

Structural Equation (SEM) of Personality Traits and Problem-Solving Styles with the Use of Stimulant Drugs among Students

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Abstract: This study aimed to investigate the relationship between personality traits and problem-solving styles with use of stimulants among male and female students of Payam Noor and Islamic Azad University in Sanandaj. This study was performed by correlation (SEM) method. The sample consisted of 300 male and female students randomly selected using classified sampling, who completed the personality trait, problem solving and the use of drugs questionnaires. Statistical techniques for data analysis, stepwise regression and structural equation model were used. The results of stepwise regression showed that neuroticism, among other components of personality traits, significantly and positively and other factors significantly and negatively could predict the consumption of stimulants among students. And all components of problem-solving style could significantly predict or affect the use of stimulants among students. The results of the structural equations also indicated that personality traits and problem-solving styles could predict the use of stimulants among students. Moreover, there was a significant direct relationship between personality traits and problem-solving styles. The results of the present study can be utilized by higher education centers, particularly by students and staff of higher education and by other educational institutions in order to reduce the use of stimulants among students and maintain their mental health.

Key words: Personality traits, problem solving styles, stimulants, SEM, significantly and negatively

INTRODUCTION

Consumption of stimulants is one of the fields that psychological researchers have focused on a lot and carried out comprehensive investigations into. The effect of behavioral problems on academic and social performances and also factors like gender, personality, social and economic traits and cognitive factors on development of behavioral disorders such as aggression during adolescence have been paid close attention by scholars. Adolescence is a physical, mental and cognitive change and also change in social requirements. One of the emotions that is common among adolescents is aggression which results from the adolescents encounter with barriers that appear on the way of their goals and it leads to the use of stimulants. In general, in this period adolescents become sensitive and experience strong emotions. They have been observed to consume stimulants following their feeling of mistrust, stress and lack of adjustment. Consumption of stimulants during adolescence presents more evident and problematic issues. It is particularly commonplace during adolescence and youth which may appear in verbal and physical forms,

bothering others, destroying properties, damaging people and so on (Vakilian and Karbasi, 2007). Freud considered the use of stimulants as the manifestation of instinctive forces which cause various behaviors and these instinctive forces are instinct for life and death while aggressive and destructive tendencies are resulted from death instinct which appear in different forms such as sadism or masochism among humans. The energy resulted from these tendencies; however, needs to emerge as apparent behavior otherwise they will pile up and explode one day. In other words, humans are bound to consume stimulants.

Consuming stimulants is a behavior with biological, psychological and sociological aspects. Each theory has focused on an aspect of consuming stimulants and sometimes there is contradiction among such theories. According to Freud's theory, most of human's actions are determined by his instincts, especially sexual instinct. When there is a barrier to emergence of instincts, the drive of consuming stimulants will occur. According to this theory, frustration is usually the reason for consuming stimulants and consumption of such drugs is one of the characteristics of drive (Atkinson *et al.*, 2007).

In social learning theory; however, the use of stimulants is considered as an acquired response. According to this theory, consuming stimulants is acquired through observation and imitation, i.e., individuals learn to behave aggressively and their behavior can be replaced by compatible behaviors (Atkinson *et al.*, 2007). Existence of different theories on consumption of stimulants indicates that this issue is highly significant in different societies and that scholars have given priority to understanding and explaining it. Regardless of different theories and thus various definitions proposed for consumption of stimulants, it has been determined that various factors are involved with the emergence and continuation of consuming stimulants. These factors can include biological, psychosocial, personality, family and cognitive factor. Personality and cognitive traits (such as problem-solving styles) are two important issues in psychology and psychologists are now a days aware of the role of these two factors in emergence of incompatible behaviors.

Scholars have recently conducted investigations into personality and its relationship with health and psychological injuries. There are numerous empirical evidence indicating that personality traits play an important role in creating, reducing, or removing the symptoms of behavioral disorders and lack of social adjustment. It is believed that personality can affect mental health in two ways: first, directly by affecting individuals' physical health, for example, through the effect of personality traits on the individuals' physiological responses to stress. Second, personality traits can have a significant effect on the individuals' evaluation of their physical health (Chalabianlou and Garousi-Farshi, 2010).

