicide attempters was selected as the participants via convenience sampling method. In addition, the number of 49 participants was
selected from the addicts referring to treatment centers who did not have the history of any suicide attempt. Both groups were matched with each other in terms of education, age, and gender. The t test for independent groups showed that both groups were matched in terms of age (P>.05, t=1.78). In addition, Chi-square test was indicative of the match of both groups in terms of education (P>.05, $x^2=2.647$).

**Instrument**

1- Millon multi-axial personality inventory-II (MCMI-II): This is a self-report scale with 175 yes/no items that are to assess personality traits and psychological trauma in 18-year-old adults and older ones who refer to mental health centers for treatment or psychiatric assessment. This test is one of the most important objective measurement instruments of clinical symptoms presented in personality disorder in DSM Axis II. Millon test tries to predict the presence or absence of clinical disorders using baseline scores. Patients with scores greater than 85 are introduced as the disorder sufferers and those with scores below 85 are considered as individuals without the disorder. Moderate correlations ranging from .58 to .93 with the average of .78 were obtained for the scales of personality disorder. For clinical syndrome scale, moderate correlations within the range of .44 to .95 with the average of .80 were also obtained (Craig, 1999). The reliability of the scale and its subscales has been reported to range from .82 to .96 with the average of .90 (Craig & Ulcan, 1998). In Iran, Sharifi (2006) reported the test-retest reliability correlation of raw scores to range from .82 to .98. In addition, in the current study, the reliability of this scale was calculated through internal consistency and the Cronbach’s alpha correlation was obtained within the range of .85 to .97.

2- Dass-42 (depression, anxiety, stress): This scale was developed by Lovibond and Lovibond in 1995 and has a short form scale (21 items) and a long form scale (42 items). The long form of the scale measures each of the three constructs of depression, anxiety, and stress with 14 items. The depression scale measures such factors as hopelessness, lack of interest, self-deprecation, and low self-esteem. The anxiety sub-scale assesses such characteristics as autonomic arousal; and the stress sub-scale assesses such features as difficulty relaxing. Studies carried out by Lovibond and Lovibond (1995) obtained the test-retest reliability coefficients for the subscales of stress, anxiety, and depression equal to .81, .79, and .71, respectively. In term of the validity of the scale, the correlations of the scale with beck anxiety inventory and beck depression inventory were obtained .81 and .74, respectively. Sahebi, Asghari & Salari have reported the reliability and validity of the Persian version of the questionnaire on Iranian population satisfactory (2005).

3- Coping styles inventory (coping strategies): This questionnaire was developed by Endler and Parker in 1990 and contains 48 items, which are scored
based on a 5-point Likert scale from never (1) to always (5). The reliability coefficient of this scale was obtained via a study on a 313-participant sample (161 females and 152 males) that was equal to .82, .76, and .67 for the subscales of task-focused strategies, emotion-focused strategies, and avoidance strategies, respectively (Endler & Parker, 1990). In Iran, several researches have calculated the reliability of this scale. In this regard, Qureshi Rad (2010) reported the retest reliability coefficients of the scale to be .58, .55, and .83 for task-focused strategies, emotion-focused strategies, and avoidance strategies, respectively.

Results

The descriptive statistics of the demographic variables for each group of participants are presented in the following table.

<table>
<thead>
<tr>
<th>Demographic variables</th>
<th>Category</th>
<th>Group with suicide attempt</th>
<th>Group without suicide attempt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male 37(88.1%)</td>
<td>46(94%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female 5(11.9%)</td>
<td>3(6%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19-30 23(55%)</td>
<td>25(51%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>31-40 14(33%)</td>
<td>17(35%)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>Above 41 5(12%)</td>
<td>7(14%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single 23(54.7%)</td>
<td>24(6%)</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td>Married 9(21.3%)</td>
<td>14(28%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Divorced 10(24%)</td>
<td>11(22%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Primary school 31(73.8%)</td>
<td>35(71%)</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Diploma and higher 11(26.2%)</td>
<td>14(29%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Employed 8(19.1%)</td>
<td>14(29%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unemployed 34(80.9%)</td>
<td>35(71%)</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of violence in family</td>
<td>-</td>
<td>24(57.1%)</td>
<td></td>
</tr>
<tr>
<td>History of suicide in family</td>
<td>-</td>
<td>*9(21.4%)</td>
<td></td>
</tr>
<tr>
<td>History of legal problems</td>
<td>-</td>
<td>34(80.9%)</td>
<td></td>
</tr>
<tr>
<td>History of sexual abuse</td>
<td>-</td>
<td>*5(12%)</td>
<td></td>
</tr>
<tr>
<td>History of physical abuse</td>
<td>-</td>
<td>33(78%)</td>
<td></td>
</tr>
<tr>
<td>History of suicide and self-harm</td>
<td>-</td>
<td>*17(40.4%)</td>
<td></td>
</tr>
<tr>
<td>History of simultaneous use of drugs and alcohol</td>
<td>-</td>
<td>*29(69%)</td>
<td></td>
</tr>
<tr>
<td>History of relapse</td>
<td>-</td>
<td>36(86%)</td>
<td></td>
</tr>
<tr>
<td>History of using more than one drug</td>
<td>-</td>
<td>34(81%)</td>
<td></td>
</tr>
</tbody>
</table>

* A significant difference between groups exists.
The descriptive statistics of the variables under study are shown in the table below.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group with suicide attempt</th>
<th>Group without suicide attempt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenic</td>
<td>54.54</td>
<td>50.89</td>
</tr>
<tr>
<td>Avoidance</td>
<td>59.9</td>
<td>63.61</td>
</tr>
<tr>
<td>Depressive traits</td>
<td>81.4</td>
<td>70.00</td>
</tr>
<tr>
<td>Histrionic</td>
<td>44.2</td>
<td>35.24</td>
</tr>
<tr>
<td>Narcissistic</td>
<td>17.26</td>
<td>17.48</td>
</tr>
<tr>
<td>Antisocial</td>
<td>51.54</td>
<td>46.38</td>
</tr>
<tr>
<td>Sadism</td>
<td>51.11</td>
<td>54.10</td>
</tr>
<tr>
<td>Obsessive</td>
<td>58.87</td>
<td>62.77</td>
</tr>
<tr>
<td>Passive-aggressive</td>
<td>66.18</td>
<td>64.87</td>
</tr>
<tr>
<td>Masochism</td>
<td>9.48</td>
<td>13.64</td>
</tr>
<tr>
<td>Schizotypal</td>
<td>75.12</td>
<td>80.42</td>
</tr>
<tr>
<td>Borderline</td>
<td>63.23</td>
<td>53.93</td>
</tr>
<tr>
<td>Paranoid</td>
<td>61.21</td>
<td>57.38</td>
</tr>
<tr>
<td>Anxiety</td>
<td>60.40</td>
<td>59.75</td>
</tr>
<tr>
<td>Somatoform</td>
<td>58.87</td>
<td>50.12</td>
</tr>
<tr>
<td>Bipolar</td>
<td>60.40</td>
<td>62.77</td>
</tr>
<tr>
<td>Dysthymia</td>
<td>65.00</td>
<td>62.46</td>
</tr>
<tr>
<td>Alcoholism</td>
<td>52.70</td>
<td>36.57</td>
</tr>
<tr>
<td>Major depression</td>
<td>76.95</td>
<td>62.34</td>
</tr>
<tr>
<td>Delusional disorder</td>
<td>57.70</td>
<td>501.95</td>
</tr>
<tr>
<td>Task-focused strategies</td>
<td>32.69</td>
<td>44.57</td>
</tr>
<tr>
<td>Emotion-focused strategies</td>
<td>56.11</td>
<td>42.80</td>
</tr>
<tr>
<td>Avoidance strategies</td>
<td>41.64</td>
<td>44.14</td>
</tr>
<tr>
<td>Situational depression</td>
<td>29.11</td>
<td>22.44</td>
</tr>
<tr>
<td>Anxiety</td>
<td>20.38</td>
<td>18.71</td>
</tr>
<tr>
<td>Stress</td>
<td>30.64</td>
<td>25.69</td>
</tr>
</tbody>
</table>

Multivariate analysis of variance was performed to assess the difference between the two groups in terms of personality disorders. One of the assumptions of using this parametric test is the equality of covariance matrices. Box’s test results indicated that this assumption has been met (P>.05, F=1.78, M Box=41.18). Another assumption for using this test is the equality of error variances. To this end, Leven’s test should be used whose results are presented in the following table.

As it is observed in the following table, this assumption has been met in all the components except in avoidant component (Millon). Due to the satisfaction of these assumptions, MANOVA was conducted and the results indicated the existence of a significant difference in linear combination of the variables of the study between the two groups (Eta squared = .344, P<.001, F=5.11, Wilks
Lambda=.339). Univariate analysis of variance was used to examine differences in patterns as follows.

Table 3: Results of Leven’s test representing the equality of error variances in the variables of the study

<table>
<thead>
<tr>
<th>Variable</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizoid</td>
<td>1.780</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Depression</td>
<td>.230</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Histrionic</td>
<td>1.640</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Narcissistic</td>
<td>1.890</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Antisocial</td>
<td>2.240</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Sadism</td>
<td>1.370</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Obsessive</td>
<td>1.800</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Passive-aggressive</td>
<td>1.850</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Masochism</td>
<td>1.310</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Schizotypal</td>
<td>.790</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Borderline</td>
<td>2.790</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Paranoid</td>
<td>.320</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Avoidant</td>
<td>6.970</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Anxiety</td>
<td>.27</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Somatoform</td>
<td>2.240</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Bipolar</td>
<td>.550</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Dysthymia</td>
<td>.780</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Alcoholism</td>
<td>.580</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Major depression</td>
<td>2.220</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Delusional disorder</td>
<td>2.160</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Depression</td>
<td>1.340</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Anxiety</td>
<td>.240</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Stress</td>
<td>2.710</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Task-focused strategies</td>
<td>1.690</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Emotion-focused strategies</td>
<td>2.900</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Avoidance strategies</td>
<td>3.220</td>
<td>&gt;.05</td>
</tr>
</tbody>
</table>

Table 4: Univariate analysis of variance representing differences in patterns

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizoid</td>
<td>305.18</td>
<td>1.350</td>
<td>.24</td>
</tr>
<tr>
<td>Depression</td>
<td>2760.20</td>
<td>5.100</td>
<td>.028</td>
</tr>
<tr>
<td>Histrionic</td>
<td>1742.95</td>
<td>2.270</td>
<td>.135</td>
</tr>
<tr>
<td>Narcissistic</td>
<td>1.17</td>
<td>.012</td>
<td>.911</td>
</tr>
<tr>
<td>Antisocial</td>
<td>602.11</td>
<td>2.880</td>
<td>.152</td>
</tr>
<tr>
<td>Sadism</td>
<td>201.23</td>
<td>.849</td>
<td>.359</td>
</tr>
<tr>
<td>Obsessive</td>
<td>3329.13</td>
<td>3.990</td>
<td>.49</td>
</tr>
<tr>
<td>Passive-aggressive</td>
<td>10.67</td>
<td>.032</td>
<td>.859</td>
</tr>
<tr>
<td>Masochism</td>
<td>1195.98</td>
<td>3.810</td>
<td>.054</td>
</tr>
<tr>
<td>Schizotypal</td>
<td>435.40</td>
<td>1.340</td>
<td>.249</td>
</tr>
<tr>
<td>Borderline</td>
<td>1955.71</td>
<td>5.190</td>
<td>.025</td>
</tr>
<tr>
<td>Avoidant</td>
<td>461.43</td>
<td>.192</td>
<td>.66</td>
</tr>
</tbody>
</table>
As it is observed in the above table, there is a statistically significant difference between the two groups in terms of depression, obsession, and borderline disorder. In other components, there is no significant difference. As per the descriptive statistics, the group with suicide attempts have received higher scores in all the components.

Multivariate analysis of variance was performed to assess the difference between the two groups in terms of clinical symptoms. One of the assumptions of using this parametric test is the equality of covariance matrices. Box’s test results indicated that this assumption has been met ($P > .05$, $F = 1.140$, $M_{Box} = 82.84$). Another assumption for using this test is the equality of error variances. As seen in table 3, this assumption has been met.

The results of MANOVA indicated the existence of a significant difference in linear combination of the variables between the two groups (Eta squared = .66, $P < .01$, $F = 3.89$, Wilks Lambda = .81). Univariate analysis of variance was used to examine differences in patterns as follows.

<table>
<thead>
<tr>
<th>Clinical symptoms</th>
<th>Mean Square</th>
<th>$F$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paranoid</td>
<td>331.14</td>
<td>1.660</td>
<td>.201</td>
</tr>
<tr>
<td>Anxiety</td>
<td>9.54</td>
<td>.050</td>
<td>.823</td>
</tr>
<tr>
<td>Somatoform</td>
<td>1614.40</td>
<td>7.800</td>
<td>.006</td>
</tr>
<tr>
<td>Histrionic</td>
<td>127.10</td>
<td>.360</td>
<td>.54</td>
</tr>
<tr>
<td>Dysthymia</td>
<td>144.82</td>
<td>.500</td>
<td>.47</td>
</tr>
<tr>
<td>Alcoholism</td>
<td>5433.34</td>
<td>17.370</td>
<td>.0005</td>
</tr>
<tr>
<td>Major depression</td>
<td>4824.29</td>
<td>20.190</td>
<td>.0005</td>
</tr>
<tr>
<td>Delusional disorder</td>
<td>844.90</td>
<td>2.670</td>
<td>.105</td>
</tr>
</tbody>
</table>

As observed in the above table, there is a statistically significant difference between the two groups in terms of somatoform, alcoholism, and major depression. In other components, there is no significant difference. According to the descriptive statistics, the group with suicide attempts have been reported with higher scores in all the components.

Multivariate analysis of variance was used to examine the difference between the two groups in terms of depression, anxiety, and stress. One of the assumptions of using this parametric test is the equality of covariance matrices. Box’s test results indicated that this assumption has been met ($P > .05$, $F = 1.22$, $M_{Box} = 22.31$). Another assumption for using this test is the equality of error variances where the results of table 3 indicate the satisfaction of this assumption.

The results of MANOVA indicated the presence of a significant difference in linear combination of the variables between the two groups (Eta squared = .24, $P < .05$, $F = 4.96$, Wilks Lambda = .76). Univariate analysis of variance was used to examine differences in patterns as follows.
Table 6: Univariate analysis of variance representing pattern differences in depression, anxiety, and stress

<table>
<thead>
<tr>
<th>Clinical symptoms</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>1006.15</td>
<td>21.12</td>
<td>.0005</td>
</tr>
<tr>
<td>Anxiety</td>
<td>62.82</td>
<td>1.53</td>
<td>.218</td>
</tr>
<tr>
<td>Stress</td>
<td>553.90</td>
<td>15.49</td>
<td>.0005</td>
</tr>
</tbody>
</table>

As observed in the above table, there is a statistically significant difference between the two groups in terms of depression and stress. According to the descriptive statistics, the group with suicide attempts have been reported with higher scores.

