The Role of Cognitive Emotion Regulation in Drug-Seeking Behaviors in Students

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Abstract

Background: During adolescence, developmental changes related to pleasure structures in brain, and emotion dysregulation may lead to an increase of involvement in addictive behaviors. Thus, the present study aimed to examine the role of cognitive emotion regulation in drug-seeking behaviors in students.

Methods: The present correlational study was conducted in 2021. The subjects included 320 students aged 13 to 17, who participated in this study after our announcement in schools of Tabriz city, Iran. We used the cognitive emotion regulation questionnaire and tendency to drug use scale for data collection. For data analysis, the correlations of the variables were primarily calculated via Pearson correlation method. Afterwards, we used the stepwise multiple regression analysis for prediction of dependent variable.

Results: Acceptance strategy (coefficient= -0.124, P= 0.001), positive refocusing (coefficient= -0.133, P= 0.001), refocusing on planning (coefficient= -0.108, P= 0.02), positive reappraisal (coefficient= -0.589, P= 0.03), and putting into perspective (coefficient= -0.144, P = 0.001) could predict negatively the tendency to drug use in adolescents. Additionally, self-blame strategy (coefficient= 0.114, P= 0.002), other-blame (coefficient= 0.283, P= 0.001), rumination (coefficient= 0.142, P = 0.001), catastrophizing (coefficient= 0.180, P= 0.002) were found to be able to predict the tendency to drug use in adolescents.

Conclusion: The obtained findings revealed that maladaptive cognitive emotional regulation strategies are associated with drug-seeking behaviors in students.

Keywords: Emotion regulation, Drugs abuse, Addiction, Drug abuse, Students

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1. Introduction

During adolescence, developmental changes related to pleasure structures in brain (for example, nucleus accumbens and amygdala), emotion dysregulation, and stress may lead to an increased level of involvement in addictive behaviors (1, 2). Based on the study of Alberts and colleagues (3), one of the most important features in adolescence is «personal fable». According to Personal Fable, some of the adolescents are believed that they are different from others. Therefore, they behave disregarding their behaviors consequences. In fact, it potentially explains risk-taking behaviors in adolescents. Several studies have shown that the combination of personal fable with novelty-seeking traits promotes risky behavior and convinces the adolescent that he/she is not vulnerable (4, 3). In this regard, the study by Galanaki (5) showed that adolescents with personal fable and a high score of sensation-seeking behavior are likely to consume more drugs. Thus, sensation seeking behavior must be considered as the prominent role of emotional problems and regulate emotion. Emotion regulation strategy refers to actions that modify an emotional state (5).

Cognitive emotion regulation (CER) is defined as «conscious mental methods individuals employ to cope with the intake of emotionally stimulating information»

and it consists of four maladaptive and five adaptive strategies. The four maladaptive CER strategies include rumination, self-blame, blaming others, and catastrophizing and they can cause psychological and emotional issues, like sadness, anxiety, and hazardous conduct (6). On the contrary, positive refocusing, refocusing on planning, acceptance, putting into perspective, and positive reappraisal are the five adaptive strategies associated with improved mental health and well-being (7).

Furthermore, studies (8-10) have shown that indices of poor emotion regulation (impulsiveness, reactivity, affective lability) are positively related to substance use among adolescents. It is caused by the increase in the activity of nucleus accumbens and amygdala during adolescence (10). Moreover, certain papers (11, 12) have indicated that emotion dysregulation could be found in various levels of substance abuse and has been found to be strongly linked with the severity and frequency of substance abuse.

High scores on the emotion dysregulation facet, including problem-regulating impulsive behaviors, were significantly associated with high substance use. People with poor emotion regulation strategies are probably more susceptible to risk taking (drug use) as a response to alleviate negative emotions.

Based on some studies (13, 10), there are certain deficiencies related to prefrontal lobe in people exposed to substance use. A meta-analysis (14) from 114 studies related to psychopathology and emotion regulation strategies reported that rumination and emotional repression are associated with substance use disorders while positive refocusing and acceptance did not relate to substances use.

Furthermore, finding the association between emotion dysregulation and problem-controlling impulsive behaviors could be a helpful treatment for people who are dependent on drugs (15).

In summary, emotion dysregulation is obviously a risk factor in substance use disorders. However, the role of cognitive emotion regulation strategies in prediction of tendency to substance use in adolescence still remains unknown and there are a few studies in this regard. Accordingly, we aimed to examine how much cognitive emotion regulation strategies can predict drug-seeking behaviors in students.

