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The Mediating Role of Time Perspective in the Relationship between General Self-Efficacy and the Tendency toward Substance Abuse in Female Adolescents

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This study investigates the mediating role of time perspective in the relationship between self-efficacy and the tendency toward substance abuse in adolescent girls. A total of 405 adolescent high school girls in Tehran (mean age: 16; SD: 1.01) completed the Sherer general self-efficacy questionnaire, Zimbardo time perspective inventory, and the addiction potential scale. The results indicated that a low level of self-efficacy, high levels of past negative perspective, present hedonistic, and present fatalistic perspectives, low levels of past positive perspective, and futurism predicted an increase in the tendency toward substance abuse among adolescents. On the other hand, the time perspective mediated the relationship between the tendency toward substance abuse and self-efficacy. The findings showed the importance of self-efficacy instruction in primary programs designed to prevent drug abuse among adolescents. Moreover, the preventive programs should include measures to create a balanced time perspective that is, increasing futurism and past positive perspectives, and reducing present hedonistic, present fatalistic, and past negative perspectives.

***Keywords**:* future, past, present, self-efficacy, time

Due to the rapid physical, psychological, social, cultural, and cognitive changes, adolescence could be accompanied with a lot of challenges. Many health risk factors and high-risk behaviors start among the adolescents of the same age (Armstrong & Costello, 2002; Crosby, Santelli, & DiClemente, 2009). A recent study in Iran shows that, in general, 15.1% of the adolescents experience alcohol consumption, which is significantly more among the boys (21.9%) than in the girls (8.4%). 3.1% of the adolescents consume opium and marijuana and 6.5% of them consume Ecstasy (Baheiraei, Hamzehgardeshi, Mohammadi, Nedjat, & Mohammadi, 2013). Since the prevalence of drug experience among the adolescents is increasing and the age of the first experience is decreasing, we are reminded of the necessity for preventive measures. The two concepts of self-efficacy and time perspective are important predictors of the tendency toward substance abuse and alcohol consumption (Ibrahim, Kumar & Abu Samah, 2011; Zentsova & Leonov, 2013; Beenstock, Adams, & White, 2010). The aim of the present study is to combine Bandura's self-efficacy theory (Bandura, 1997) and Zimbardo's theory of time perspective (Zimbardo, 1999) in order to predict the tendency toward substance abuse in adolescents high school girls in Tehran. As a first, this study examines whether the aspects of time perspective predict changes in the levels of self-efficacy as one of the important factors affecting the tendency toward substance abuse.

Self-efficacy is ability by which cognitive, social, emotional, and behavioral skills are effectively organized for the realization of different goals. People's previous knowledge, skills, and achievements are not exact predictors for their future

performance. However, their belief in their ability to perform is a more appropriate predictor of their performance. In fact, self-efficacy refers to the individual's beliefs and judgments about his or her ability to perform certain tasks and meet responsibilities (Bandura, 1997) and it is an important factor in creating the motivation for progress (Schwarzer, 2008). Self-efficacy is associated with continuous planning for future goals (Azizli, Atkinson, Baughman, & Giammarco, 2015). Factors such as the experience of mastery and social persuasion are also important sources of self-efficacy (Bandura, 2012). According to Bandura, drug abuse behavior, on the one hand, is learned by imitation and reinforcement in the area of interpersonal relationships, and on the other hand, is influenced by individual factors such as self-efficacy and individual beliefs (Bandura, 1993). Research findings also suggest that there is a significant relationship between self-efficacy and drug abuse in the adolescents, the more is the self-efficacy, the less is the tendency toward drug abuse (Dolan, Rosemarie, Martin, & Rohsenow, 2008; Tate et al., 2008; McKellar, Ilgen, Moos, & Moos, 2008; Ibrahim et al., 2011).

Time perspective refers to a process whereby people assign the cognitive processes of their experience into categories of the past, the present, and the future. An individual’s type of time orientation and mental focus on time affect the way they assign meaning and order to their life experiences and it is effective for cognitive processes such as decoding, storing, and recalling information (Zimbardo & Boyd, 1999; Anagnostopoulo & Griva, 2011). Zimbardo & Boyd distinguish between five types of time perspective—future time perspective, present fatalistic perspective, present hedonistic perspective, past positive perspective, and past negative perspective. Future time