Multivariate analysis of variance was used to examine the difference between the two groups in terms of coping strategies. One of the assumptions of using this parametric test is the equality of covariance matrices. Box’s test results indicated that this assumption has been met (P>.05, F=1.72, M Box=31.45). Another assumption for using this test is the equality of error variances where the results of table 3 indicate the satisfaction of this assumption.

The results of MANOVA indicated the presence of a significant difference in linear combination of the variables between the two groups (Eta squared = .21, P<.05, F=2.33, Wilks Lambda=.92). Univariate analysis of variance was used to examine differences in patterns as follows.

Table 7: Univariate analysis of variance representing pattern differences in factors of coping strategies

<table>
<thead>
<tr>
<th>Coping strategies</th>
<th>Mean square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task-focused strategies</td>
<td>3192.32</td>
<td>19.660</td>
<td>.0005</td>
</tr>
<tr>
<td>Emotion-focused strategies</td>
<td>4391.78</td>
<td>20.160</td>
<td>.0005</td>
</tr>
<tr>
<td>Avoidance strategies</td>
<td>141.34</td>
<td>1.330</td>
<td>.252</td>
</tr>
</tbody>
</table>

As observed in the above table, there is a statistically significant difference between the two groups in terms of task-focused coping strategies and strategies. According to the descriptive statistics, the group with suicide attempts have been reported with higher scores in emotion-focused strategies while the group without suicide attempts have received higher scores in task-focused strategies.

Discussion and Conclusion

The major aim of this study was to identify risk factors and suicide predictors in drug abusers. In terms of the comparison of addicted suicide attempters and addicted non-attempters, the results showed that there are higher levels of the history of the simultaneous abuse of alcohol and other drugs, history of suicide in family, and self-harm in suicide attempters compared to those in non-attempters. The simultaneous use of alcohol and other drugs compared to drug use alone raises suicide risk (Ma Madsen, Caveng, Wehrli & Malti, 2009). Suicide attempters made new suicide attempts compared to non-attempters. Previous suicide attempt is a strong predictor of suicide (Claassen, 2007).
Compared to other drugs, abuse of some drugs, such as opioids, cocaine, and painkillers may be associated with suicide attempts (Maloney, et al., 2009). In this study, no difference was observed between the two groups in terms of the type of drug and the most frequently used drugs were, respectively, opium sap and heroin in both groups.

With regard to the comparison of personality disorders between addicted suicide attempters and addicted non-attempters, the results were indicative of the availability of a significant difference between the two groups in borderline personality disorders, depressive disorder, obsessive-compulsive disorder, and masochism. In addition to the non-adaptive skills in addicts, several studies have referred to the comorbidity of substance use disorders and axis II personality disorders in the fifth Diagnostic and Statistical Manual of Mental Disorders where some of these studies have mostly referred to antisocial personality disorder and borderline personality disorder among the second type category of personality disorders (Walter, Wiesbeck, Dittmann & Graf, 2010; Graa, Mouz & Navas, 2009). This is so while some other studies have referred to type one personality disorders, such as paranoid, schizotypal, and schizoid (Ball, Cobb-Richardson, Connolly, Bujosa & Neall, 2005). Mohammadifar, et al. (2013) also found higher levels of borderline personality, anger, hostility, and aggression in addicted suicide attempters compared to addicted non-attempters. According to the research conducted in this area, borderline personality disorder is rampant among suicide attempters (Giegling, et al., 2009; Cerutti, et al., 2010). The relationship of borderline personality disorder and antisocial personality disorder with increased risk of suicide may come into existence for several reasons. First, impulsivity is one of the major clinical features of borderline and antisocial personality disorders that increases the risk of suicide. Second, patients suffering from borderline and anti-social personality disorders have the history of alcohol and drug abuse, which are the factors that increase the risk of suicide. Third, patients with borderline and antisocial personality disorders hardly obtain adequate social support (Maloney, et al., 2009).

The results pertaining to the comparison of the above-mentioned groups in terms of clinical symptoms showed that the difference between the two groups is significant in somatoform and alcoholism in addition to drug use and major depression. Depression and antisocial personality disorder are more frequently found in addicted suicide attempters than addicted non-attempters (Marzuk, Tardiff & Hirsh, 1992). Epidemiological studies of suicide risk factors have found that depression is associated with the considerable increase of risk of self-destructive behavior (Heisel, et al., 2006). In patients with major depression who have attempted suicide, there are high degrees of dependent and borderline personality disorders (quoted from Classsen, 2007). In the current study, the difference between the two groups was significant both in major depressive disorder and borderline personality disorder that can represent some risk factors for suicide in drug abusers. The results pertinent to the comparison
of stress, depression, and anxiety in one week before suicide attempt between addicted suicide attempters and addicted non-attempters was indicative of the existence of a significant difference between the groups in stress and depression, but not in anxiety. Based on previous research findings, depression, anxiety, and stress constitute the psychological characteristics of suicide attempters. More than 80 percent of the people who attempt suicide have been depressed at the time of suicide (Maloney, et al., 2009; Li et al., 2010). Hasking, et al. (2010) concluded that there are frequent stressful events in the family environment of suicide attempters. These stressful events may include drug use in the family, parental conflicts, parental divorce, physical and sexual abuse during childhood, history of suicide attempt in the family and relatives, domestic violence, mental health problems in parents and other family members, and refereeing to a psychiatrist (cited in Mousavi, Sajjadi, Rafiea & Feizi, 2008).

The results pertaining to the comparison of coping strategies between addicted suicide attempters and addicted non-attempters showed that the difference between the two groups was significant in problem-focused coping and emotion-focused strategies while that was not significant in avoidance strategies. Suicide attempters used more emotion-focused strategies and less problem-focused strategies. Hajir (1997) also examined the coping styles in a sample of cocaine addicts with an average age of 32 years and showed that those who had tolerated a lot of stress in the past have benefited from less social support and, thereby, have used more emotion-focused coping styles. These persons might have turned to cocaine use as a way to cope with the stressors in life.

In general, people with addiction undergo more emotional and behavioral problems, including anxiety, depression, dysfunctional thoughts, aggressive and unlawful behavior, unhealthy coping strategies, hyperactivity, and personality disorders (Didden, Embregts, Toorn & Laarhoven, 2009; Mangrum, 2009; Ball, et al., 2005; Ladd & Petry, 2003; Walter, et al., 2010). Therefore, it can be argued that these people need serious medical and psychological interventions. Based on the findings of the present study, serious planning and training of the staff active in drug treatment centers are strongly recommended to be put on the agenda for the detection and prevention of suicide in addicted patients.

Acknowledgement

Hereby, special thanks go to the active officials of Imam Khomeini Hospital of Kermanshah who allowed the conduct of this research. Thanks also go to Institute of Psychological and Social Ill Surveys (Parva) for its financial support of this research.

Reference


Abstract

Objective: This study was an attempt to predict potential for drug abuse on the basis of three predictors, namely parenting style, stress, and type D personality. Method: In this descriptive-correlational study, 200 students (100 males and 100 females) of Islamic Azad University of Karaj were selected by convenience sampling. For data collection, perceived parenting styles questionnaire, perceived stress scale, type D personality scale, and addiction potential scale were used. Results: The results showed that rejecting/neglecting parenting style and emotional support were positively and negatively correlated with addiction potential, respectively. Conclusion: The child-parent relationship and also the relationship between stress and type D personality can be considered as predictive factors in addiction potential.

Key words: Parenting Styles, Stress, Type D Personality, Addiction Potential

Potential for Drug Abuse: Predictive Role of Parenting Styles, Stress and Type D Personality

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Introduction

Addiction, as one of the four main crises of the twenty-first century, is considered one of the major health, mental, and social problems as well as the most important factor effective in risk behaviors (Farnam, 2013). About 205 percent of university students have been involved in addiction due to various psychological and social problems (Bahadori Khosroshahi & Khanjani, 2013; Sarrami, 2012). Addiction is dependence on the substances whose repeated use with a specified quantity and at certain times is necessary for the user and leads to physical and psychological dependence (American Psychological Association, 2013) and also causes the creation of a phenomenon named tolerance in the body (Bazmi, 2011). Addiction is described as a set of defense and adaption mechanisms that begin from the beginning of adolescence and are stabilized with the compatibilities of adulthood (Johnson, 2003). Several factors are involved in the development of drug trends from the beginning of adolescence. In accordance with self-regulation theory, Zinberg (1984) emphasized the imbalance of “ego” in drug-dependent persons and their inability to maintain the independence of the "ego" and believed that drug dependent people lose the nutrition sources of environmental stimuli, establish destructive relationships with family and others, and their perceptions of the outside world become more negative. Kohut (1971) believed that the major damage to the addicts’ personality is the result of severe failures and negative experiences in relation with the mother and the failure in the adjustment of actions and tensions. This leads to the establishment of an inefficient mental structure in the internal regulation of their acts and behaviors. In scientific literature, this issue has been frequently researched under the title of parenting styles. Parent-child interaction is accomplished in two dimensions, namely admission evaluation (including supporting and fostering positive affect between parent and child) and control (including guidance and monitoring the child’s behavior). Emotional warmth against hostility (neglect, rejection, and violence) is the most effective dimension of parent-child relationship and the base of the formation of one’s future experiences (Amato & Fowle, 2002). Baumrind (1967) considered both dimensions of responsiveness vs. unresponsiveness and demanding vs. undemanding and, then, introduced three styles as authoritative parenting (reasonable expectations by creating logical constraints, expressions of love, and the participation of children in decision-making), authoritarian parenting (onerous and unrealistic expectations, use of punishment and coercion, lack of attention to the emotional needs), and permissive parenting (not expecting children and weakness in control of child’s demands). Young, Klosko & Weishaar (2003) also introduced several parenting styles characterized by emotional deprivation, overprotective parenting, belittling parenting, perfectionist parenting, pessimistic/fearful parenting, controlling parenting, emotionally inhibited parenting, and conditional/narcissistic parenting. The
quality of mother-child relationship and all aspects of it (role confusion, positive affect, communication and replication) are involved in adolescents’ addiction potential (Farahati, 2012). Violent and authoritarian relationship, tendency to delinquent behavior, symptoms of depression, anxiety, and phobia are also prevalent in drug users that verify the role of parent-child interaction styles in the tendency of children to malicious behavior (Ra’easi, Anisi, Yazdi, Zaman & Rashidi, 2008; Goudarzi, Zarnaghash & Zarnaghash, 2004; Parker & Benson, 2004; Havasi, 2001; Shokrzadeh, 2013; Andersson & Eisemann, 2003; Zeinali, Vahdat & Gharehdingeh, 2010, Seifi Gandomani, Saffarinia & Kalantari Meybodi, 2013).

Such experiences in childhood are mainly determinant of the structure of one's personality and predict his/her behavioral model in subsequent periods (Bazmi, 2011). Several studies have confirmed the relationship between personality traits such as introversion, incompatibility, and neuroticism and high-risk behaviors such as smoking, alcohol consumption, and substance use. (Aderam & Nikmanesh, 2011; Kornor & Nordvik, 2007; Janey & Kan, 2012, Esratiifard, 2012; Ahmadi, Najafi, Husseini Almadani & Ashoori, 2012; Erfani & Poorsina, 2012). The existence of the vulnerable personality and serious problems of personality, such as narcissism, antisocial behavior, and borderline personality in drug abusers has also been approved (Bond, 2005, cited in Baron-Oladi, Navidian and Kaveh-Farsani, 2013; Sarason & Sarason, 1994; Mohamadzadeh & Aghayi, 2005). Some studies have also confirmed the intensification of mental and personality disorders after addiction (Ketabi, 2009), potential type D personality or frustration by a combination of two fixed personality constructs, including negative affect and social inhibition for tendency to addiction (Grossarth-Maticek & Eysenck, 1990), and lower tendency to health-related behaviors (Broek, Martens, Nyklicek, Voort & Susanne, 2007; Williams, et al., 2008; Whitehead, Perkins-Porras, Strike, Magid & Steptoe, 2007).

In addition to the quality of interactions with parents and the consequent experiences in terms of personality traits, a variety of social, economic and psychological stresses are the underlying factors leading to potential for drug addiction (Samoo’ea, Ebrahimi, Mousavi, Hassanzadeh & Rafi’ea, 2000). Goeders (2004) considered tendency to drug as a mechanism aimed at overcoming stressful life factors or reducing the symptoms of anxiety and depression. Studies are also indicative of the inability to cope with stressors in terms of tendency to substance use (Pourseyedmoosayi, Mousavi & Kafi, 2012; Hyman, Fox, Hong, Doebbrick & Sinha, 2007; McCuller, Sussman, Dent & Teran, 2001; Ghasemi, Rabie, Haghayegh & Palahang, 2011; Banna, Back, Do & See, 2010; Garland, Gaylord, Boettiger & Howard, 2011).

With regard to the above-mentioned points, this study aims to investigate the relationship of parenting styles, stress, and type D personality with students’ addiction potential and, then, examine the predictive role of these three variables in students’ addiction potential.
Method

Population, sample, and sampling method

The population of the study consisted of all Islamic Azad University students who were studying in the academic year 2014-2015. For the sample selection, seven faculties were randomly chosen out of the 11 faculties of the university. In this descriptive-correlational study, 200 students (100 males and 100 females) of Islamic Azad University of Karaj were selected from bachelor and master’s programs (176 students in bachelor program and 24 ones in master’s program) by convenience sampling method. All the participants in this study were in the 18-to-42-year-old age group with the mean of 23.73 years old and standard deviation of 4.5.

Instrument

1- Short perceived parenting styles questionnaire EMBU (Swedish acronym for Egna Minnen Beträffande Uppfostran): This scale was developed by Arrindell, et al. (2005) in 23 items for the replacement of its 81-item counterpart. The current scale contains three subscales of rejection (7 items), emotional support (6 items), and overprotection (10 items) with a 5-point Likert scale (never to always) for scoring. The items are scored from 0 to 4. In the study conducted by the designers of the scale, the reliability of the scale and its subscales was reported to be between .70 and .90. Hassani, Fathi Ashtiani & Rasoolzadeh Tabatabai (2011) obtained the convergent validity of the questionnaire in correlation with parental bonding instrument .77 and .72 for emotional support and overprotection, respectively. Moreover, its divergent validity was also assessed by anxiety questionnaire where the correlation coefficients of emotional support, rejection, and overprotection were obtained equal to -.31, .51, and .45, respectively. Its reliability coefficient for the three subscales of emotional support, rejection and overprotection was respectively obtained as .89, .83, and .93 via test-retest method. In addition, the Cronbach’s alpha coefficients for the three subscales were respectively reported to equal .81, .69, and .77. In the present study, the reliability of the three sub-scales of rejection, emotional support, and overprotection was respectively obtained equal to .76, .75, and .75 by means of Cronbach's alpha.