In studying the effective cognitive factors in emergence of personality behaviors, problem-solving style is taken into consideration, because defect in this field can be one of the most important cognitive causes in emergence of consuming stimulants. Problem solving is considered as a behavioral-cognitive process that can be utilized as an important tool to deal with and solve many situational problems. Problem solving can help find potential effective responses for problematic situations and enhance the probability of choosing the most effective response from among various ones. Channon believes that scholars of all fields and activities have nowadays been invited to high-level thinking skills and problem solving in both general and technological domains and both healthy and problematic activities. In most communities, people believe that there should be an emphasis on problem-solving skills.

The definition of problem solving was proposed by Dzurilla and Nezo as follow: it is a self-directed cognitive-behavioral process through which the individual tries to find effective or adaptive solutions for everyday problems of life. According to this view, problem solving is basically a careful, logical, energetic and purposeful dealing process which can enhance the individuals' capacity to effectively learn with an extensive range of stressful situations. Nezo and Ronan believed that problem solving involves a series of behavioral responses and cognitive and emotional actions that are inclined to a certain direction in order to adapt to internal and environmental conflicts. In general, problem solving refers to an individual's cognitive-behavioral and innovative process through which he/she wants determine, discover or innovate effective and adaptive strategies to deal with daily problems. In other words, problem solving is an important dealing strategy that enhances the individuals' social capacity and progress and reduces their stress and psychological symptoms.

The present study investigated the relationship between personality traits and problem solving styles and the use of stimulants. Consuming stimulants has been known as one of the problems of adolescence and different definitions have been proposed for it. It emerges in different shapes and as a result of different variables. In other words, this concept is related to various variables among which the present study has focused on problem-solving styles and personality traits.

In their study of the relationship between personality traits and consumption of stimulants, Jensen-Campbell indicated that personality and particularly neuroticism, is effective in regulating the emergence of aggression and consumption of stimulants and that there is a significant negative relationship between adjustment and aggression. Conard also showed that individuals whose neuroticism score is low are usually calm, moderate and comfortable due to possessing emotional stability. Individuals with high scores are characterized by anxiety, anger, hostility, depression and fragility. In their longitudinal study, Mc-crae and Costa indicated that individuals who obtained scores on agreeableness, conscientiousness and flexibility had a higher level of mental health than those with lower scores. However, as opposed to this finding, Gustvsson and MC-Crae and John showed that there is a relationship between the dimension of flexibility and many unhealthy behaviors and that there is a significant direct relationship between it and agitation (aggression, anxiety, anger and hostility). Bahrami concluded that training problem-solving styles is effective in reducing the consumption of stimulants, this finding is

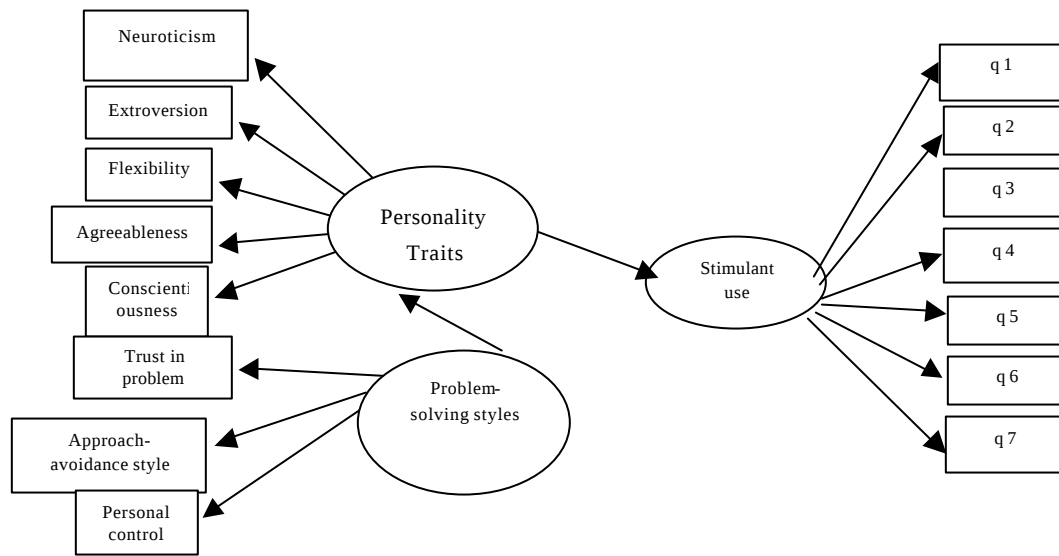


Fig. 1: The study's primary model

in agreement with the one reported by Tuzandeh Jani and Kamalpour (2000) about the effect of cognitive-behavioral treatment on the use of stimulants.