2. Methods

The present correlational study was conducted in 2021 in Tabriz, Iran. The subjects included 320 students aged 13 to 17, who participated in this study following our announcement in schools of Tabriz. Herein, we utilized convenience sampling. The inclusion criteria were the age of 13 to 17, being a school student. The exclusion criteria included any serious mental disorders (for example, schizophrenia). A 300-subject sample size was chosen for the study based on the study's objectives and previous studies on the same topic, with a 95% confidence interval and 0.85 power, utilizing power and sample size calculator tools. The sample size of the current research was expanded to 320 individuals due to a 10% attrition rate. In addition, based on the table proposed by Krejcie and Morgan (16) a table for determining sample size for a finite population, for population of 1900 to 2000, 320 subjects is believed to be suitable. Furthermore, the sample size was calculated using the formula proposed by 17. Tabachnick and Fidell (17) for calculating the sample size required for a multiple regression analysis $N \geq 50 + 8m$. Tabachnick and Fidell (17) suggested it is better that we have 30 participates for each predictor variable and in present study we have 9 predictor variables that become 270 participates totally ($9 \times 30 = 270$). Thus, considering the attrition rate of 10%, we considered 320 samples.

The study's objectives were explained to the participants who completed an informed consent form. The Ethics Committee of Tabriz University approved this study with the code of IR. UTBZ. REC. 4263. 1730. Following the ethical approval, the questionnaires were distributed.

Measures

Cognitive emotion regulation questionnaire (*CERQ*): Garnefski and colleagues (18) created this scale for the first time. Self-blame, ruminating, catastrophizing, blaming others, acceptance, positive refocusing, refocusing on planning, putting into perspective, and positive reappraisal are among the 36 items on the scale. It includes a five-point scale with 1 representing (nearly) never and 5 representing (almost) often. They reported the reliability of this scale via Cronbach's alpha, which are 0.91, 0.87, and 0.93. In Iran, the validity of this scale

has been examined with total correlation score with sub-scale scores including the range of 0.40 to 0.68 with a mean of 0.56, all of which were significant. Additionally, the reliability of this scale, using Cronbach›s alpha, has been reported to be 0.82 (19). Furthermore, in the study by Yousefi (20), the validity of this scale through the correlation of negative strategies with depression scores and anxiety in public health scale were 0.35 and 0.37, which were significant. Salehi and colleagues (21), utilizing the Cronbach›s alpha for nine subscales, also reported that all of them were significant. The closest correlation has been reported to belong to positive reappraisal subscale (0.86) and the lowest correlation to acceptance subscale (0.60). In addition, reliability coefficients by test-retest were suitable. These coefficients ranged from 0.40 for catastrophizing to 0.67 for putting into perspective. The concurrent validity of this scale was also examined through the correlation between cognitive emotion regulation strategies and depression scores in scl-90, in which the catastrophizing (0.55), rumination (0.50), acceptance (0.38), blaming others (0.32) and self-blame (0.28) had a positive correlation with depression symptoms. The other strategies had a negative correlation with depression symptoms. Moreover, The CVR (content validity ratio) and the Content Validity Index (CVI) for this scale were 0.81 and 83, respectively (21).

Tendency to drug use scale (TDUS): TDUS was designed by Ghorbani (22) in 2001, in which 30 items measure the tendency to drug use. The reliability and validity coefficients were 0.84 and 0.76, respectively. The CVR (content validity ratio) and the Content Validity Index (CVI), based on the study by Ghorbani (22), were

0.80 and 0.85, respectively, for this scale. A high score of tendency to drug use scale indicates that the subject has an inclination toward drug use. To prevent bias, some items are scored reversely.

Statistical analysis

For data analysis, the correlations of the variables were initially calculated via Pearson correlation and then we used the stepwise multiple regression analysis for prediction of dependent variables.

3. Results

The subjects of the present work included 320 students aged 13 to 17, who participated in this study after our announcement in schools of Tabriz. The inclusion criteria were being 13 to 17 years old, being a school student. The exclusion criteria were any serious mental disorders (for example, schizophrenia).

At the beginning, we examined the baseline demographic variables (Table 1).