2- Perceived Stress Scale: It was designed by Cohen, Kamarck & Mermelstein (1983) in 14 items for the assessment of general perceived stress during the past month. This scale also assesses thoughts and feelings related to stressful events, control and coping, dealing with mental pressure and experienced stress. This scale is scored based on a five-point Likert scale (never to always). Items numbered 4, 5, 6, 7, 9, 10 and 13 are scored in reverse order. In this scale, the minimum and maximum scores of perceived stress are 0 and 56, respectively. Cohen, et al. (1983) calculated the correlation coefficient of this scale with
semiotics and obtained the values ranging from .52 to .76 as the criterion validity of the scale. In the present study, the Cronbach's alpha coefficient of the scale was obtained .78.

3- Type D personality scale: This questionnaire was designed by Denollet (1998) to evaluate two general characteristics of negative emotion and inhibition. This questionnaire consists of 14 items, 7 items of which assess negative affect and also 7 items evaluate. Except for items 1 and 3, the whole scale is scored in a 5-point Likert scale (true to false) within the range of 0 to 4. Therefore, each respondent’s score in each sub-scale ranges from 0 to 20 while that the score for the total scale ranges from 0 to 56. Zoljanahi & Vafayi (2006) reported the internal consistency of negative affect and social inhibition equal to .77 and .69, respectively. The reliability of the questionnaire in this study was calculated using Cronbach's alpha which equaled .80.

4- Addiction potential scale: This questionnaire was constructed by Weed, Butcher, McKenna & Ben-Porath (1992) and contains two factors, namely active readiness (antisocial behaviors, desire to use drugs, positive attitude to drugs, depression, and sensation seeking) and passive readiness (lack of assertiveness and depression). This scale has 36 items in addition to 5 lie detector items (including items numbered 12, 13, 15, 21, and 33). Except for the items numbered 6, 12, 15, and 21; scoring of each item is fulfilled based on a Likert scale from zero (completely disagree) to 3 (strongly agree). Each respondent’s score in this questionnaire ranges from 0 to 108. Higher scores indicate a greater potential for addiction. Zargar, Najarian & Na’ami (2008) calculated the reliability of this scale via Cronbach's alpha and reported its coefficient equal to .90. Zeinali, Vahdat & Easavi (2008) obtained the reliability coefficient of this scale equal to .69 and .77 for females and males, respectively. In the current study, the reliability of the questionnaire was obtained equal to .91 using Cronbach’s alpha.

Results

The descriptive statistics of the variables of the study are presented in the following table.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress</td>
<td>28</td>
<td>6.8</td>
<td>2</td>
<td>47</td>
</tr>
<tr>
<td>Type D personality</td>
<td>22.5</td>
<td>8.7</td>
<td>2</td>
<td>46</td>
</tr>
<tr>
<td>Potential for drug use</td>
<td>32</td>
<td>17.7</td>
<td>2</td>
<td>95</td>
</tr>
<tr>
<td>Rejection</td>
<td>11.8</td>
<td>3.7</td>
<td>7</td>
<td>24</td>
</tr>
<tr>
<td>Emotional support</td>
<td>17.7</td>
<td>3.4</td>
<td>8</td>
<td>24</td>
</tr>
<tr>
<td>Overprotection</td>
<td>21.1</td>
<td>4.7</td>
<td>10</td>
<td>33</td>
</tr>
</tbody>
</table>

Table 1: Descriptive statistics of the variables of the study
Pearson's correlation coefficient was used to examine the relationship of parenting style, stress, and type D personality with potential for drug use and, then, stepwise regression was used to investigate the predictive role of each of these variables in potential for drug use. The correlation matrix of the variables of this study is displayed in the following table.

Table 2: Correlation matrix of the variables of the study

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addiction potential</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Stress</td>
<td>.45**</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Type D personality</td>
<td>.44**</td>
<td>.61**</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rejection</td>
<td>.34**</td>
<td>.20**</td>
<td>.32**</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Emotional support</td>
<td>-.40**</td>
<td>-.28**</td>
<td>-.25**</td>
<td>-.42**</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Overprotection</td>
<td>.09</td>
<td>.17*</td>
<td>.19**</td>
<td>-.55**</td>
<td>-.09</td>
<td>1</td>
</tr>
</tbody>
</table>

*P<.05, **P<.01

The results of stepwise multiple regression on investigating the role of predictive variables in explaining the potential for drug use are presented in the table below.

Table 3: Results of stepwise multiple regression on prediction of potential for drug use

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictors</th>
<th>R</th>
<th>R²</th>
<th>B</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Type D personality</td>
<td>.44</td>
<td>.20</td>
<td>.87</td>
<td>.44</td>
<td>6.96</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Type D personality</td>
<td>.53</td>
<td>.28</td>
<td>.72</td>
<td>.37</td>
<td>5.86</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Emotional support</td>
<td>-1.49</td>
<td>-3.0</td>
<td>-4.73</td>
<td>.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Type D personality</td>
<td>.48</td>
<td>.24</td>
<td>3.22</td>
<td>.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Emotional support</td>
<td>.55</td>
<td>.31</td>
<td>-1.36</td>
<td>-2.7</td>
<td>-4.34</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Stress</td>
<td>.54</td>
<td>.21</td>
<td>2.83</td>
<td>.001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As it is observed in the above table, type D personality has entered the equation in the first step and it accounts for 20% of the variance. In the second step, emotional support entered the equation where these two variables together accounted for 28% of the total variance. In the final step, stress entered the equation and constituted 31% of the total variance of potential for addiction along with the other two steps.

Discussion and Conclusion

This study was aimed to examine the relationship of potential for drug abuse with the three variables, namely parenting style, stress, and type D personality. The results showed that rejecting/neglecting parenting style and emotional support were positively and negatively correlated with addiction potential, respectively. Emotional support along with type D personality could predict .28 of the variance of potential for drug use among students. This finding is consistent with those of the studies done by Parker & Benson (2004), Ra’easi, et al. (2008), Farahati (2012), Havasi (2001), and Shokrzadeh (2013). Yousefi
(2007) showed that perception of the family as an authoritarian family predicts antisocial, aggressive, and impulsive behaviors in children. Parents, as the emotional source of children, play a central role in the formation, persistence, and prevention of maladaptive behaviors. Parenting styles play an enormous role in psychological dimensions, including psychological growth, social adjustment, self-esteem, self-confidence, managing emotions, and behaviors. Love and affection along with freedom provide children with a proper space for emotional discharge and an opportunity to learn and gain experience. Parents with cold relations often have depression, anxiety, phobia, and destructive interpersonal relationships with others and, thereby, they behave towards their children in the same way. Thus, cold relationship along with rejection or even insult and violence towards children make them hate their family and lead them to a variety of destructive and maladaptive behaviors.

In addition, the findings suggest the presence of a relationship between type D personality and potential for drug use in a manner that type D personality explained 20 percent of the variance in potential for drug use. This finding is consistent with the results of the studies conducted by (Broek, et al. 2007; Williams, et al., 2008; Whitehead, et al., 2007; Janery & Kan, 2012; Esratitifard, 2012; Ahmadi, et al., 2012; and Aderam, & Nikmanesh, 2011). Some people, due to their certain personality traits, are more susceptible to destructive behaviors are self-harm. These people are indifferent to their physical and mental health; and experience of social negative emotions associated with a reduction of mechanism of social inhibition and weakness in maintaining and reinforcing social and affective support of others will increase their willingness to experience unpleasant and potentially harmful stimuli, including substance abuse. Finally, the probability of addiction raises. Fenichel regards a person's mental structure as an important factor in his/her potential for drug use; and also considers the significant increase in self-esteem and erotic and narcissistic gratification after drug use as the factor effective in drug use persistence. According to Williams, et al. (2008), people with potential for drug use hold negative views about themselves and report more physical symptoms, and are inclined to undesirable stimuli. These individuals encounter difficulty in daily social functions and frequently feel depression, stress, and insecurity when interacting with others. They suffer from maladaptive health behavior such as smoking, lack of exercise and improper diet (Besharat, Darvishi Lord, Zahdmhr & Gholamali Lavassani, 2013).

The results of the current study also suggested the presence of a significant positive relationship between stress and potential for drug use in such a way that stress along with type D personality and emotional support could account for 31 percent of variance in students’ potential for addiction. This finding is consistent with the results of the studies done by (Hyman, et al. 2007; McCuller, et al., 2001; Ghasemi et al., 2011; and Pourseyedmoosayi, et al., 2012). When confronted with stressful conditions, people with inappropriate interactions with
parents as well as some traces of personality type D cannot use proper coping methods and are more likely to turn to fleeting and ineffective solutions. Goeders (2004) showed that those exposed to such stimuli as unpleasant marriage, job dissatisfaction or harassment were reported to exude more addictive behaviors. The results of the studies done by Ranjbar Nosheri, Mahmoud Alilou, Omidi Majreh, Ghodrati & Najar Mobarak (2013) and Rostami, Ahadi & Cheraghali Gol (2013) showed that there was a significant difference between addicts and normal people in the sub-scales of coping strategies for stress, including suppression, self-control, responsibility, and, evasion, avoidance, and problem solving. Pourseyedmoosayi, et al. (2012), Hyman, et al. (2007), McCuller, et al. (2001), and Ghasemi et al., (2011) showed that people who take alcohol and opiates to regulate their mood, increase positive emotional experiences, and reduce negative mood such as depression and anxiety show considerably higher symptoms of alcohol dependence in their lifetime. According to Lazarus & Folkman’s transactional model of stress & coping, one can assert that stress depends on two dimensions of individuals’ cognitive appraisal and coping strategies in the face of stressful events. People deprived of any transactional model in their previous experiences estimate stressful events too reasonable because of the availability of personality variables underlying inappropriate behaviors. These people are more prone to the development of risk taking behaviors in stressful situations since their behavioral treasury is devoid of the experiences pertaining to the constructive coping methods with those stressful situations. Therefore, turning to addiction is the coping strategy and defense mechanism of the people who have not learned efficient methods of dealing with the problem during the early years of their growth because of lacking a suitable transactional model. They experience pleasure, false confidence, reduced anxiety and stress as a result of initial drug use and consequent achievement of short-term euphoric effects. Then, with the decrease of these effects after drug use, the intense craving for repeated use of drugs is strengthened in such people. Banna, et al. (2010) also showed that stress can considerably increase craving for drug use and relapse in drug among people who are in the process of drug use abstinence.

That the current study was only limited to the students of Azad University of Karaj and was conducted through correlation method stopped the possibility of between-group comparison and limited the generalizability of the results to other populations. Future researchers interested in this research area are recommended to use other groups and mediating and moderator variables in their studies and conduct comparison studies on potential for addiction. Considering the findings of this study, parents’ attention to the methods of interaction with children, teaching coping skills and self-control, and methods of dealing with stressful life events can be receive attention in counseling centers.
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Abstract

Objective: Morphine is one of the important narcotics which constitutes one of the alkaloid and opium components. If this substance is prepared defectively, it will appear in a variety of colors. Therefore, it is not possible to identify this substance by its color. Method: In this study, drug addicts were invited to take urine tests. After morphine extraction from urine samples by chromium toxicity method, different standard concentrations were injected into HPLC device and the resultant diagrams were analyzed. Then, some changes were made into the methodology for the optimality of measurement process and morphine determination in human urine. Results: It was found that the amount of morphine available in the urine samples was measurable through high-performance liquid chromatography and the amount of impurities added to drugs could be determined. Conclusion: This method can be used for diagnosis.

Keywords: Drugs, Morphine, Chromatography, Addiction

On the Measurement of Morphine Level and Specification of Consumption of Different Drugs in People’s Urine at Different Ages through High-Performance Liquid Chromatography

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Introduction

Nowadays, drug addiction is no longer considered a social ill, but it has become a problem threatening global security. Production of chemicals and evolution of drug use model from natural modes to chemical modes is also a great risk. Undoubtedly, breaking geographical boundaries and the boundaries of human knowledge has led to the qualitative and quantitative proliferation of narcotics despite all its benefits and advantages in other fields. For example, synthetic drugs are generated in different places of the world in addition to poppy cultivation and heroin production in Afghanistan (Taheri Nokhost, 1999; Ehsanmanesh & Karimi, 1999). Morphine is categorized in alkaloids and is one of the important components of opium that makes up 7 to 14 percent of opium. This chemical is insoluble in water and is found as crystalline powder, white to cream in color and sometimes brown. If this substance is prepared in an incomplete mode, it will have different colors. Therefore, it is not possible to identify it by color. Heroin is another narcotic drug that is extracted from morphine by distillation. About 900 grams of heroin is extracted from a kilo of morphine while heroin is 3 to 5 times more potent than morphine (Akhtar Mohagheghi, 2006).

In the present study, high performance liquid chromatography (HPLC) method with a series of changes was experimented to extract morphine from urine samples. This method has overcome the problems pertaining to the sample analysis by gas chromatography such as destruction of samples at high temperatures and also the problems in the analysis in impurity profiling techniques. Successful progress in HPLC has started since the beginning of 1980 and attracted a lot of fans and applicants who wanted good isolation. Most HPLC columns are made of stainless steel type 316 which is austenitic steel chrome-nickel-molybdenum, is resistant to HPLC, and is relatively inert to chemical corrosion (Skoog, Holler & Nieman, 1998; Rouessac & Rouessac, 2007; Shafii, 1994).