perspective refers to the effort and planning for future goals and rewards; present fatalistic perspective refers to a general fatalistic attitude, helplessness, and hopelessness toward future and life (Zimbardo & Boyd, 1999). The present hedonistic perspective refers to seeking excitement and new motives, taking advantage of momentary pleasures (Zimbardo & Boyd, 2005), along with impulsivity and lack of concern about the consequences of actions. The past positive perspective refers to the overall positive, warm, and emotional attitude toward the past (Zimbardo & Boyd, 1999). The past negative orientation refers to recalling a chaotic past, a cynical attitude toward the past, and probably, the experience of traumatic life events (Boniwell & Zimbardo, 2004). Research shows that future orientation has an inverse relationship with drug abuse (Henson, Carey, & Carey, 2006; Beenstock et al., 2010). Addicts have high scores in past negative, present hedonistic, and present fatalistic factors (Zentsova & Leonov, 2013); the present hedonistic and past negative time perspectives significantly predict alcohol consumption and substance abuse (Chavarria, Allan, Moltisanti, & Taylor, 2015). Past negative and present hedonistic time perspectives are more associated with the problematic consumption of alcohol and drugs while those who have a more future-oriented perspective consume alcohol less riskily and have healthier behavioral patterns (McKay, Andretta, Magee, &Worrell, 2014; Beenstock et al., 2010).

There is little research on the combined effect of the psychological concepts of self-efficacy and time perspective as the predisposing factors of the tendency toward substance abuse. The role of time perspective as a mediator in explaining the effect of self-efficacy on the tendency toward substance abuse is

important. Findings show that in addition to being associated with the tendency toward substance abuse (Ibrahim et al., 2011), time perspective is also related to self-efficacy (Zebardast, Besharat, & Haghighatgoo, 2011). A person who has high future time perspective will also have high self-efficacy and a person who has high past negative and present fatalistic perspectives will have low self-efficacy. It can be pointed out that self-efficacy can protect individuals from a tendency toward substance abuse in interaction with a balanced time perspective. In fact, self-efficacy is accompanied by balanced time perspective, which is negatively associated with the tendency toward substance abuse. No study has ever examined the interaction between these three factors. However, a few studies that have examined the mediating role of time perspective will be referred to as indirect support. Orkibi & Dafner (2015) studied the mediating role of time perspective in risk factor exposure and mental health in adolescents. The results of their study show that adolescents in danger are not only away from a balanced time perspective and are mentally less healthy compared to their peers, but the relationship between the state of risk and adolescent mental health may be mediated by the time perspective diagram. In another study, Adams (2009) found that time perspective plays a mediating role in the relationship between socioeconomic status and the two health-related behaviors of smoking and physical activity.

In this study, we hypothesized that general self-efficacy has an indirect negative relationship with the tendency toward substance abuse, this relationship being mediated by the aspects of time perspective. The test model is presented in Figure 1.

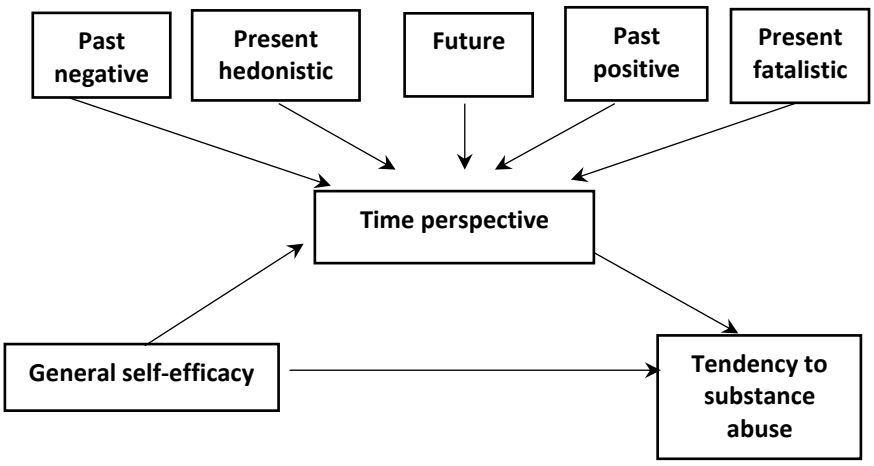

Figure 1. Proposed Model of this Study

Method

The present research follows the descriptive correlational method. The statistical population of this study includes all female high school students in Tehran in 2015–2016. In this study, the participants were selected through the multistage cluster sampling method in three stages, using the sampling units of school districts, schools, and classrooms. The sample size for the hypothesized model test was 405 students (mean age = 16; SD = 1.01); 81 students were selected from each district [north (District 1), south (District 19), east (District 4), west (District 9), and center (District 6)] and 135 students were selected from each grade (first, second, and third). Considering the number of the parameters measured in the model, which include approximately 40 parameters and based on Klein's proposed logic (2005), in this study, for each parameter, 10

participants were selected. The sample size was determined for testing the assumed model of 40 participants.