Table 1: Baseline demographic variables

Index		Whole sample
Age (mean ± SD)		15.3 ± 4.53
13-year-old		41 (13 %)
14-year-old		53 (16 %)
15-year-old		55 (18 %)
16-year-old		99 (31 %)
17-year-old		72 (22 %)
Gender	Male	224 (70 %)
	Female	96 (30 %)
Education	Secondary School	208 (65 %)
	High School	112 (35 %)

Table 2: Correlation Matrix between Tendency to drug use and adaptive cognitive emotion regulation strategies

Strategy	component	1	2	3	4	5	6
Tendency to drug use		1					
Adaptive cognitive emotion regulation strategies	Acceptance	-0.148[**]	1				
	Positive refocusing	-0.162[**]	0.032	1			
	Refocusing on planning	-0.141[*]	0.015	0.073	1		
	Positive reappraisal	-0.202[**]	0.130	0.122	0.144	1	
	Putting into perspective	-0.194[**]	0.078	0.073	0.024	0.230	1
	Mean (SD)	42.09 (5.40)	12/03 (1.09)	12.05 (1.11)	12.03 (1.05)	12.15 (1.14)	12.13 (1.10)

[*]P<0.05, [**]P<0.01

Table 3: Correlation Matrix between tendency to drug use and maladaptive cognitive emotion regula tion strategies

Strategy	Component	1	2	3	4	5
Tendency to drug use		1				
Maladaptive cognitive emotion regulation strategies	Self-blame	0.164[*]	1			
	Other-blame	0.297[**]	0.058	1		
	Rumination	0.179[**]	0.005	0.163	1	
	Catastrophizing	0.198[**]	0.162	0.044	0.022	1
	Mean (SD)	42.09 (5.40)	12.25 (1.12)	12.13 (1.10)	12.22 (1.11)	12.18 (1.10)

[*]$P< 0.05$, [**]$P< 0.01$

According to Table 1, 13-year-old respondents were N=41 (13 %), 14-year-old respondents were N= 53 (16 %), 15-year-old ones were N= 55 (18 %), 16-year-old ones were N= 99 (31 %), and the 17-year-olds were N= 72 (22 %). Subsequently, to examine the correlation between cognitive emotion regulation strategies and tendency to drug use, we utilized the correlation matrix (Tables 2 and 3); the results showed a significant and reverse correlation between acceptance (r= - 0.148, P= 0.001), positive refocusing (r= - 0.162, P= 0.001), refocusing on planning (r= -0.141, P=0.02), putting into perspective (r= - 0.194, P= 0.001), and positive reappraisal (r= - 0.202, P=0.03) variables with tendency to drug use. In other words, with the increase in the scores of adaptive cognitive emotion regulation strategies, tendency to drug use scores in adolescents decreased. In contrast, a straight and significant correlation was observed between tendency to drug use and self-blame (r= 0.164, P=0.002), rumination (r= 0.179, P= 0.001), catastrophizing (r= 0.198, P= 0.002), and blaming others (r= 0.297, P= 0.001) variables. That is, the increased scores of maladaptive

cognitive emotion regulation strategies led to an increase in tendency to drug use.

To predict tendency to drug use based on adaptive and maladaptive cognitive emotion regulation strategies, we used enter and liner regressions. The results of linear regression based on adaptive cognitive emotion regulation strategies indicated that adaptive cognitive emotion regulation strategies explained 7.9% of variance of tendency to drug use in students. Because calculated F (27.318) (β= - 0.28) was significant (P<0.01). Adjusted R square was obtained 0.079 for adaptive cognitive emotion regulation strategies. On the other hand, the results of linear regression for prediction of tendency to drug use based on maladaptive cognitive emotion regulation strategies demonstrated that incompatible cognitive emotion regulation strategies explained 10.9 % of variance of tendency to drug use in adolescents. Because calculated F (38.74) (β= 0.33) was significant (P<0.01). Adjusted R square was obtained 0.109 for maladaptive cognitive emotion regulation strategies. In sum, entered regression analysis showed the prediction of students›

Table 4: β coefficients, and t in prediction of tendency to drug use

Variables	B (non-standard)	Error	Beta (Standard)	t	p
Constant	79.267	6.171		12.844	0.01
Acceptance	-0.608	0.266	-0.124	-2.291	0.001
Positive refocusing	-0.645	0.262	-0.133	-2.460	0.001
Refocus on planning	-0.589	0.275	-0.108	-2.009	0.02
Putting into perspective	-0.680	259	-0.144	-2.627	0.001
Positive reappraisal	-0.589	0.274	-0.121	-2.153	0.03
Constant	0.534	5.618	-	0.095	0.924
Self-blame	0.548	0.251	0.114	2.183	0.002
Rumination	0.695	0.254	0.142	2.731	0.002
Catastrophizing	0.884	0.253	0.180	3.492	0.001
Other-blame	1.368	0.249	0.283	5.492	0.001

[*]$P<0.05$, [**]$P<0.01$

tendency to drug use through cognitive strategies of adaptive and maladaptive emotion regulation. Based on the results, adaptive strategies predicted 10.7% of the variance of students› tendency to use drugs. Since the calculated F was significant P<0.01, the enter method regression model was also significant. Adjusted R square was obtained 0.107 for adaptive cognitive emotion regulation strategies. Additionally, maladaptive strategies predicted 16.4% of the variance of students› tendency to drug use. Because the calculated F was significant with P<0.01, the enter method regression model was also significant and adjusted R square was 0.164 for maladaptive strategies.