To date, many methods have been used to extract morphine and codeine from human urine and blood (Yamada & Oguri, 2005). Taghavi, et al. (2002) used high recycling liquid - liquid phase to extract codeine from human urine and quantitatively investigated the urine by chromatography gas (Taghavi, Nazeri, Sabzevari, Fekri & Afshar, 2002). They concluded that it is possible to benefit from this method for extracting codeine (and morphine) due to high recycling and acceptable sensitivity. Taghavi, et al. (2003) used liquid-liquid phase and solid-phase to extract morphine from human urine and compared them via scanning densitometry. In both methods, the concentration of extracted morphine in hydrolyzed state was higher than that in non-hydrolyzed state (Taghavi, Nazeri, Sabzevari, Fekri & Afshar, 2003). Today, HPLC with minor changes and other lateral methods are used to diagnose and measure morphine (Ruzilawati, Yusuf, Ramli, Hussain & Rasool, 1994; Schönberg, Grobosch,
Lampe & Kloft, 2006). In the present study, the amount of morphine in the samples obtained from individuals addicted to drugs, as well as lifetime of morphine compounds after consumption were measured by high performance liquid chromatography; and the metallization resulting from opium use and heroin use were compared to each other. In fact, this study aimed at examining and testing high performance liquid chromatography method in order to extract morphine from human urine with respect to the consumed narcotic drug and age. Another purpose of this study was to examine and test this method in order to diagnose the type of used drug and detect the impurities of the consumed substance in addicts. Generally, the current study was an attempt to investigate the application of this method in drug discovery by police and explore the relationship between different discovered samples and the arrested individuals.

Method

Population, sample, and sampling method

Morphine and codeine standards and methanol acetonitrile with high purity were purchased from Merck Company. Other solvents, such as ethanol, and acetone were used without any purification. All the experiments were performed using deionized distilled water (twice distillation). The devices used here were as follows: high performance liquid chromatography system containing degassing system with helium, a six-part injection valve with 10-microliter loop, a multi-wavelength fluorescence detector, and an analytical column (60 Å, 4μm, 150×3.9mm) with protective columns (60 Å and 20 × 3 mm). Full glass filtration system was used to filter all mobile phase solvents. PTEFE-SUPER- 450 was used for filtering solvents and .45-micrometer syringe filter was used for filtering the samples.

Although the preparation of samples for experiments was a very difficult task in this study, anti-drug police in Fars Province cooperated and issued research permit among the patients at that center. Therefore, research began. These individuals were fully informed on the research topic and the sampling was done with their consent. It should be noted that no drugs were offered to these people, but these people were those who had previously used drugs and were under the control of anti-drug police. Indeed, the selection of these people took about three months and all the people who were transferred to this center during this period were researched.

In this study, some individuals meeting the requirements for taking the sample were invited; in fact, these requirements were reflected in the following items: amount of drug use, type of drug, time of drug use, age, etc. Among them, only five people aged 24, 26, 30, 50, and 52 years were selected. The 30-year old person took urine test 5, 12, 24, and 36 hours after drug use, respectively. The 24-year-old person took urine test about 76 hours after the consumption of heroin, the 26-year-old took urine test 36 hours after the consumption of opium,
The 52-year-old person took urine test 36 hours after the consumption of heroin, and the 50-year-old person took urine test 24 hours after the consumption of opium.

The amount of urine sample for each test was 10 milliliters. The sample temperature is considered a very important issue only in the laboratory diagnosis of addiction and should be approximately equal to the temperature of the human body. The sampler should make sure that the sample is free of additional colors and the sample must be without and colors or additives. In this study, the samples were tested with different PHs, in which the most favorable one ranged between 1.5 and 8.5. To this end, the special weight of the sample should not be smaller than 1.004 and the concentration of creatinine in it should not exceed 20 dL/mg.

In this study, chromium poison (morphine-codeine Detection Kit) was used wherein the following drugs were examined and no drug interactions were observed in any of them. These drugs include: Adult Cold, Chlordiazepoxide, Diclofenac Sodium, Antihistamines, Decongestant, amitriptyline, Acetaminophen codeine, imipramine, cocaine, hashish, Fluoxetine, Perphenazine, Diazepam, atenolol, theophylline, Pentazocine, phenobarbital, cimetidine, ranitidine, Diphenoxylate, Spironolactone, methadone, caffeine, and phenybutazone. In the case of cimetidine, a stain near the top of morphine is created at high concentrations (about 20µg/ml) that may cover the morphine. It is noteworthy that the color of these stains is yellow and quite different from that of morphine. If such stains appear, it will be better to go for another complementary test using ethyl acetate, methanol, and ammonia (85: 10: 5) to ensure the accuracy of the answers.

For the extraction of morphine from the sample, the sample must be inserted in the chromatography column along with a series of chemical solutions that will be mentioned below and, then, it should pass through the column. In this study, chromatography columns of Chrome poison (morphine-codeine diagnostic kit) were used. Each package of Chrome poison kit containing powder morphine diagnosis A1, A2 is an activator and powder B is a fixation substance.

For the preparation of buffer A, a vial of powder A1 was resolved in 100 ml of distilled water at room temperature. In the same way, A2 solution was also formed. Then, 10 ml of solution A1 and 90 ml of solution A2 were mixed and stirred in order to prepare buffer A. For the preparation of buffer B, a vial of powder B was resolved in Chrome poison and 100 ml of distilled water. Buffers should be prepared one hour before the start of the experiment. These buffers are stable for one week at 25 degrees of centigrade of laboratory conditions. Chromatography columns were placed in the holes of the vacuum chamber vent. Pressure pump was set about .2-.3 loading and, then, the pump was turned off. The distance between cotton and resin into the column was slowly removed by a glass rod (use of glass rod was because of lack of electric charge). An amount of 3 ml of buffer prepared by PH of approximately 8.5 was added to the column. After about 2 minutes, the vacuum pump was turned on again and its pressure...
was set to 1.0 bar. Then, 10 ml of the available samples (samples were coded) was added to each of the columns and the pressure of the vacuum pump was fixed to the previous amount until the full discharge of the sample (1.0 bar). After the complete discharge, the cotton inside each column was removed and the amount of 5 ml buffer B with PH of 8 was added to each column (pressure for the previous amount was fixed). After discharge of buffers, the pressure of vacuum pump was increased to 3.0 bar and 15 minutes took to correctly accomplish discharge and drying. Extraction columns were put in a special tube and their tips were set in the epithelial thimbles that were arranged on the hot plate. Then, three ml of ethanol was added to each column so that extraction can be performed by evaporation. Extraction lasted approximately 15 minutes and, then, beakers were removed from the hot place. The result of extraction along with a few drops of ethanol was injected into the HPLC device.

All separation and measurement were conducted on the Novapak column 18 at room temperature. Isocratic elution mode with acetonitrile-water phase (35-65% V/V) was applied with a flow rate of one ml per minute. All mobile phases were filtered through suitable PTFE-SUPER-450. Excitation and emission wavelengths were selected 235 and 350 nm, respectively. All samples were passed through 4-μmsyringe filters before injection into HPLC.

The most common solvents used in reversed-phase high performance liquid chromatography were water, acetonitrile, methanol, and tetrahydrofuran that are usually used as mobile phases in double or triple modes. In this regard, different mobile phases in different volume ratios of water-methanol and water-acetonitrile were investigated in order to achieve lower analysis time and desired separation between peaks. Volume ratios of 30-80, 30-75, 35-65, 50-50, and 40-60 (v/v%) of binary mixtures of water-acetonitrile and water-methanol system were injected into the analytical column by the pumps and the chromatograms obtained from morphine compounds were investigated.

Results

The results showed that the mobile phase of water-acetonitrile with the volume ratio of 35-65 (v/v%) results in the best the separation between peaks. On the other hand, the polarity of mobile phase is in such a state that unwanted polar compounds are quickly washed from the column and do not overlap with the peak of analytes. Therefore, acetonitrile solvent was selected as the modifier of the organic mobile phase despite being more expensive than methanol. Tetrahydrofuran solvent was not used due to its high toxic properties. In mobile phases where the amount of water is more than 40% volumetric, the separation and distinction between peaks are performed in higher degrees, but 35% water was selected since analysis takes a longer period of time and peaks are influenced by broadening. The flow rate of mobile phase is also an important factor to achieve a better separation; therefore, flow rates of .8, .9, 1.1, and 1.2 ml per
minute were evaluated and, in conclusion, the flow rate of 1 ml per minute was selected as the optimal flow rate. It should be mentioned that this flow rate is used in most of HPLC analyses. In higher flow rates, the peaks overlap while separation between the peaks is better performed in lower flow rates, but it is not used because the analysis took longer. The results of the injection of morphine extracted from different samples into HPLC device are presented in the table below.

Table 1: Results of the injection of morphine extracted from different samples into HPLC device

<table>
<thead>
<tr>
<th>Sample</th>
<th>Age</th>
<th>Substance / time spent after use</th>
<th>First iteration</th>
<th>Second iteration</th>
<th>Third iteration</th>
<th>RSD%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Peak level of morphine</td>
<td>Retention time (minute)</td>
<td>Below the peak level of morphine</td>
<td>Retention time (minute)</td>
</tr>
<tr>
<td>A</td>
<td>30</td>
<td>5 hours-opium</td>
<td>58920</td>
<td>9.89</td>
<td>58290</td>
<td>9.91</td>
</tr>
<tr>
<td>B</td>
<td>30</td>
<td>12 hours-opium</td>
<td>44880</td>
<td>9.85</td>
<td>44986</td>
<td>.10</td>
</tr>
<tr>
<td>C</td>
<td>30</td>
<td>24 hours-opium</td>
<td>37860</td>
<td>9.98</td>
<td>37015</td>
<td>9.90</td>
</tr>
<tr>
<td>D</td>
<td>30</td>
<td>36 hours-opium</td>
<td>10760</td>
<td>9.93</td>
<td>10410</td>
<td>9.77</td>
</tr>
<tr>
<td>E</td>
<td>26</td>
<td>48 hours-opium</td>
<td>9780</td>
<td>.11</td>
<td>9100</td>
<td>9.87</td>
</tr>
<tr>
<td>F</td>
<td>24</td>
<td>76 hours-heroin</td>
<td>20395</td>
<td>.05</td>
<td>19591</td>
<td>9.66</td>
</tr>
<tr>
<td>G</td>
<td>50</td>
<td>36 hours-opium</td>
<td>22260</td>
<td>9.83</td>
<td>22849</td>
<td>9.71</td>
</tr>
<tr>
<td>H</td>
<td>52</td>
<td>36 hours-heroin</td>
<td>31840</td>
<td>9.84</td>
<td>31231</td>
<td>9.91</td>
</tr>
</tbody>
</table>

The different concentrations of standard morphine sample were initially injected into HPLC device so that the figures 1-A, 1-B, 1-C, 1-H, and 1-5 were obtained during 10 minutes in concentrations 10 ppm, 30 ppm, 50 ppm, 70 ppm, and 90 ppm, respectively. Thereafter, Figure 1-D, known as calibration curve, using the area under curve peak based on morphine concentration. In this curve, y-axis and x-axis were respectively drawn based on millivolt and morphine concentration, and a straight line was obtained whose equation is $y = -3480*780$. It is noteworthy that y is the curve under the peak in different injected morphine concentrations which is obtained with the calculation of the curve under the peak. Then, x (morphine concentration) is obtained by the placement of y in calibration curve equation.
Figure 1: a) standard solution chromatogram with 10-ppm morphine, b) 30-ppm morphine, c) 50-ppm morphine, d) 70-ppm morphine, e) 90-ppm morphine, and f) calibration curve (flow rate of 1 ml per minute, mobile phase 65: 35 water-acetonitrile, Novapak column c18).

Figure 2: Chromatogram of 30-year-old person a) 5 hours, b) 12 hours, c) 24 hours, and d) 36 hours after opium use (flow rate of 1 ml per minute, mobile phase 65: 35 water-acetonitrile, Novapak column c18).
Figure 3: a) Chromatogram of 24-year-old person 72 hours after opium use, b) Chromatogram of 26-year-old person 48 hours after heroin use, c) Chromatogram of 52-year-old person 36 hours after heroin use, and d) Chromatogram of 50-year-old person 36 hours after opium use (flow rate of 1 ml per minute, mobile phase 65: 35 water-acetonitrile, Novapak column c18).

As is clear from the obtained figures, the consumed food materials (according to the difference of individuals) in the sample have the least impact on the extracted product. Figures 2-A, 2-B, 2-C, and 2-D show the chromatogram obtained from the injection of morphine into HPLC in the samples extracted from 30-year-old individuals 5, 12, 24, and 36 hours after opium use, respectively. Figure 3 shows the chromatogram of 24-, 26-, 50-, and 52-year-old individuals.

Discussion and Conclusion

The results of this study showed that the amount of morphine in the sample with high performance liquid chromatography is measurable. It was also revealed that the amount of impurities in narcotic drugs and the level of morphine in the body of drug users can be estimated in specific time intervals. In addition, it is possible to obtain the relationship between the amount of morphine and individuals’ age over a period of time after the use of drugs. In terms of the results obtained from the amount of morphine in the sample, it was concluded that there is a direct relationship between the time spent after morphine use and the time duration morphine stays in the body. Hence, the
amount of morphine extracted at intervals after opium consumption has experienced a descending mode. For example, after the passage of five hours from the consumption, the amount of morphine reached 79.31 ppm; the amount of extracted morphine in the sample reached 61.67 ppm 12 hours after opium use; this amount reached 52.69 ppm 24 hours after opium use; and this amount reached 17.88 ppm 24 hours after opium use. These results pertained to a 30-year-old person who took opium and the pertinent chart shows the obtained results in four different time intervals. Figure 3 shows chromatograms of morphine extracted in a 50-year-old person and a 52-year-old person who are closely related in age. The 52-year-old person had taken heroin and his sample was tested 36 hours after consumption; his morphine was extracted which reached 45.20 ppm. However, the 50-year-old person had used opium and the morphine extracted from his sample was calculated after 36 hours which was equal to 33.09 ppm. Therefore, the amount of morphine in the 52-year-old was about 12 ppm higher than that in the 50-year-old person although they were similar to each other in terms of age and they both took tests in the same time interval after drug use. This can be accounted for by the difference in the amount of morphine in heroin and opium since the 52-year-old person had taken heroin but the 50-year-old person had taken opium. In fact, the amount of morphine in heroin outweighs that in opium heroin metabolization is performed in the body more quickly than opium metabolization in the body.

In terms of police investigation, the data analysis can lead to some in drug discovery scenes and to the relationship between different discovered samples and arrested individuals. The results of this study can be helpful and effective in the following areas: recognition of the possession of discovered drugs in various locations, estimation of geographic location of drug distribution and production based on the analysis of compounds of discovered drugs, prioritization of sampling from individuals in certain circumstances, acceptance or rejection of the statements of offenders in the consumption of psychotropic substances and investigation of their abnormal states at the time of committing crime, identification of the type of drugs and the association of suspects with the criminal scene. Opium and its derivatives such as heroin, morphine, and codeine are obtained from the opium gum, heroin is rapidly metabolized and converted to morphine. Thus, it is possible to find both compounds of morphine and glyco urinate morphine in urine samples of heroin users.