The participants in the present study answered the questionnaires collectively in their classrooms. The researcher, while referring to the goals of the study, emphasized the voluntary nature of participation by the adolescents in this research, the importance of the questionnaires, and the confidentiality of the information. After distributing the questionnaires and before they were answered, the researcher read out the instructions to all the participants and answered their queries regarding the questionnaires. In order to prevent possible biases in the responses and to strengthen the validity of the collected results, a balancing method was used. Therefore, the order in which the students submitted the questionnaires was changed. The questionnaires that did not respond to all the materials were excluded. Finally, the Pearson correlation tests and simultaneous multivariate regression were used to analyze the findings.

Instruments

General self-efficacy is measured by the general self-efficacy scale (GSES) (Sherer, Maddux, Mercandante, Prentice-Dunn, Jacobs, & Rogers, 1982). The scale measures the individual's beliefs related to his/her ability to overcome different situations. The questionnaire consists of 17 items and is set based on the 5-point Likert scale (from strongly agree to strongly disagree). The items are added to obtain the total score. Sherer et al. (1982) cite the calculated score of .86 for validity through Cronbach's alpha (quoted by Becker & Schaller, 1995). Becker and Schaller (1995) obtained .80 for Cronbach's alpha and Cross (1998) also obtained a score of .86 for internal validity. In this study,

Cronbach's alpha was calculated to be .83 for the self-efficacy scale.

Tendency toward substance abuse is measured by the addiction potential scale (APS) (Weed, Butcher, McKenna, & Ben-Porath, 1992), it is one of questionnaire subscales that consist of three subscales of the addiction potential scale (APS), the addiction acknowledgment scale (AAS), and the MacAndrew Alcoholism Scale- revised (MAC-R). These subscales are derived from the Minnesota multiphasic personality inventory (MMPI-2). This scale measures addiction potential as an indicator of the correlated personality factors of the created addiction disorders and includes 39 questions that can be answered with yes and no. Some questions receive one point for a "yes" answer and others for a "no" answer. Weed et al. (1992) obtained .67 and .77 for the reliability coefficients of the APS in a normal sample of men and women, respectively. Bakhshi Bojed and Nikmanesh (2013) calculated a reliability coefficient of .80 for this scale. In the present study, .63 is the alpha value for the APS scale.

Time perspective is measured by the Zimbardo time perspective inventory (ZTPI) (Zimbardo & Boyd, 1999), which includes 56 items that measure the attitudes and behaviors related to time and includes five subscales—past negative perspective, present hedonistic perspective, future perspective, past positive perspective, and present fatalistic perspective. The items are scored by the 5-point Likert scale item, according to how each case is consistent with the participants' beliefs. In a sample of people aged 15 to 62 years, Zimbardo and Boyd (1999) reported Cronbach's alpha coefficient for the subscales

from .74 to .82. Cronbach's alpha coefficient in the test-retest by Zimbardo and Boyd is reported as follows:
Past negative perspective = .7, past positive perspective= .76, present fatalistic perspective= .76, present hedonistic perspective= .72, and futuristic perspective= .80. In this study, Cronbach's alpha is calculated to be .80 for the total subscales, .76 for past negative perspective, .72 for present hedonistic perspective, .64 for future perspective, .63 for past positive perspective, and .62 for present fatalistic perspective.

In this study, the statistical software SPSS 16 was used for the descriptive statistics indices of the variables (mean, standard deviation and correlation matrix). Then, in order to test the relationships between the latent and the measured variables and the structural relationship in the proposed conceptual model, structural equation modeling (SEM) was used. In order to predict the tendency toward substance abuse, the proposed conceptual model was tested through SEM. Due to the superiority of SEM to the least square techniques and its ability to assess the adequacy of the theoretical models, to compare models and also, to estimate model parameters between different groups, this method was used in the present study. Hu & Bentler (1995–1999) pointed out that some of the multiple indicators present a comprehensive evaluation of the model's fitness. Before testing the hypothesized model by SEM, in the stage of data screening, the assumptions of missing values, multivariate normality, linearity, and multicollinearity were tested and confirmed.

Results

The descriptive measures of mean and standard deviation of the research variables in the sample group of the adolescents are presented in Table 1.