Now, due to the importance of the variables such as personality traits and problem-solving styles among the students and their effect on consumption of stimulants, the present study aimed to respond to this question, "Is there a relationship between personality traits and problem solving styles and the use of stimulants?" In so doing, the following hypotheses and primary model were proposed (Fig. 1). There is a relationship between personality traits and the use of stimulants. There is a relationship between problem-solving styles and the use of stimulants. Can the use of stimulants among students be predicted according to personality traits and problem-solving styles?

MATERIALS AND METHODS

In terms of its purpose, the present study was an applied one, regarding its conduction it was descriptive-survey and due to using structural equation modeling it was a causal correlation. The statistical population consisted of all students of Sanandaj's Islamic Azad University and Payam Noor University (N = 15,000). From among them, 300 male and female students were selected through Cochran formula and using a stratified-random sampling method. Data collection was carried out using a field method in which questionnaires were distributed among the selected students. The questionnaires that were used in this study were as follow.

Personality inventory: This questionnaire was developed by McCrae and Costa in order to measure personality. The named this questionnaire Neo (NEO-PI-R). To develop the questionnaire, they utilized linguistic and statistical approach. In so doing, they collected keywords existing in the English language and after conduction factorial analysis, they obtained 5 main factors and 30 sub-factors. NEO-PI-R is a questionnaire that has been focused on in international studies and it is an important psychological instruments that is used in studies that are aimed at investigating personality factors solely or with other factors. This questionnaire covers of 5 factors for each of which there are 12 items that are selected based on having the highest factorial load in relation with the trait in question.

In other words, this questionnaire includes 60 items that are used to evaluate 5 main factors of personality: neuroticism, extroversion, flexibility (openness), agreeableness (agreeableness, acceptableness and desirableness) and conscientiousness. This questionnaire was translated into Persian and normalized on Iranian students by Farshi (2001). In the study carried out by Askari used Cronbach's alpha for each factor and reported the coefficients of internal consistency as 0.87, 0.66, 0.32, 0.45 and 0.74, respectively. In the present study, Cronbach's alpha coefficients were obtained for the factors respectively as 0.86, 0.72, 0.55, 0.47 and 0.85.

Problem solving inventory: This questionnaire was developed by Heppner and Peterson in order to assess the respondents' understanding of their

problem-solving behaviors and their reaction to the issues that they encounter. This inventory has 35 items and is a self-assessment scale in problem solving. High scores in this scale indicate lack of familiarity with problem-solving skills. Based on factorial analysis, this inventory has three separate subscales:

Problem Solving Confidence (PSC): It includes 11 items (5, 10, 11, 12, 19, 23, 24, 27, 33, 34 and 35). High scores in this section indicate the individual's lack of confidence in his/her capacities and self-efficiency while solving problems.

Approach-Avoidance style (AA): It includes 16 items (1, 2, 4, 6, 7, 8, 13, 15, 16, 17, 18, 20, 21, 28, 30 and 31) and assesses whether the individuals intends to solve or avoid the problem which plays a very important role in the individual's next behaviors in defining the problem and trying to solve it. Obtaining high scores on these items indicates the individual's tendency to avoid encountering problems.

Personal Control (PC): It covers 5 items (3, 14, 25, 26 and 32). High scores indicate the individual's lack of control over his/her personal excitements and behavior while solving problems. Items of 9, 22 and 29 are extra and are developed for research purposes and are not scored.

Heppner and Peterson tested and regulated this inventory with several samples and reported a relatively high internal consistency with total alpha value of 0.90 and in each subscales of problem solving confidence, approach-avoidance style and personal control with values of 0.85, 0.84 and 0.72, respectively. In the present study, the total Cronbach's alpha of the inventory was 0.95 with 0.89, 0.87 and 0.78 for subscales, respectively. To determine the use of stimulants, 7 questions were utilized.

RESULTS

Hypothesis 1: There is a relationship between personality traits and the use of stimulants among students. In order to examine this hypothesis, multiple regression was employed, the results of which are presented in Table 1.