Therefore, the presence of morphine and/or its metabolites in the samples taken from people suggest heroin and morphine use. At the beginning of chemistry as a science, humans have made different uses of chemistry, one of which has been regarding the recognition of opium alkaloids, especially morphine in biological samples. Morphine disposal by different parts of the body decreases with aging; in other words, as one gets older, the metabolism of different body parts has a descending order and its function is reduced. Therefore, morphine disposal is also reduced which can be due to the functional
decrease of body parts with aging. Investigation a person of the amount of morphine excreted in such people suggests that the amount of morphine in is reduced with the passage of time. This is due to the decomposition of morphine to other substances and reduction of initial amount of morphine in the body. In terms of the comparison of the excreted morphine in people of similar ages but with consumption of different drugs, it can be concluded that as the amount of morphine in raw materials is higher, the amount of excreted morphine in the biological samples will be higher, too. Therefore, it is possible to guess the type of raw materials to some extent. With the investigation of the type and amount of morphine available in biological samples, it is possible to find the relationship between unknown criminal scenes and unknown police crimes. The conduct of similar studies on people with certain diseases, on the amount of morphine over time on the basis of gender, etc. in different environmental conditions and with blood or saliva samples is strongly recommended.

Reference

Abstract

Objective: The present study aimed at investigating the moderating role of personality traits in the relationship between attachment styles and attitude towards drugs.

Method: To this end, 190 first-semester students of Tehran Payam Noor University (south center) in 2013-2014 were randomly selected and requested to revised adult attachment scale, Eysenck personality questionnaire, and attitude towards drugs questionnaire.

Results: The results of this study indicated that only avoidance attachment style could predict attitude towards drugs and this relationship could be significantly moderated by neuroticism.

Conclusion: The results of this study can have applications and implications in the development of treatment and training programs for addiction prevention in vulnerable populations.

Keywords: Attachment Styles, Personality Traits, Attitude towards Drugs, Neuroticism
Introduction

Substance abuse is a complex disorder with high prevalence which affects various aspects of people's lives. A huge number of factors are involved in the emergence, persistence and treatment of this disorder. The most important factors of this category include biological, psychological, social, family, and transformation factors. In recent decades, the identification of risk factors in the incidence, prevention, and treatment of addiction has allocated a large amount of research. Some useful treatment methods for addiction are derived from attachment theory (Porter, 2007). Attachment style plays an important role in how people self-adapt and prevent risk behaviors like addiction (Nickerson & Nagle, 2005). Developmental psychology refers to attachment as the emotional bond between mother and infant. Attachment theory was introduced for the first time by Bowlby (1983). According to this theory, a consistent pattern is shaped over time between the infant and primary care, which becomes the origin of one’s future beliefs and expectations and influences his/her future relationships, emotions, and behavior (Bowlby, 1983). Bowlby (1983) proposed the internal working model based on two variables: judgment about the independence and responsibility of attachment symbol and judgment about its value as a subject. Internal working model shapes a strategy that is used by an individual in his/her relationships with other, this pattern of communication is meant as attachment style (Porter, 2007). Bowlby believed one can see him/herself and others positively or negatively in this communication pattern person (Batholomew, 1990). Secure attachment style is formed when a person has a positive model of self and others, a children with secure attachment style have experiences rich in security and away from debilitative anxiety. In contrast, insecure style is characterized by anxiety and avoidance. Anxiety style is marked with a negative model of self while avoidant style is determined by the negative model of others (Feeney & Noller, 1996). Children with insecure attachment styles (avoidant and ambivalent) imagine the world as an insecure and stressful environment and do not have the ability to effectively and constructively cope with problems and stressful situations (Flores, 2004). Attachment style is associated with functions and disorders of adulthood. Separation from the safety-bringing source (mother/primary caregiver) can be associated with the disconnection of one’s relationship with other people, his/her tendency to drugs, and turning to dreams in order to escape from the related fears and anxieties. Children with insecure attachment style will develop a heartless character that is characterized by emotional withdrawal, apathy, inability in establishing emotional loving relationship with others; and it finally orients them to addiction. In these conditions, insecure attachment is more likely to be associated with experience of negative emotions, poor coping skills, immature mechanisms, impaired cognitive style, and interpersonal conflict. These factors increase the likelihood of substance abuse (Borhani, 2013).
Attachment styles can be associated with substance abuse, affective problems, emotional problems, and interpersonal problems in adulthood (Paulk & Zayac, 2013; Doumas, Blasey & Mitchell, 2006; Molnar, Sadava, De Courville & Perrier, 2010; Thorberg & Lyvers, 2010). Davidson & Ireland (2009) investigated the relationship of drug abuse with coping styles, personality traits, and attachment styles. The results showed that the individuals with abnormal personality traits suffered from insecure attachment styles. There are strong reasons to believe that insecure attachment style is related to negative attitudes towards self (Borhani, 2013). People with insecure attachment style may not have the skills necessary to making communications. This will causes anxiety and depression. Since these people are less likely to engage in supportive relationships, they turn to drug use in times of stress to cope with the situation (Kassell, Wardle & Roberts, 2007).

According to Thorberg & Lyvers (2006) the patients under substance abuse treatment have reported higher levels of insecure attachment style and fear of intimacy. Attachment style can anticipate intimacy problems and both interpersonal and intrapersonal functions in drug abusers (Thorberg & Lyvers, 2010).

The results Molnar, et al. (2010) found that anxious attachment style is a risk factor for substance abuse. Caspers, Cadoret, Langbehn, Yucuis & Troutman (2005) proved the relationship between substance abuse and insecure attachment style. De Rick & Vanheule (2007) also showed that insecure attachment style may lead to dysfunctional behaviors and personality disorders. Jones (2009) showed that secure and insecure attachment can predict drug addiction and crime history in prisoners. Early social interactions affect internal working model and psychological characteristics of the person (Finkel & Matheny, 2000, Gervai, 2009; Roisman & Fraley, 2008) and play an important role in psychological disorders and lack of emotional regulation (Wedekind, et al., 2013).

Personality traits is one of the most important predictors of addictive behaviors. Some theories have explained that a wide range of personality factors affect the onset and continuation of drug use. According to Eysenck (1997), substance use disorders are correlated with extraversion, neuroticism, impulsivity, and sensation seeking. Research has shown that there are certain personality traits in drug dependent people (Grant et al., 2004; Grana, Munoz & Navas, 2008; Rahmanian, Jena & Samiee, 2012; Rahmanian, 2008; Rahmanian & Hasani, 2005). For example, in a survey performed by Rahmanian & Jena (2013), the results showed that there was a significant difference between people dependent on opiates and ordinary people in terms of personality traits in such a way that extraversion and neuroticism in drug-dependent individuals were higher than those in normal people. In addition, Vaknin (2007) also showed that people with antisocial, passive-aggressive, and anxious personality are at greater risk for developing substance abuse.
According to the related literature and the impact of insecure attachment style and personality traits on the formation of substance abuse disorders, the current study investigated the moderating role of personality traits in the relationship between attachment style and attitude to drug abuse.

Method

Population, sample, and sampling method

Descriptive and correlational research methodology was used to assess and predict the relationship between the variables. All the first-semester students of Tehran Payam Noor University (south center) in 2013-2014 constituted the statistical population of this study. Among the population, the number of 210 participants was randomly selected while 20 participants were left out from the final analysis since their questionnaire had not been fully completed. Therefore, data analysis was done on the 190 participants. About 79.9 percent of the participants in the study were male and the remaining 22.1 percent were female. In terms of academic program, 73.7 percent of the participants were studying in bachelor’s program and 24.2 percent of them were studying in master’s program while the academic program of 2.1 of them had been left unanswered. The mean and standard deviation of participants’ age were 12.91 ± 24.45 years.

Instrument

1- Revised adult attachment scale: This questionnaire was constructed by Collins & Read (1990) and includes a self-assessment of skills in building relationships and self-decryption of forming close attachments and contains 18 items and three sub-scales (each consisting of 6 items). The three sub-scales are: a) depend – It measures the extent to which a person feels he/she can depend on others and is measured through the degree that depended are available when needed. b) Close- It measures the extent to which a person is comfortable with closeness and intimacy. c) Anxiety- It measures fear of having relationship (Mallinkrodt, et al, cited in Pakdaman, 2001). Collin & Read (1990, cited in Pakdaamm, 2001) prepared the contents of their questionnaire based descriptions of the Hazan & Shaver’s Adult Attachment Questionnaire. Anxiety subscale is consistent with anxious-ambivalent attachment and close is a bipolar dimension which essentially puts together secure and avoidant descriptions. Therefore, closeness is in compliance with secure attachment and dependence sub-scale can be regarded as the of other avoidant attachment.

The items of the scale are rated on a 5-point scale ranging from 1 = not at all characteristic to 5 = very characteristic. The items numbered 6, 1*, 8*, 13, 12, and 17* belong to secure attachment; items numbered 5*, 2, 16&, 14, 7, and 18* belong to avoidant attachment; and items numbered 4, 3, 9, 10, 1, and 15 belong to ambivalent / anxiety. The questions marked with an asterisk should be scored
negatively. Factor analysis has shown these three dimensions (construct validity). Collins and Reid, the Cronbach’s alpha for the subscale of secure attachment, avoidant, and ambivalent in two samples of 173 and 100 students of, respectively, 81/0, 82.0, 78/0, 80/0, and vary from 850, 83 / 0 reported. Collins & Read examined reliability of the scale on a 173-student sample and a 100-student sample and reported Cronbach’s alpha coefficients of .81, .82; .78, .80; and .85, .83 for secure attachment, avoidant attachment, and ambivalent attachment, respectively. Pakdaman (2003) reported the reliability coefficient of .95 for the total scale through test-retest method.

2- Eysenck personality questionnaire (Adult Form): This questionnaire was constructed by Eysenck in 1963 to assess some aspects of personality such as introversion and extraversion, as well as identify some personality disorders such as psychoticism, anti-social disorder, neuroticism, and social desirability. Later on, this questionnaire underwent some changes and revisions and the current form emerged. The current form is a 90-item self-report scale that measures the factor named lying in addition to the other three factors-extraversion, psychoticism, and neuroticism. For each item, there are two alternatives, "Yes" and "No" wherein "Yes" is assigned 1 score in some item items and zero point in some other items and the same procedure for the alternative “No” holds true. The scoring of adult form of the scale is presented in the table below.

<table>
<thead>
<tr>
<th>Factors</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychoticism</td>
<td>22, 26, 30, 33, 43, 46, 50, 65, 67, 74, 76, 79, 83, 87</td>
</tr>
<tr>
<td></td>
<td>2, 6, 9, 11, 18, 37, 53, 57, 61, 71, 90</td>
</tr>
<tr>
<td></td>
<td>3, 7, 12, 15, 19, 23, 27, 31, 34, 38, 41, 47, 54, 58, 62, 66, 68, 72, 75, 77, 80, 83, 88</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>1, 5, 10, 14, 25, 32, 36, 40, 45, 49, 52, 56, 60, 64, 70, 82, 86</td>
</tr>
<tr>
<td></td>
<td>21, 29, 42</td>
</tr>
<tr>
<td>Extraversion</td>
<td>13, 20, 35, 55, 78, 89</td>
</tr>
<tr>
<td>Lying</td>
<td>4, 8, 16, 24, 28, 39, 44, 48, 51, 59, 63, 69, 73, 81, 85</td>
</tr>
</tbody>
</table>

Cronbach’s alpha coefficients for three components of extraversion, neuroticism, and lying have been reported to range from .79 to .85 and that for psychoticism has been reported to range from .68 to .74 (Eysenck & Eysenck, 1985). The reliability of extraversion, neuroticism, and lying was obtained within the range of .8 to .9 through test-retest method during a one-month interval through the conduct of a study on normal people while this value was reported to range for .71 to .83 for psychoticism (Spielberger, Reheiser, Carlos & Foreyt, 2000). Test-retest reliability coefficient within a two-month interval on an Iranian sample was reported as follows: psychoticism = .72, extraversion = .92, neuroticism = .89, and lying = .88 which represents a very high and acceptable reliability for this questionnaire (Kaviani, 2003). In addition,
Barahani (cited in Ganji, 2012) reported the reliability of extraversion, neuroticism, and lying equal to .69, .77, and .47, respectively.

3- Attitude towards drugs questionnaire:
This self-reporting scale was constructed by Nazari (2000) and consists of 32 items that are scored based on a Likert scale. In terms of scoring, the items measuring positive attitude to addiction are responded by the alternatives "strongly agree, agree, no idea, disagree, strongly disagree" and are assigned 5, 4, 3, 2, and 1 points, respectively. In contrast, the items measuring negative attitude to addiction are scored in reverse (the responses "strongly agree, agree, no idea, disagree, strongly disagree" are assigned 1, 2, 3, 4, and 5 points, respectively. Thus, a respondent’s score on the whole questionnaire ranges from 32 to 160. It is noteworthy that higher scores indicate favorable attitudes toward drug use and addiction. Face and content validity and internal consistency and parallel-form reliability of this scale have been reported to be the desired. In addition, internal consistency through Cronbach's alpha test equaled .89 (Nazari, 2000).