Table 1

Means and SDs for the Variables of the Study

Variables	Subscales	Mean	SD
Self-efficacy	predicted Successfully	17.89	4.04
	Belief in empowerment	20.58	4.71
Tendency to substance abuse	Locus of control and accountability	4.20	1.69
	Communication skills and impulsivity	3.55	1.61
Time perspective	Past negative	34.74	6.73
	Present Hedonistic	54.21	7.73
	Future	44.87	6.52
	Past positive	25.27	4.77
	Present fatalistic	27.51	5.50

Table 2 shows the correlations among the research variables. In this study, the correlations between the aspects of the negative past, the present hedonistic, and the present fatalistic perspectives and self-efficacy was significant and negative and their correlation with the tendency toward substance abuse was significant and positive. Also, the correlation between the aspects of future and past positive perspectives with self-efficacy was positive and significant and their correlation with the tendency toward substance abuse was negative and significant. Finally, the correlation between the aspects of self-efficacy and the tendency toward substance abuse was negative and significant.

Table 2

Correlations among Study Variables

	1	2	3	4	5	6	7	8	9
1. Successfully predicted SE1	1								
2. Belief in empowerment SE2	.57**	1							
3. Locus of control and accountability TS1	-.26**	-.37**	1						
4. Communication skills and impulsivity TS2	-.26**	-.32**	.55**	1					
5. Past negative T1	.50**	.42**	-.32**	-.47**	1				
6. Present Hedonistic T2	.49**	.45**	-.29**	-.22**	.48**	1			
7. Future T3	-.21**	-.33**	.45**	.27**	-.12*	-.15**	1		
8. Past positive T4	-.15**	-.17**	.20**	.19**	-.13**	.07	.29**	1	
9. Present fatalistic T5	.38**	.43**	-.38**	-.48**	.52**	.50**	-.24**	-.04	1

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

The results of the structural model fit indices test with mediation of time perspective including destructive orientation to time (present hedonistic, present fatalistic, and past negative) and manufacturer orientation to time (past positive and futuristic) in the relationship between self-efficacy and the tendency toward substance abuse in Iranian adolescents is reported in Table 3.

Table 3
Fitness Indices of the Proposed Model

Fitness indices	X^2	Df	X^2/df	GFI	AGFI	NFI	CFI	IFI	TLI	RMSEA
The Proposed Model	130.80	22	5.94	.93	.86	.89	.90	.90	.84	.11

The hypothesized model of the structural relationships between self-efficacy and the tendency toward substance abuse was tested in the sample of Iranian adolescent girls with the mediation of time perspective (Figure 2).

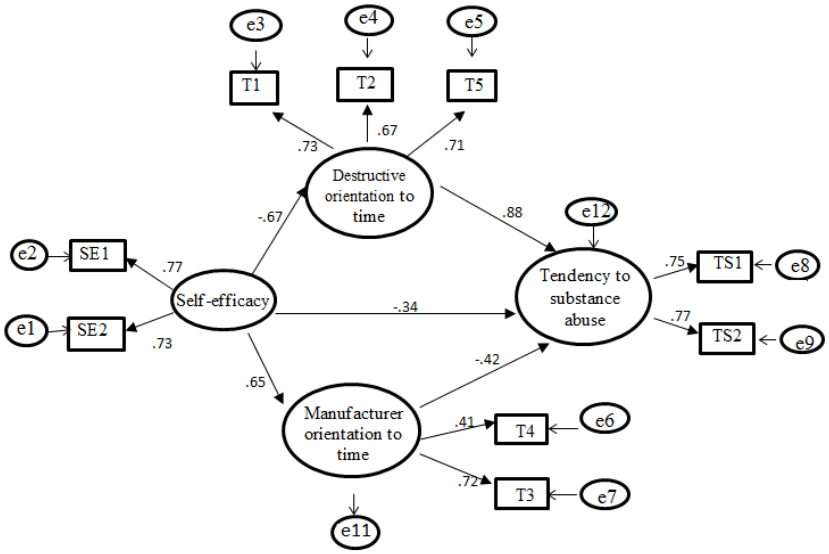

Figure 2. Model of the Relative Mediation of Time Perspective Components in the Relationship between Self-efficacy and Tendency to Substance Abuse

Based on the logic proposed by Hu & Bentler (1999), in order to determine the proposed model fit with the data, based on the above-mentioned measures, a numerical value higher than 2 for the index (df / χ^2), values higher than .60 for the Root Mean Square Error of Approximation (RMSEA), and numerical values of less than .90 for Comparative Fit Index (CFI), Goodness of Fit Index (GFI), and Adjusted Goodness of Fit Index (AGFI) show the need to improve the model.