The results of enter method of regression showed that acceptance strategy (coefficient = -0.124, P<0.001), positive refocusing (coefficient= -0.133, P= 0.001), refocusing on planning (coefficient= -0.108, P= 0.02), positive reappraisal (coefficient= -0.589, P= 0.03), and putting into perspective (coefficient= -0.144, P= 0.001) could negatively predict the tendency to drug use in adolescents. Self-blame strategy (coefficient= 0.114, P= 0.002), blaming others (coefficient= 0.283, P= 0.001), rumination (coefficient = 0.142, P= 0.001), and catastrophizing (coefficient = 0.180, P= 0.002) could also predict the tendency to drug use in adolescents (Table 4).

4. Discussion

Our results revealed that cognitive emotion regulation strategies are related to the tendency toward substance use in adolescents. Furthermore, adaptive strategies predicted 10.7% of variance of tendency to drug use. Maladaptive strategies also predicted 16.4% of the variance of students› tendency to drug use drug.

In accordance with our results, certain studies (23-26) have reported that cognitive emotion regulation strategies are associated with risk-taking behaviors (substance use). In this regard, Connors and co-workers (26) suggested that the high score in negative emotion regulation strategies increase substance abuse probability. Moreover, the results reported by Pardini and colleagues (27) showed that only among boys with moderate to low inhibitory control, an increased risk of alcohol use was observed, which was found to be associated with higher anger and reduced fearfulness. Depression, on the other hand, predicted the onset of alcohol use in boys with adequate inhibitory control. In addition, Zafarghandi

and colleagues (28) indicated that individuals with drug use disorder could be classified as the following: using temperament dimensions, addiction intensity, and negative emotional states. Garke and colleagues (11) also reported that having further trouble-controlling impulsive behavior when stressed is linked to having more severe and frequent substance use.

Based on the present study, every defect in emotion regulation might make the people susceptible to mental disorders (for example, depression) (29). Depression is a mental disorder characterized with emotional dysregulation, which could be one of the most important factors in tendency to substance use (29). Differences among people in using various cognitive emotion regulation styles lead to emotional, cognitive, and social consequences. As a result, a positive reappraisal style is related to positive emotions and better interpersonal functions. Positive emotions, by affecting the way an individual thinks, expand and contribute to positive personality features, for instance, flexibility and optimism. People with an open and active mind and broad cognitive ability are less likely to engage in impulsive and risky behaviors. Therefore, they experience less stress and anxiety and have less tendency to substance use (30, 31).

Emotion regulation strategies are functional when unfavorable events happen. The inability to control negative emotions is due to the existence of negative thoughts and beliefs related to worry and the use of ineffective coping techniques; accordingly, people who use negative cognitive emotion regulation strategies, in interpreting, coping and expressing appropriate emotion in different situations are incapable (32). As a result, this disability can lead to increased depression and anxiety, and ultimately predispose the person to addiction. (33-36).Trinidad and Johnson (37) reported that once people are under pressure, the weak management of emotions increase the risk of substance use. People with positive emotional regulation are also better at predicting what others want. In fact, they understand inappropriate demands of others and inhibit their emotions in a better way. In contrast, people that show less resistance against substance use have less positive emotion regulation. In other words, they tend to use substances for alleviation of negative emotions (38-40). Our results relied on the self-reported values of Cognitive emotion regulation and tendency to drug use, which is the usual method in

population-based epidemiological studies but prone to desirability bias. Also, we didn›t consider the socioeconomic status and environmental factors (e.g., level income and poverty) in association with tendency to drug use.

5. Conclusion

In summary, tendency to drug use was found to be a response reducing negative emotions and maladaptive emotion strategies. High scores in the emotion dysregulation components, including problem-controlling impulsive actions, was linked to high tendency to drug use.Emotion dysregulation seemed to be a key transdiagnostic component during adolescence, increasing the likelihood of a variety of neuropsychiatric consequences; this could be conducive to drug use prevention or treatment in clinics. Furthermore, the findings revealed that school is the best time to prevent, diagnose, and treat emotion regulation-associated issues in adolescents.

Ethical Approval

The Ethics Committee of Tabriz University approved this study with the code of IR. UTBZ. REC. 4263. 1730. Also, the study›s objectives were explained to the participants who completed an informed consent form.

Conflict of Interests: None declared.

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