Results
The correlation matrix of the variables under study is presented in the following table.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Psychoticism</th>
<th>Neuroticism</th>
<th>Extraversion</th>
<th>Anxious attachment</th>
<th>Avoidant attachment</th>
<th>Secure attachment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes to drugs</td>
<td>.033</td>
<td>.208**</td>
<td>-.045</td>
<td>.098</td>
<td>.202**</td>
<td>-.015</td>
</tr>
<tr>
<td>Secure attachment</td>
<td>.072</td>
<td>.132</td>
<td>.072</td>
<td>.018</td>
<td>.054</td>
<td>-</td>
</tr>
<tr>
<td>Avoidant attachment</td>
<td>.139</td>
<td>.332**</td>
<td>.101</td>
<td>.107</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Anxious attachment</td>
<td>.008</td>
<td>.150'</td>
<td>.029</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Extraversion</td>
<td>.107</td>
<td>.175'</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>.428**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

* p≤ .05 & ** p≤ .01

Regression analysis was performed to assess the moderating effect of personality traits on the relationship between attachment style as the predictor variable and attitude to drugs as the criterion variable. Based on Baron & Kenny’s model (1986), hierarchical regression analysis is a reasonable statistical method to evaluate the effect of moderating variable on the significance of the relationship between the predictor variable and criterion variable. To this end, the main effect of the predictor variable and the moderating variable on the criterion variable and also the interaction effect of predictor × moderating variables on the criterion variable should be examined (Frazier, Tix & Barron, 2004). The results of the analysis are presented in the table below.
### Table 3: Regression analysis representing the moderating effect of personality traits on the relationship between attachment style and attitude to drugs

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor variables</th>
<th>Criterion variable: attitude to drugs</th>
<th>$F$</th>
<th>$\Delta R^2$</th>
<th>$t$</th>
<th>$\beta$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Secure attachment style</td>
<td>3/096 0/048</td>
<td>-0/376</td>
<td>-0/027</td>
<td>0/707</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Avoidant attachment style</td>
<td>2/714 0/007</td>
<td>-0/016</td>
<td>0/077</td>
<td>0/283</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anxious attachment style</td>
<td>1/076 0/263</td>
<td>-0/027</td>
<td>0/077</td>
<td>0/283</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderator variable</td>
<td>Psychoticism</td>
<td>0/032</td>
<td>-0/061</td>
<td>0/230</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neuroticism</td>
<td>2/349 0/020</td>
<td>-0/061</td>
<td>0/020</td>
<td>0/230</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extraversion</td>
<td>-1/205 0/087</td>
<td>-0/061</td>
<td>0/087</td>
<td>0/439</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Predictor × moderating</td>
<td>Avoidant attachment × psychoticism</td>
<td>0/960 0/044</td>
<td>-0/093</td>
<td>-0/011</td>
<td>0/926</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Avoidant attachment × neuroticism</td>
<td>1/910 0/050</td>
<td>-0/093</td>
<td>-0/011</td>
<td>0/926</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Avoidant attachment × extraversion</td>
<td>-1/105 0/271</td>
<td>-0/093</td>
<td>-0/011</td>
<td>0/926</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As shown in the table above, the results of the first step suggested that the scores of avoidant attachment style are predictors of attitudes toward drug use in such a way that this style accounts for 4.8% of the variance in attitudes towards drug use. In the second step, the scores of extraversion, psychoticism, and neuroticism as moderators entered regression analysis to assess the predictive power of personality traits on the attitude towards drugs. The results of the second step revealed that 3.2% of the variance of attitude towards drug use is accounted for by neuroticism. Since only the relationship between drug use and avoidant attachment style was significant, the interactive effects of each of the personality traits on avoidant attachment style was examined in the third step in order to assess the moderating effect of personality traits on the strength of the relationship between attitude towards drugs and attachment style. The results of this indicated that only neuroticism among personality traits was moderator of the relationship between attitude towards drugs and avoidant attachment style.

### Discussion and Conclusion

The aim of this study was to investigate the moderating role of personality traits in the relationship between attachment style and attitude towards drugs. The results showed that avoidant attachment style can be a predictor of attitude towards drugs and neuroticism can moderate this relationship. This result is consistent with that of the studies done by Paulk & Zayac (2013), Doumas, et al. (2006), Molnar, et al. (2010), Thorberg, & Lyvers (2010), and Williams & Kelly (2005). Attachment style plays an important role in dealing with difficult situations of life and coping with stress. According to Williams & Kelly (2005), unsafe people turn to drug use as a mechanism of self-treatment for the suppression of their negative emotions and affects. Factors such as the lack of proper interaction between the child and the mother, emotional deprivation in childhood, low confidence, and the great distance between parents and children reduce one’s ability in coping with stressful situations and lead him/her to drug...
use (Vakalapi, Harrison & Janzen, 2001). According to Bowlby, the first attachment relationships lead to the growth of internal working models that include information about self, others, and the relationships between them. These models specify one’s performance during the life and shape his/her personality traits (Hinnen, Sanderman & Sprangers, 2009). When children do not consider their emotional source as responsible and accessible, avoidant attachment style is activated in them. The most characteristic feature of such people is that they regard self and others negatively and become neurotic and anxious since they do not feel secure in this relationship. Therefore, they make some efforts to overcome negative emotions, and maximize or minimize attachment needs and, accordingly the level of vulnerability in them raises (Hirschi, 1969). Moreover, Kaplan’s self-derogation theory (1980) can also explain the results of the current study. According to this theory, people with insecure attachment style may try to acquire a sense of social acceptance and self-worth by tendency to unconventional communities and groups. In this context, there is often the possibility of visiting and communicating with the friends and relatives involved in drug use. From another point of view, high scores in neuroticism can be associated with a lack of emotional stability in people (Rahmanian & Jenna, 2013). Therefore, a person with avoidant attachment style and without emotional stability feels insecure and, thereby, tends to dependence on an affective source. Since these people have experienced the loss of this source, they have a higher tendency to use drugs in order to achieve stability. It is evident that there is lack of confidence and self-regulation in individuals with insecure attachment style. Since they feel rejected from the social network due to lack of family support, they feel that they do not have any control over life and become disappointed by feelings of guilt and despair. As a result, they experience intense anxiety and stress, which leads to the lack of compatibility with problems. Then, they tend to risky behaviors such as drug use to control their mental conditions. Daringly, it can be claimed that the main cause for the tendency of people with avoidant attachment to addiction is high correlation with neuroticism and difficulty in making relationships (Kassel, et al., 2007). In fact, if people with avoidant attachment are considered as people with anxiety and low self-esteem, it will be clear that placement in a reliable relationship is difficult for such people and failure in communicating along with rejection lead them to seek a secure base. According to the above-mentioned points, insecure attachment and neuroticism can be associated with tendency to drug use in that both of the variables have commonalities in terms of anxiety. On the one hand, drug use is opted for to reduce anxiety in making interpersonal relationships; on the other hand, drug use is selected as a safe base at hand and one sets him/herself in a position where there is no need for establishing any relationships with others. Avoidant attachment style provides one with such conditions that breeds neuroticism. This causes the devastation of relationships and tends one to a direction where there is a weaker need for relationships. In
fact, this state is secure for such people. The results of this research can have many applications and implications towards the development of training and treatment programs to prevent drug use in the vulnerable population. Since the present study was conducted only on a sample of students, it is recommended that future research be carried out on another setting other than university and on a sample with different educational levels.

References


Abstract

Objective: This study was an attempt to evaluate the effectiveness of the application of theory of choice in quality of life and resiliency of male drug users in Tehran. Method: An experimental research design with pretest-posttest and control group was employed for this study wherein 40 drug users were randomly selected from a governmental center. The experimental group was exposed to twelve 90-minute intervention sessions of theory of choice. Then, both groups were tested. The follow-up was performed two months later. Quality of life questionnaire and Connor-Davidson resiliency scale were used for data collection purposes. Results: The results of this study showed that the application of theory of choice had an impact on quality of life and resiliency. This finding was actively present in the follow-up, as well. Conclusion: This Method can be used to treat addicts.

Keywords: Theory of Choice, Quality of Life, Resiliency, Addiction
Introduction

Almost all people in today’s society are familiar with the personal, familial, social and economic damages of addiction and the range of this familiarity is on the increase. Considering the extension and pervasiveness of addiction, it is assumed that prevention of people from becoming involved with substance abuse is easier than its treatment. Addiction can be viewed as a physical, mental, and social disease that several factors are involved in its formation (Galanter, 2006). Narcotic drugs and addiction to them have ruined the lives of many people and have endangered the convenience of individuals, the political, economic, and social development of the society, even the security of streets, and also the stability of governments. Such despicable side effects are prevalently available in the individual and mental, in social sector, and in the macro-level of the society. Social and economic damages of drug abuse impose intolerable pressures on the social infrastructure of a country. Illegal production and distribution of drugs have deviated the vast human and natural resources from productive activity and, thereby, undermine the foundation of economic growth in the long term. Health is considered as one of the main foundations of human life and essential conditions for playing social roles. Humans, especially the groups whose health is somehow at risk (addicts) can desirably keep on their collective and individual activities if they feel healthy and their society is healthy, as well (Bakhshipour Roodsari, 2001). In order to improve the health of addicts, different theories of treatment are used, one of which is Glassre’s theory of choice. In this theory, it is assumed that all behaviors are goal-oriented and motivated from inside of the human beings. The goal of each behavior is to satisfy one of the five basic needs, namely survival, belonging, power, freedom, and enjoyment needs. According to the theory of choice, people select specific actions and behaviors to meet their needs when they are unable to satisfy their needs. This theory explains how we as human beings start making selection to obtain what we want. In addition to treatment, counseling, and management, this theory can open up a new window to life for drug users and increase the amount of responsibility in such people (Glassre, 2011). Theory of choice can be effective in improving the quality of life. Quality of life is a broad concept that encompasses all dimensions of life, including health. Quality of life literally means how to live. However, this concept is uniquely different for each person. The World Health Organization has provided a comprehensive definition of quality of life: one's perception of his/her current situation with respect to the culture and value system in which s/he lives and relates these feelings to his/her goals, expectations, standards, and priorities. Different factors such as economic, cultural and spiritual ones impact people’s quality of life. Quality of life is consistent with one’s life and is measured by individuals. It is possible that one feels deeply satisfied with his/her life despite having an unsuitable living environment. One’s self-assessment of his/her health and well-being is a key
factors in the studies on quality of life; in other words, his/her judgment on him/herself is of special importance (Salehi & Rostami, 2000).

Another variable in relation to mental health is resiliency that causes higher adaptation of humans to the needs and threats of life (Samani, Jokar & Sahrargard, 2007). Psychologists have found that life stressors can undermine one’s mental health and social function and cause psychological damage. Some people successfully experience stressful events without undergoing any mental illness or experiencing any loss in their mental health (Waugh, Fredrikson & Taylor, 2009). Research on this phenomenon has led to the emergence of another research domain named resiliency. Resiliency is defined as a capability process to cope successfully with threatening conditions. In other words, resiliency is positive adaptation in response to adverse conditions (Samani, et al., 2007). This concept does not only mean stability against damages or threatening conditions, but also refers to active and constructive conditions of a person in the environment. Resiliency is one’s capabilities in establishing a bio-psychological trade-off in dangerous conditions (Conner & Davidson, 2003). People with resiliency are flexible, have alternative solutions, adapt themselves to environmental changes, and quickly become recovered after the elimination of stressors. People who are placed at the lowest extreme of resiliency adapt themselves to new situations slightly and restore to normal and natural states from stressful situations slowly (Siebert & Kaasa, 2007). Since life is full of challenges and stressors, people require the means to deal with these conditions. According to the above-mentioned points, this study is an attempt to examine the effectiveness of theory of choice in quality of life and resilience of drug users among drug users in Tehran.

Method

Population, sample, and sampling method

An experimental research design with pretest-posttest and control group was employed for this study wherein both groups were administered to the pre-test before the conduct of intervention. The experimental group was exposed to twelve 90-minute intervention sessions of theory of choice and the post-test was carried out at the end of the intervention. The follow-up was performed after two months.

The population of the study includes all those drug users who has passed withdrawal course in 2012 and had referred to one of the addiction treatment centers in the Welfare Organization. Thus, 40 drug users were randomly selected from among the patients referred to the treatment center and, then, were randomly assigned in two groups, i.e. experimental (n = 20) and control group (n = 20).
Instrument

1- Quality of life questionnaire: In this study, the short-form 36-item health survey: SF-36 was used. This scale consists of eight sub-scales, namely vitality, physical functioning, bodily pain, general health perceptions, physical role functioning, emotional role functioning, social role functioning, and mental health. This questionnaire has been validated on the Iranian population. It enjoys acceptable validity and reliability and seems to be consistent with the social and cultural context of Iran (Hassanpour, et al. 2007). In this study, Cronbach's alpha for the total scale was obtained equal to .93.

2- Connor-Davidson resilience scale: This scale was to measure resiliency and contains 25 items and five sub-scales, namely personal competence, trust in one’s instincts/ tolerance of negative affect, positive acceptance of change/ secure relationships with others, control, and spiritual influences. This scale is scored based on a 5-point Likert scale (from strongly disagree = 0 to strongly agree = 5). The validity and reliability of this scale were confirmed in national studies, as well (Samani, Jokar & Sahragard, 2007). In the present study, Cronbach's alpha method was used to determine the reliability of the above-mentioned questionnaire which was obtained equal to .71.

Results

The mean age of the participants in the experimental group was 27.30 years and this value was 26.85 years for the control group. The experimental group consisted of 13 single and 7 married participants while 10 participants were single and 10 participants were married in the control group. Multivariate analysis of variance was used to evaluate the effectiveness of intervention in quality of life and resiliency. The results of this analysis proved the effectiveness of the intervention (P<.001, F =326.90, Wilks Lambda=.05). Univariate analysis of variance was used to examine differences in patterns as follows.

Table 1: Univariate analysis of variance representing the effectiveness of the intervention

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of life</td>
<td>1773.96</td>
<td>573.05</td>
<td>.0005</td>
<td>.94</td>
</tr>
<tr>
<td>Resiliency</td>
<td>16212.58</td>
<td>156.41</td>
<td>.0005</td>
<td>.81</td>
</tr>
</tbody>
</table>

As observed in the above table, there is a statistically significant difference between the two groups in both variables.

Multivariate analysis of covariance was performed to evaluate the maintenance of the effectiveness of the intervention in the follow-up scores. The results proved the maintenance of the effectiveness of the intervention (P<.001, F =508.80, Wilks Lambda=.03). Univariate analysis of covariance was used to examine differences in patterns as follows.
Table 2: Univariate analysis of covariance representing the effectiveness of the intervention

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of life</td>
<td>29212.64</td>
<td>762.38</td>
<td>.0005</td>
<td>.95</td>
</tr>
<tr>
<td>Resiliency</td>
<td>16249.70</td>
<td>358.90</td>
<td>.0005</td>
<td>.90</td>
</tr>
</tbody>
</table>

As it is observed in the above table, the effectiveness of the intervention has been maintained in both variables.

Conclusion and Discussion

The current study aimed to evaluate the effectiveness of the application of theory of choice in quality of life and resiliency of drug users. The results of this study showed that theory of choice has led to the increase of quality of life both in the post-test and follow-up stages. This finding is consistent with the results of the studies done by Hojati, Aloostani, Akhundzadeh, Heydari & Sharifnia (2010); Beygi, Farahani, Mohammadhkhani & Mohammadi\(\text{a}\)far (2011); Alipuri Niax, Rafi’ea, Setareh Foroozan & Talebi (2009); Najafi, Zarrabi, Kafi & Nazifi (2012), Amiri, Yekeh Yazdandoost & Tabatabai (2011), and Torrens, et al. (1997). Quality of life includes one’s physical health, psychological status, social relationships, and personal and spiritual beliefs and is evaluated based on subjective experiences of individuals. The purpose of training choice theory is to raise one’s mental experiences and make his/her life better. Therefore, those who receive training in the theory of choice and become familiar with it can help raise their quality of life. As a result of familiarity with this theory, they forget about external control, do not regard others as the cause of their problems, make correct decisions and choices, and seek to resolve their problems. All these factors considerably assist increase the quality of life, one variable of which is calmness. The theory of choice teaches a coherent concept of human behavior and invite people to turn to the psychology of internal control and distance from external control. Experiments have shown that one will be put in the course of a long-term and an effective change if s/he is able to convert his/her belief in external control and coercion into an awareness and correct knowledge of choice. As a result, such a person ends concentration on the past and the blame of others’ deeds and behaviors; and s/he becomes ready to choose more effective behaviors. When people become familiar with their needs and become convinced that their current behavior, that is, drug dependence, prevents them from reaching their goals, they make a decision to change the behavior. This understanding is valuable in improving the quality of life drug dependent people.