The model fit test with the data, by using modified model selection, showed that in the latent factors of self-efficacy and destructive orientation to time through the creation of covariance between the remains of errors for the indicator of belief in empowerment and present hedonistic, in the latent factors of self-efficacy and manufacturer orientation to time

through the creation of covariance between the remains of errors for the indicator of success prediction and futurism, in the latent factors of self-efficacy and manufacturer and destructive orientations to time through the creation of covariance between the remains of errors for the indicator of past positive and present hedonistic, after the reduction of 4 units from the modified model freedom, a value 85.339 units is reduced from the numerical value of chi-square values (chi-square) in this model. Figure 3 shows the structural model of relative mediation of time perspective (destructive and manufacturer orientations to time) in relation to self-efficacy and the tendency toward substance abuse. The fitness of the modified model based on the fitness indices is reported in Table 4.

Table 4
Fitness Indices of the Modified Model

Fitness Indices	**X^2**	**Df**	**X^2 /df**	**GFI**	**AGFI**	**NFI**	**CFI**	**IFI**	**TLI**	**RMSEA**
The Modified Model	45.468	18	2.526	.97	.93	.96	.97	.97	.95	.06

In the modified model, a detailed overview of the exact model of the goodness of fit indices shows that the aforementioned model fits the data after modification. In this model, 22% of manufacturer orientation variance to time, 55% of destructive orientation variance to time through self-efficacy, and also 88% of the tendency toward substance abuse variance were determined through self-efficacy, manufacturer orientation to time, and destructive orientation to time. Also, all path

coefficients between the latent variables were statistically significant. The relationship between self-efficacy of manufacturer orientation to time was positive and significant and its relationship with destructive orientation to time and the tendency toward substance abuse was significant and negative. Also, the relationship between destructive orientation to time and the tendency toward substance abuse was positive and significant, and the relationship between manufacturer orientation to time and the tendency toward substance abuse was negative and significant (Figure 3). Finally, the indirect effect of self-efficacy beliefs on the tendency toward substance abuse through destructive orientation to time and manufacturer orientation to time were obtained .58 and .27, respectively, that are statistically significant ($P<.05$).

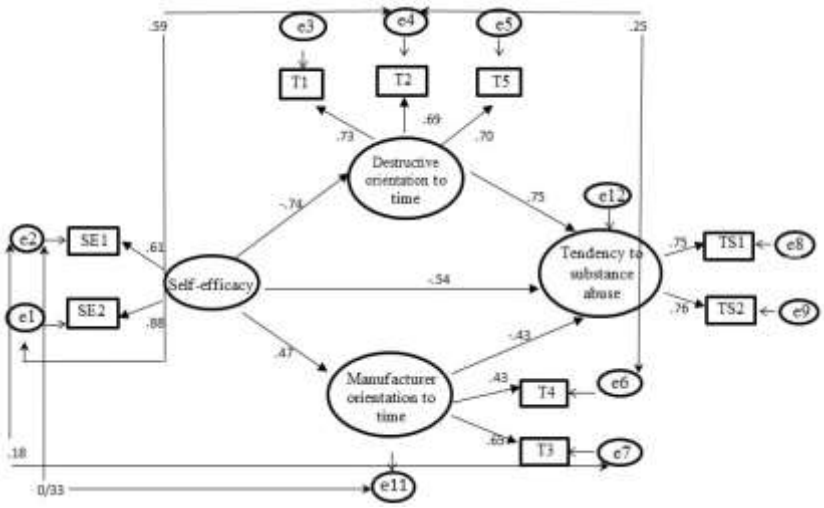

Figure 3. Model of the Relative Mediation of Time Perspective Aspects in the Relationship between Self-efficacy and Tendency to Substance Abuse after Modification