As indicated in Table 1, the calculated correlation coefficient to examine the relationship among the components of personality traits and the use of stimulants is 0.40. Based on the coefficient of determination (R^2), it can be stated that the components of neuroticism,

extroversion, agreeableness, flexibility and conscientiousness determine 16% of the variance of consuming stimulants. According to the results of F test, it can be said that the components of neuroticism, extroversion, agreeableness, flexibility and conscientiousness can predict the use of stimulants in a linear method. Moreover, beta coefficients indicate that conscientiousness with beta of -0.32 and significant t at a level of 0.02 can predict the use of stimulants more rigorously compared to other components. The component of agreeableness with beta of -0.27 and significant t at a level of 0.02, the component of flexibility with beta of -0.22 and significant t at a level of 0.03 and the component of extroversion with beta of -0.15 and significant t at a level of 0.001 had the most to the least predicting power for the use of stimulants.

Hypothesis 2: There is a relationship between problem-solving styles and the use of stimulants. In order to examine this hypothesis, multiple regression was employed, the results of which are presented in Table 2. As indicated in Table 2, the calculated correlation coefficient to examine the relationship among the components of problem solving styles and the use of stimulants is 0.67. Based on the coefficient of determination (R^2), it can be stated that the components of problem solving confidence, approach-avoidance style and personal control determine 45% of the variance of consuming stimulants and the rest of the variance based on other variables is not presented here. According to the results of F test, it can be said that the components of problem solving confidence, approach-avoidance style and personal control can predict the use of stimulants in a linear method. Moreover, beta coefficients indicate that personal control with beta of -0.42 and significant t at a level of 0.002 can predict the use of stimulants more rigorously compared to problem solving confidence with beta of -0.32 and significant t at a level of 0.005 and approach-avoidance style with beta of 0.31 and significant t at a level of 0.001 had the most predicting power of consuming stimulants.

The study's main question: Can the use of stimulants among students be predicted according to personality traits and problem-solving styles?

In order to answer the study's main question, structural equation modeling was utilized. In fact, this approach was used to fit the conceptual model of the present study (Fig. 1) with the collected data. The results of the two models are presented in Table 3. In the 1st model which is based on the conceptual model of the

Table 1: Regression coefficients to examine the relationship between the components of personality traits and the use of stimulants

Model	R	R ²	F	p	Model 1	Unstandardized coefficient		Standardized		p
						B	SE	Beta	T	
1	0.40	0.16	14.80	0.001	Constant	59.26	5.67	-	9.90	0.001
					Neuroticism	0.16	0.25	0.17	6.05	0.001
					Extroversion	-0.17	0.17	-0.15	0.20	0.001
					Flexibility	-0.18	0.17	-0.22	2.79	0.030
					Agreeableness	-0.35	0.15	-0.27	2.21	0.020
					Conscientiousness	-0.67	0.32	0.32	20.08	0.030

Table 2: Regression coefficients to examine the relationship between the components of problem solving styles and the use of stimulants

Model	R	R ²	F	p	Model 1	Unstandardized coefficient		Standardized		p
						B	SE	Beta	T	
1	0.67	0.45	5.385	0.001	Constant	19.76	4.95	-	3.99	0.001
					PSC	0.18	0.08	-0.32	2.87	0.005
					AA	0.55	0.07	-0.31	8.29	0.001
					PC	0.28	0.08	-0.32	7.25	0.002

Table 3: The indices of structural model fitness of explaining the use of stimulants based on personality traits and problem solving styles

Index	Abbreviation	Model 1	Model 2
		(based on the main model)	(after modification)
Comparative fit index	CFI	0.83	0.95
Tucker-lewis index	TLI	0.72	0.95
Normed fit index	NFI	0.90	0.92
Goodness fit index	GFI	0.91	0.96
Root mean square error of approximation	RMSEA	0.05	0.07
Normed chi-square	CMIN/DF	3.89	2.34

Table 4: Regression coefficients for predicting the use of stimulants based on personality traits and problem solving styles

Model	Route	Assessment		Sig.
		Standard	Nonstandard	
Primary	Personality traits-Stimulant use	-0.45	4.95	0.001
	Problem solving styles-Stimulant use	-0.38	3.82	0.01
	Personality traits-Problem solving styles	0.58	6.54	0.001
After	Personality traits-Stimulant use	-0.54	7.51	0.001
	Problem solving styles-Stimulant use	-0.48	5.55	0.01
	Personality traits-Problem solving styles	0.64	8.75	0.001

study (Fig. 1), the fitness of the data with the model in Normed Fit Indices (NFI) and Root Mean Square Error of Approximation (RMSEA) was lower than the acceptable amount.