In addition, the results of the current study showed that theory of choice leads to the increase of resiliency both in post-test and in follow-up stages. This result is consistent with that of the studies conducted by Besharat (2007), Rahimian Boogar & Asgharnejad (2008), Samani, et al. (2007), and Waugh, et al. (2009). To count for this finding, one can argue that resiliency is an important art in life...
and self-trust lies at the center of resiliency. Resilient people do not allow difficulties to limit them. They achieve resiliency by moving towards their goals. They regard hard times as fleeting problems and, accordingly, can overcome pain and sorrow. People who are grown up in families with high resiliency learn lessons from past experiences and are less likely to develop substance abuse. A family with problems may really cause substantial damage on society, but resilient people fight against such problems and actively and creatively respond to these actions. Their clever responses to the difficulties are added to their inner conscience as lasting power. The purpose of training choice theory to substance abusers is to make them aware of the fact that the increase of self-esteem leads to better and more efficient resiliency. Theory of choice informs people of such resiliency and attempts to empower this feature. As five basic needs are mentioned in training theory of choice and one of them is independence and freedom, the achievement of independence and freedom is one way to gain resiliency.

In brief, it can be concluded that any person in any environment can benefit from theory of choice since it is a process-oriented treatment rather than a technique-oriented treatment. Therefore, it is recommended that this theory is used and taught in treatment centers and centers of counseling services, especially in the treatment of addicts.

Reference


Abstract

Objective: This study was an attempt to explore the structural relationship between religious involvement, religious struggle, attitude to drugs, social modeling, spiritual well-being, and cigarette and tobacco smoking among students. Method: For this purpose, 504 male and female students from Kharazmi University, Agricultural Paradise, and Azad University of Karaj were selected by cluster sampling and they were asked to complete spiritual well-being scale, religious involvement scale, religious struggle scale, social modeling scale, negative beliefs about drugs, and the tobacco section of the high-risk behavior questionnaire. Results: The results showed that the effect of religious involvement on cigarette and tobacco smoking was mediated by negative beliefs about drugs, social modeling, spiritual well-being, and incentives for drug use. Similarly, the effect of religious struggle on cigarette and tobacco smoking was mediated by spiritual well-being. Conclusion: It seems that religion prevents people joining the unhealthy peer groups by the establishment of moral discipline, internal and external rules, and healthy coping styles; therefore, people get less attracted to cigarette and tobacco smoking. Accordingly, these factors should be paid more attention in prevention programs for drug use, particularly cigarette and tobacco that are considered as the gateway to other drugs. Keywords: Drug Use, Spirituality, Social Modeling, Attitude to Drugs, Students
**Introduction**

Lifetime prevalence of use and abuse of drugs have been reported to amount to 49 percent among adolescents, aged 20-19 years old, and 72 percent at the age of 27 years old (Johnston, O’Malley, Bachman & Schulenberg, 2009; Substance Abuse and Mental Health Services Administration (SAMHSA), 2009). Drug use among adolescents leads to death and injury and it brings about educational problems, conflicts and clashes and sexual behavioral issues for students. Adolescence is not only an important development period and the peak of prevalence of drug use and the problems associated with it, but it is also the stage of entry into adulthood (Arnett, 2005). At the end of this period, many young people start taking the duties and responsibilities of adulthood. Successful transition to adulthood roles is dependent upon absence of substance use and absence of antisocial behavior and delinquency (Ston, Becker, Houber & Catalano, 2012).

Given the importance of substance abuse, the gateway to it should be assigned more importance. Many experts believe that cigarette smoking is a prelude to resort to the use of other substances and refer to it as a gateway to drug use (Schmid, 2001). Tobacco use, mainly in the form of cigarette, holds the highest mortality rate compared to other drugs and alcohol (U.S. Department of Health and Human Services, 2010) and is one of the most widely used substances among adolescents (Johnson et al.). Smoking, especially cigarette smoking, is expected to be the leading cause of death in 2030 (Mecklenburg, 1992). Among the adults who smoke cigarette every day, 82 percent have experienced their first cigarette smoking before the age of 18. Roughly, half of adolescent cigarette smokers continue this act until they die of smoking-related diseases (U.S. Department of Health and Human Services). Study of cigarette smoking among students is of special importance since the smoking behavior of students is a useful indicator of smoking by young people. On the other hand, students being considered a role model to young students plays an important role in increasing or decreasing the prevalence of smoking in the general population (Rigotti, Lee & Wechsler, 2000). In the two decades of research on the prevalence of drug use among students at Iranian universities, cigarette and hookah have gained the first rank among different substances (Sarrami, Ghorbani & Taghavi, 2013). Thus, according to the importance of adolescence, a proper strategy should be devised to immunize adolescents and prevent substance use. Prevention is based on the decrease of risk factors and increase of protective factors in the individual and the environment during the development period (Connell, Boat & Warner, 2009). These factors are psychological, familial and social; here, the role of religion/spirituality assumes significant individual and social importance since it is dominant over different aspects of human life.

Spirituality and religion are complex, multi-dimensional, and interrelated structures. However, spirituality refers to subjective, experimental, and personal
dimensions of excellence, while religion puts emphasis on social and objective dimensions and presents a cultural framework that helps legislation. Moreover, it is possible to build spiritual experiences by providing culturally acceptable explanatory and enlightened models (Cholz & Valach, 2008). Spirituality can be defined as a search for sacred items and religion is the social fabric of this search (Pargament, 2007). Religion/ Spirituality can be used as an extensive and wide structure with diverse specific areas (Johnson, Sheets & Kristeller, 2008). Religion/ spirituality can be considered in two sub-categories of religious involvement and religious struggle (Johnson et al, 2008). Religious involvement measures general religious beliefs (Drerup, Johnson & Bindle, 2011). Religious struggle also refers to the incompatible physical and emotional effects that are caused by the feeling of being punished by God, feeling of God's anger and discontent, and feeling of rejection by God (Pargament et al., 2005). Another term that is at play in connection with spirituality and mental health is spiritual well-being that is considered as the mediator of religion/ spirituality and drug use, as well (Drerup et al., 2011). Spiritual well-being refers to the sense of harmony and solidarity towards the self, others, the world, and the perceived supreme power (Ackley & Ladwig, 2002; cited in Tofthagen, 2006). Johnson, et al. (2008) found that religious involvement anticipates high levels of spiritual well-being whereas religious struggle predicts low levels of spiritual well-being. Many studies have examined the relationship between the broad concept of religion and spirituality and addiction to drug use, and have introduced religion/ spirituality as a protective agent against addiction (Faigin, 2008). The review of 265 articles and books published in the area of spirituality and addiction, it was found that 85 percent of the studies on addiction fell within the category of substance abuse and religion/ spirituality (Cook, 2004). In a review article, Booth & Martin (1998) found that religion (e.g. religious preferences and practices) has a negative correlation with substance abuse in teenagers and students. High levels of religious involvement such as attending church was predictor of a drug-free life in the interval of one to fifteen following years. In Iran, several studies have been conducted to investigate this issue. Hajjarian & Ghanbari (2013) concluded that there was a significant negative relationship between tendency to religious points and the level of drug consumption and there was a significant positive relationship between interaction with addicts and tendency to drug use. Moreover, Makarem & Zanjani (2013) showed that religious beliefs and belief in the consequences of drug use play an effective role in reducing drug use. Asghari, Kord Mirza & Ahmadi (2013) showed that religious orientation has an important role in tendency to substance abuse among students. However, relatively few studies have attempted to determine the mechanisms through which religion/ spirituality can impact substance use (Johnson et al., 2008; cited in Drerup et al., 2011). Studies have shown that the relationship between spirituality/ religion and drug use can be mediated by people’s attitudes towards and opinions about drug use (Chawla, Neighbors &
Lewis, 2007). Johnson et al (2008) found that religion/spirituality predicts negative opinions about alcohol consumption; in other words, individuals’ negative attitudes about alcohol use have a negative association with its real consumption. These attitudes include ideas such as "alcohol consumption is a sin", "alcohol consumption is contrary to my personal beliefs and values". Social modeling is another mediator variable. Religious affiliation affects drug use in different ways through social modeling, which include observed norms, dealing with drug use patterns, and some suggestions for drug use (Chawla et al., 2007). Social learning theory and cognitive theory constitute the theoretical foundation of the model presented in the present study. Two well-known theories pertaining to peers are differential association theory (Sutherland & Cressey, 1978) and social learning theory (Bandura, 1986). Theory of differential learning is an interactive approach with an emphasis on the learning process people are involved that makes them show deviant behaviors. This theory assumes that adolescents learn norms, attitudes, techniques, rational excuses (rationalization), and incentives for delinquency through interaction with close friends.

Social learning theory emphasizes the social mechanisms in the learning process of deviant behaviors and assumes that adolescents learn maladaptive behavior through observation, modeling or mimicking the behavior of close associates and also learn the consequences of social strengthening of that learned behavior. These theories express the initial mechanism of the spread of deviant behavior among the network of friends, peers and family. Najaflavi & Navabinejad (2014) found a significant difference between drug-dependent individuals and normal people in profile of the family environment, especially such components as cohesion, conflict, religious orientation, control, achievement orientation, intellectual – cultural orientation, and organization. These results indicate the impact of family and close friends on the acquisition of deviant behavior. Cognitive theories also reiterate the role of beliefs and opinions of individuals about the negative effects of drug use in the onset of drug use. These theories regard individuals’ expectations and attitudes about drugs as the most important factor associated with substance use and believe that other factors, such as personality traits and communication with others exert their effects through the understanding and assessment of the individuals on drugs. Beck believes that certain beliefs under certain circumstances are activated in substance abusers which increase the likelihood of substance abuse. These are completely personal and unconventional beliefs that include predictive beliefs (specific expectations from drugs, such as I become strong if I take drugs), relief-seeking beliefs (sedative properties of drugs, such as if I do not use drugs, propensity to consume now continues.), facilitative beliefs and leniency (substance use is acceptable despite its unacceptable results, such as this is my right to take drugs because I take pains day and night; therefore, it is worth its consequences). Drug-related belief is activated as a result of inner and outer
circumstances. This belief leads to automatic thoughts and ultimately the need and the desire to use drugs (Beck, Wright, Newman & Liese, 1993).

Although numerous studies have explored the relationships of these variables with each other separately, all the variables have not been studied in a model so far. Therefore, this study aims to provide a structural model to show the relationship between substance use (cigarette and hookah), religious involvement and religious struggle, and mediators of the relationship between these two variables, including attitudes to drugs, social modelling, and spiritual well-being.

Method

Population, sample, and sampling method

All the bachelor students of Kharazmi University, Azad University of Karaj, and Agricultural Paradise of Karaj in the first academic semester 2012-2013 constituted the statistical population of this study. The sample of the study consisted of 504 students, including 255 female and 249 male students in different majors of engineering, agricultural, humanities and applied sciences.

Since the possibility of making a list of the population members was not possible, multistage random cluster sampling was used. In this way, four faculties were randomly selected from each university in the first phase; then, from two to four departments were selected from each faculty; at the end, from two to four bachelor classrooms, except the freshmen of the academic year 2012, were selected out of each department. Indeed, the total of 520 participants completed the questionnaires, out of whom 16 participants did not deliver complete questionnaires and, thereby, were excluded from the sample. Therefore, a 504-participant sample in the 19-to-25-year-old age group constituted the final sample of the study.

Instrument

1- Youth Risk Behaviors Scale (YRBS): This scale was used to measure the degree of cigarette smoking and hookah use. It is noteworthy that this scale has been extracted from the high-risk behavior scale of America’s Control Disease Center (CDC). A set of behavior in contrast with physical health that raise the risk of diseases and social problems and, to a great extent, cause the death of teenagers and adults constitute the theoretical foundations of this scale (Brener, Kaan & Mcmanus, 2002). Based on this questionnaire, high-risk behaviors in domains of driving, violence, smoking, alcohol use, narcotics and psychotropic drugs, nutrition and physical activity, and bad friends are evaluated in terms of frequency, intensity, and tendency to drug use in monthly periods, annual periods, and lifetime within 72 items (Bakhshani, Lashkaripour & Bakhshani, 2007). In this study, the smoking section of the scale was used and the
Cronbach's alpha coefficient for it was obtained .88. This section contains 8 items wherein 4 items are scored via the Likert scale (never to above 40 times) with 0 to 6 points; 2 items are scored with the response range of never up to 17 years old and above with 0 to 8 points; and 2 items are scores based on the Likert scale (never to very much) with 0 to 6 points. High score on this scale is equivalent to more consumption or greater desire for consumption. Brener et al. (2002) calculated the reliability of this scale via test-retest method in a two-week interval and obtained kappa coefficient for all items between .23 and .90. In Iran, Bakhshani et al. (2007) obtained the test-retest reliability coefficient and calculated the kappa coefficient for all the items roughly equal to .85.

2. Social modeling Scale: This scale was used to measure social effects (Reed, Wood, Kahler, Maddock & Palfai, 2003). According to the theoretical basis of this questionnaire, people follow their friends, families, and associates' examples in various fields such as smoking. Accordingly, this questionnaire evaluates tobacco use status of friends, families and acquaintances, friends' opinion about cigarette smoking and hookah, the pressure of the person for consumption from friends, and the dominant ideas about the consumption of one's peers.

This questionnaire encompasses 9 four-point Likert items wherein the choices include such alternatives as strongly disagree to strongly agree, never to so much, never to once a week or more, and never to five times a week. High score mean that the respondent follow his/her friends and acquaintances’ example in high degrees. Cronbach's alpha coefficient of .87 has been reported for this scale. Diagnostic validity for this scale has been reported to be equal to .72. Similarly, the concurrent validity of this test was evaluated with social norm scale, family ties, perceived accessibility, self-control, and assertiveness scales and the resultant coefficients were obtained .62, .49, .45, -.52, and -.65, respectively (Read et al., 2003). The reliability of the questionnaire in this study was obtained .82 via Cronbach's alpha mode and also .79 via test-retest method in a 10-day interval on 60 male and female participants.