Discussion

In general, the results of the study support the relative mediation of time perspective in the relationship between self-efficacy and the tendency toward substance abuse. In the present study, based on the path analysis, the paths of self-efficacy, destructive orientation to time (negative past, present hedonistic, and present fatalistic perspectives), manufacturer orientation to time, and the tendency toward substance abuse were significant. It can be said that self-efficacy reduces the tendency toward substance abuse by decreasing destructive orientation to time and by increasing manufacturer orientation to time. The results of this study are consistent with the results of the study conducted by Orkibi and Dafner (2015) on the mediation by the time perspective in the relationship between the state of risk and

mental health of adolescents. Our findings are also consistent with the results of the study done by Adams (2009) on the relative mediation by the time perspective in the relationship between socioeconomic status and the two health-related behaviors of smoking and physical activity. One of the characteristics of people with present hedonistic orientation is impulsivity and a lack of concern about the consequences of their actions (Zimbardo & Boyd, 1999), while individuals with self-efficacy constantly plan for the future and long-term goals (Azizli et al., 2015). Thus, the higher the individual's tendency toward the present time and pleasure seeking, the lower is their self-efficacy; consequently there would be no more time for planning for the future, achieving goals, and believing in their ability to deal with different situations. On the other hand, substance abuse can be one of the results of seeking excitement and new motives, taking advantage of momentary pleasures, and not considering the consequences, which is a characteristic of people with this orientation (Boniwell & Zimbardo, 2004). Accordingly, we can say that an individual with self-efficacy can reduce present orientation, pleasure-seeking, and impulsivity by planning for the future, achieving goals, and believing in their abilities. When present hedonistic time perspective decreases, the individual will not be in search of excitement and destructive motives like drug abuse; instead, the individual will look for healthier ways to satisfy their curiosity, thrill-seeking, and pleasure-seeking. An individual with a high present fatalistic orientation has no hope for the future and believes that uncontrollable forces determine his/her destiny (Boniwell & Zimbardo, 2004). We can expect that such a person makes no effort to achieve his/her goals. Thus, the sense of self-control and determining factor of self-efficacy, that is, the

individuals' achievement of goals and successful experiences will not be attained and will be followed by lower self-efficacy. Therefore, with an increase in present fatalistic perspective, self-control, which plays a role in self-efficacy, decreases and when self-control decreases, the tendency toward substance abuse, might increase significantly. People with past negative orientation have a cynical attitude toward past experiences (Boniwell & Zimbardo, 2004), and therefore, are deprived of one of the sources of self-efficacy, that is, having successful experiences (Bandura, 2012). When a person's self-efficacy is low, tension increases. When a person is tense, a capable and efficient person makes greater efforts to deal and cope with the problems but a weak and inefficient person gives up easily and feels anxiety and depression (Bandura, 1997). Drug abuse might be used as a strategy for reducing tension, confusion, and depression in an individual. Beliefs play an important role in the formation of motivation, which is the main factor in strengthening human behavior and efforts to achieve goals (Bandura, 1997). Self-efficacy is one of the most effective factors of motivation (Schwartz, 2008). A person who is motivated plans for reaching his/her goals. In fact, futurism is accompanied by making effort and planning for future long-term goals (Boniwell & Zimbardo, 2004). After planning to achieve goals, the individual hopes to succeed; therefore, he/she would not be depressed and would have a positive attitude and positive thoughts toward the future. Thus, self-efficacy belief as a motivating factor for the individual and planning to achieve goals reinforces hope in the individual and futurism would grow. It seems that a person who uses drugs has low futurism because he/she does not have the ability to consider the

consequences and potential outcomes of his/her present actions and to postpone momentary pleasures. Thus, futurism can function as a barrier against drug use. Generally, a person who has a futuristic time perspective does not get involved in behaviors that might hurt his health (Zimbardo & Boyd, 1999).

A past positive time perspective reflects a positive, warm, and emotional attitude towards past and a high self-esteem (Zimbardo & Boyd, 1999). A person who has low self-esteem is expected to withdraw from family and friends because this low self-esteem is formed during his/her social life and past relationships with people; therefore, he/she will not have a positive feeling toward them and his/her personal experiences in the past. Thus, it can be said that a past positive perspective along with increased self-esteem can lead to the formation of a sense of self-efficacy and help in taking advantage of social persuasion. Thus, if a person's self-esteem is low, he/she might choose drug abuse as a way to compensate for this sense of isolation.

The main limitation of the present study is that only female adolescents participated in the study; as a result, generalization should be performed cautiously. It is suggested that in order to prevent drug abuse, the results of this study should be used in parenting programs to improve self-efficacy through the formation of a balanced time perspective, the ability to delay the enjoyment, and planning for the future in the very years of childhood.

Another suggestion involves planning intervention programs to change the time perspective—steps can be taken through activities to enhance self-efficacy and drug abuse prevention. It is hoped that with the implementation of the interventions in the field of time perspective and further research on the

effectiveness of these interventions, a new step could be taken towards the prevention of drug abuse in adolescents.

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