3- Spiritual well-being questionnaire: This questionnaire was constructed by Palotzin and Elison in 1982 and consists of 20 items and two subscales. The odd-numbered items of the scale belong to religious well-being subscale which is to assess one's relationship with God. On the other hand, the even-numbered items belong to existential well-being subscale which is dealt with a self-assessment of one's sense of life purpose and life satisfaction. The responses to the items are given based on six-point Likert scale from "strongly agree" to "strongly disagree". It should be noted that reverse scoring is dominant in some items. A high score indicates a high spiritual well-being. Palotzin & Elison (1982) reported the Cronbach's alpha coefficients of religious well-being, existential well-being, and total scale equal to .91, .91, .93, respectively. This scale has been applied for research purposes in various communities such as students, nurses, ordinary people, the mentally ill individuals, and people with physical illnesses.
Several studies have proven that this scale enjoys desired internal consistency and construct validity (Hammermeister, Flint, Alayli, Ridnour, & Peterson, 2005). In addition, the results of confirmatory factor analysis showed that the two-factor model of religious and existential well-being has a high goodness-of-fit among students, which is indicative of the construct validity of this scale. Dehshiri, Sohrabi, Jafari & Najafi (2008) reported the existence of a significant positive correlation between spiritual well-being scale scores and scores of happiness, religiosity; and found a significant negative correlation between the scores of this subscale and the scores of mental disorder. These findings prove the existence of convergent validity and divergent validity of spiritual well-being among the community of students. Bartlett's sphericity test results indicated a significant correlation between questions. The Cronbach's alpha coefficients of this questionnaire on male and female students were obtained equal to .9, .82, and .87 for the total scale, religious well-being subscale, and existential well-being subscale, respectively. In the same way, the reliability coefficients of the total scale, religious, and existential well-being subscales were respectively obtained .85, .78, and .81 via test-retest method. In this study, Cronbach's alpha for the total scale was obtained .92 and this value was obtained equal to .86 and .88 for religious and existential well-being subscales, respectively.

3- Negative beliefs about drug use: This scale includes negative beliefs and negative religious attitudes that people have towards substance use and was constructed by Johnson, Carlisle, Sheets & Kristeller (2008). The beliefs that cause one to regard drug use against his/her values and religion and feel guilty while taking drugs. This scale consists of four items, including "I feel guilty when smoking hookah and cigarette", "Drug use is inconsistent with my personal values and beliefs," "My religion does not approve of smoking hookah and cigarette". This questionnaire was scored based on a four-point Likert scale (it does not matter at all to it is too important). High scores indicate negative religious beliefs and opposition to substance. Cronbach's alpha for this scale was obtained .89 in this study. Moreover, the test-retest reliability coefficient of the questionnaire in this study was obtained .81 by the administration of the questionnaire on 60 participants within a 10-day interval.

3- Inventory of religious involvement: In this study, religion/spirituality included two dimensions, namely religious involvement and religious struggle. Religious involvement measures general religiosity and is a combination of 9 scales: internal religiosity, brief daily spiritual experiences, Pargament’s positive religious coping, positive religious support, organizational religiosity, frequency of saying prayers, personal devotions, subjective religion/spirituality, and objective personal beneficial experiences. In this study, a combination of these scales, including 29 items, was used to measure religious involvement (Johnson et al, 2008). Items 1 and 2 are scored based on a 4-point Likert scale with such alternatives as never, low, medium and high with 0 to 3 points assigned to each alternative respectively. However, items 3 to 14 are scored based on the same
Likert scale but with the following alternatives: strongly disagree, disagree, agree, and strongly agree with 0 to 3 pints. Last but not least, items 15 and 29 are scored with such alternatives as never, sometimes, often, and every day. High score on this questionnaire is tantamount to high degrees of religious involvement. Cronbach's alpha for the total scale was obtained .87 (Drerup et al., 2011). In the present study, the reliability of the questionnaire was measured through Cronbach's alpha that was equal to .95. Similarly, the questionnaire was administered twice on 60 participants within an interval of ten days and the test-retest reliability coefficient of the scale was obtained .83.

4. Religious struggle scale: Brief Religious Coping Scale (Pargament et al., 1998) is a 14-item instrument that evaluates religious coping strategies and is scored based on a 4-point Likert scale from 1 (never) to 4 (always). This scale is the short form of Pargament et al’s religious coping scale (1998). The scale includes 21 subscales and each subscale consists of 5 items which amounts to the total of 105 items and, thereby, is not suitable for research purposes. Therefore, its short form with two factors has been constructed. Positive religious coping with 7 items, including questions 7, 8, 9, 10, 11, 12, 13, and 14 and negative religious coping with 7 items, including questions 1, 2, 3, 4, 5, 6, and 7 are the two factors of this short form (Yeu, 2010). Negative religious coping is indeed a struggle that one has in the face of difficulties and hardships of life about his/her religious beliefs. This struggle can be reflected in such beliefs as doubting the power of God, abandoning hope in God, becoming angry with God, doubting the existence of God, expiating his/her sins, and being punished by God. High scores on this scale indicate high religious struggle in a person. In this study, negative religious coping scale was used to measure religious struggle. This scale enjoys high internal consistency and construct validity. Cronbach's alpha for negative religious coping scale has been reported to be placed in the range .69 to .81. (Pargament et al., 2000). In this study, Cronbach's alpha for negative religious coping scale was obtained .70. In addition, the test-retest reliability of the questionnaire was obtained .76 by administering the questionnaire to 60 male and female participants twice within a 10-day interval.

**Procedure**

After sampling and random selection of faculties, departments and classrooms, it was planned with the instructor of every classroom to allow the students to fill in the questionnaire during 20 to 25 minutes at the beginning of the class in a relaxed atmosphere. At first, some short explanation was provided about the theme of questionnaires and the response procedure. They were explained that the questionnaire should be filled in anonymous format, it has research purposes only, and contains various issues that must be answered individually and with precision, accuracy and completeness. They were also asked to raise their
possible questions about each of the items. All questionnaires were completed at the beginning of classes before noon in collaboration with university professors in order to raise the precision and concentration of the participants. In all classes, the average number 20 to 30 participants was randomly selected to answer the questionnaires. Overall, the administration of questionnaires took six weeks.

**Results**

From among the 504 participants of the sample, the number of 255 students (49.4%) was female and the number of 249 participants (50.6%) was male. Demographic data of the sample are provided in the table below. As shown in the table, the number of 266 ones (52.8%) was selected from Kharazmi University, 162 ones (32.1%) from Azad University of Karaj, and 76 ones (15.1%) from Agricultural Paradise. In terms of academic majors, it is noteworthy that the number of 184 students (36.5%), 76 students (15.1%), 93 students (18.5%), and 134 students (26.6%) was studying Engineering, agriculture, basic sciences, and humanities, respectively. However, a total of 17 participants had not specified their fields of study. Finally, the number of 226 participants (44.8%) lived on campus while the number of 278 ones (55.2%) did not. Descriptive statistics of the variables under study are presented in the table below.

![Table 1: Descriptive statistics of the variables under study](image)

Correlation matrix of the variables under study is presented in the table 2.

The main objective of this research is to achieve a clear understanding of how religious involvement and religious struggle affect hookah and cigarette smoking through social modeling, negative beliefs about smoking, and spiritual well-being. The test model designed for this purpose will show whether the main hypothesis of this study is confirmed by fitting the model with data obtained from the study population.
Table 2: Correlation matrix of the variables under study

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social modeling</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Negative beliefs about consumption</td>
<td>-0.53**</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Religious struggle</td>
<td>0/02</td>
<td>0/02</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Religious involvement</td>
<td>-0.44**</td>
<td>0/66**</td>
<td>-0/08</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Spiritual well-being</td>
<td>0/06</td>
<td>0/002</td>
<td>-0/1*</td>
<td>0/002</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cigarette smoking</td>
<td>0/52**</td>
<td>-0/45**</td>
<td>-0/05</td>
<td>0/38**</td>
<td>0/04</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Hookah use</td>
<td>0/66**</td>
<td>-0/57**</td>
<td>0/38**</td>
<td>0/31**</td>
<td>0/09</td>
<td>0/57**</td>
<td>1</td>
</tr>
</tbody>
</table>

*P< 0.05, **P< 0.01

Figure 1: The proposed structural model of drug use among students

The results of the test model show its acceptability via fitness indicators. These indicators and the corresponding values are presented in the table below.

Table 3: Fitting indexes of the model

<table>
<thead>
<tr>
<th>SRMR</th>
<th>IFI</th>
<th>NFI</th>
<th>RFI</th>
<th>RMSEA</th>
<th>CFI</th>
<th>GFI</th>
<th>Df</th>
<th>χ²/df</th>
<th>χ²</th>
</tr>
</thead>
<tbody>
<tr>
<td>.05</td>
<td>1</td>
<td>.96</td>
<td>.95</td>
<td>.06</td>
<td>.93</td>
<td>755</td>
<td>3.38</td>
<td>2552.35</td>
<td></td>
</tr>
</tbody>
</table>

The results indicate the GFI obtained in this study is equivalent to .93. Since the values equal to or greater than .9 are acceptable for this indicator, it can be concluded that the model has a desired goodness of fit according to this index. The value of NFI in this model is .96. This value within the range of .9 to .95 is considered acceptable and this value above the range is excellently acceptable. Therefore, the index represents a good fit of the data with the model. In addition, the CFI value for the model is equal to 1 and it is conventionally agreed that this value should be higher than .90. Thus, this value represents the high fitness of the model. Since the obtained Root Mean Square Error of Approximation, that is, .06 is lower than the criterion value of .1, the model enjoys a good fit. The index of 2/dfχ is assigned importance for the fit of models which is desired to
range from 2 to 5. This value for the present model is 3.38. In general, it can be concluded from the above indexes that the model enjoys an average and higher fit. The results of squared multiple correlation for endogenous variables are as follows: .78 cigarette smoking, .80 hookah use, .63 incremental incentives, .97 social incentives, .84 coping incentives, .72 negative beliefs about consumption, .43 social modeling, and .51 spiritual well-being.

**Discussion and Conclusion**

According to results of this study, the effects of religious involvement on cigarette and hookah smoking was mediated by social modelling, spiritual well-being, and negative beliefs about drugs and effect of religious struggle on cigarette and hookah smoking was mediated by spiritual well-being. These results are consistent with the findings of the studies conducted by Johnson et al. (2008) and Drerup et al. (2011). Furthermore, the results showed that the relationship between religious involvement and cigarette smoking is mediated by negative attitudes and beliefs on drugs. These results are consistent with findings of the studies carried out by Chawla et al. (2007) and Johnson et al (2008). To explain these relations, it seems that religion can specify some norms with the establishment of internal and external rules and regulations and direct one to hold the beliefs and attitudes that creates immunity against the drugs. The effects one’s spiritual and religious beliefs have on how s/he interprets the events facilitate the adaptation and acceptance process of events (Cotton, Larkin, Hoopes, Cromer & Rosenthal, 2005). According to the perspective of social development, commitment and attachment to social institutions such as family, school, and religion create healthy beliefs and clear standards that lead to healthy behaviors, as well. (Hawkins & Weis, 1985). Thus, the opinions and attitudes that religion create towards cigarette and hookah smoking and the sense of commitment and value that one has towards these beliefs cause immunity against cigarette and hookah smoking.

In another part of the model, the results showed that religious struggle affect cigarette and hookah smoking that was mediated by spiritual well-being. This finding is consistent with that of the study undertaken by Johnson et al (2008). To explain these results, Fagin believes that people who feel they are separate from religious services, receive little spiritual support from the close people in their lives. The individual who has some conflicts, questions and tensions, such as anger toward God, in the relationship with God might come down with pervasive effects on his/her physical health and spiritual well-being. Anger towards God is triggered by lower mental health and weaker coping strategies due to the sense of abandonment from God and is likely to convert the positive and constructive effect of spirituality into negative and destructive effects. This puts one’s mental system in need of alternative coping strategies. These strategies can include cigarette and hookah smoking and might be used as an
easy and available solution to relieve the mental suffering and pain. On the other hand, spiritual well-being reinforces psychological functions and compatibility; and makes people hate drugs and deal with problems through such strategies as self-awareness, communication and bonding with family, social support from others, confidence, meaningfulness, becoming goal-oriented in life, and effective coping and compatibility with problems. People with interpersonal and intrapersonal religious questions and doubts may feel deficiency in purpose, meaning, or organization; therefore, they cannot make sense of their lives and find answers to these questions. They may feel spiritual void and be looking for a new form of meaning, including the destruction of these habits fill this vacuum.

In line with this approach, Gorsuch & butler (1976) suggest that some people use drugs as a way to escape from their mental suffering. On the contrary, those people with strong and stable religious beliefs may have an eternal source of meaning at the core of their lives. For such people, a high sacred power becomes an organized force that directs the individual to useful routes in life and brings about a life free from high-risk behaviors such as cigarette and hookah smoking.

Overall, the results suggest that religious involvement and religious struggle predicts cigarette and hookah smoking through mediator variables such as social modeling, negative beliefs about smoking, and spiritual well-being. Social modeling is directly associated with cigarette and hookah smoking. Religion influences one’s attitudes with the establishment of internal and external rules, religious beliefs provide one with higher strength and power to cope with personal, educational, and psychological stressors; therefore, s/he will be inclined, to a lesser extent, to such friends or groups wherein there is a high possibility of drug abuse in order to avoid such stress. On the other hand, positive religious copings are sources social and affective support. Thus, the individuals who take advantage of these copings in their daily lives suffer from lower degrees of depression and anxiety, do not seek for short-term relief, do not need to be accepted by their addicted friends, and, thereby, are less directed to cigarette and hookah smoking.

Since the proposed model of the study was conducted on student population with a limited sample, one of the major limitations this study suffers from is that the generalization of this model to other populations must be done with care and caution. Indeed, it needs further research on adolescents, adults and the samples with more participants. In this study, the consumption of other drugs and alcohol was not examined; therefore, the generalization of the findings to other drugs and alcohol need more extensive research and cooperation of the authorities. Since students constituted the sample of this study, it was not known whether or not they use or abuse other drugs and alcohol. Therefore, it further research is recommended to be done with control of these factors. Finally, with regard to Iran’s religious atmosphere and the existence of some rules, response to the religious struggle questionnaire has been possibly followed by some limitation. In fact, the topic of religious struggle and concepts such as casting doubt on the
power of God, thinking about the non-existence of God, and casting doubt on the love of God towards humans are taboo subjects in Iran’s society. Therefore, answering questions in this respect may be associated with bias and dishonesty.

Reference