That the primary model cannot be fit enough is not unusual and scholars consider resolving it (i.e., reassigning). In order to modify the model, suggested model modification indices of AMOS were taken into consideration. Among the suggested modifications, covariance of error variables E5 and E8, E1 and E7 and E5 and E9 were justifiable based on theoretical and empirical principles. Therefore, fitting the structural equation model was carried out again after conducting necessary modifications. In Table 3, by comparing the fit criteria of the modified model with the primary model, it is

observed that relative improvement was obtained in absolute, adaptive and economical fit indices and based on Brown's criterion and that of Kline, the modified structural model has appropriate fitness with the empirical data.

Finally, Fig. 2 presents the (final) structural model to explain and predict the use of stimulants based on personality traits and problem solving styles after the modifications were carried out. Moreover, Table 4 presents standard and nonstandard regression coefficients for predicting the use of stimulants based on personality traits and problem solving styles in the primary model of the study (the conceptual model) and after modification.

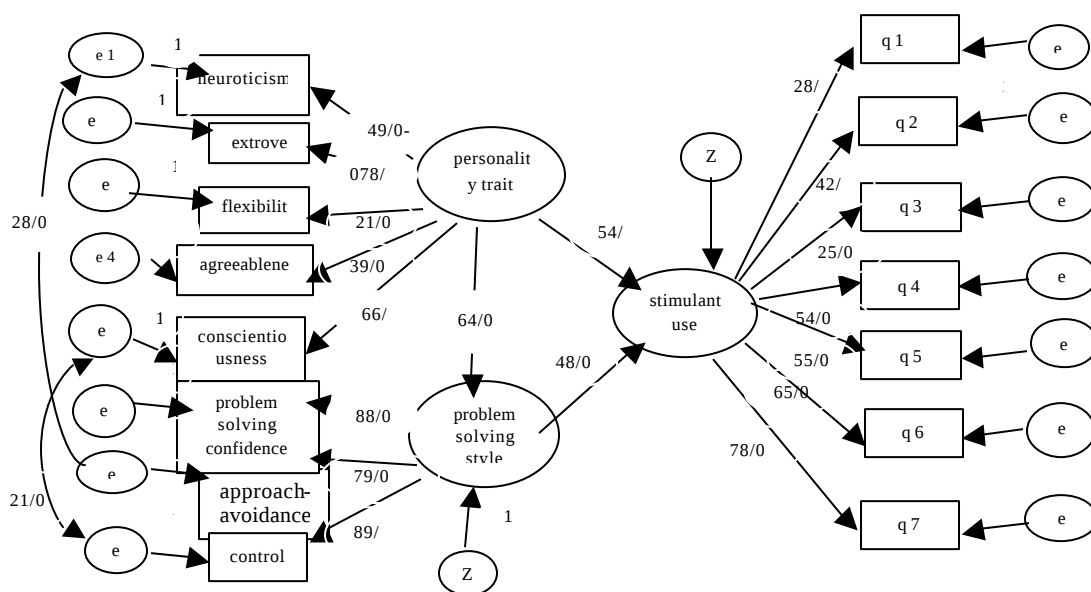


Fig. 2: The structural model of explaining and predicting the use of stimulants among students based on personality traits and problem solving styles after the modification were applied

DISCUSSION

The present study aimed to predict the use of stimulants among students based on their personality traits and problem solving styles. The results obtained from examining the relationship between personality traits (neuroticism, extroversion, flexibility, agreeableness and conscientiousness) and the use of stimulants indicated that the components of personality traits can significantly predict the use of stimulants among students, such that they played a total role of 40% in predicting the use of stimulants among the students. This finding is to some extent in agreement with the results of the studies carried out by Chapman, Bernardo, Sharpe and Desai, Anderson, Watson, Jurge, Moradi and Abedi *et al.* (2012b).

In justifying this finding, it can be stated that the use of stimulants makes human travel in a fancy world and keeps him away from the realities of life; therefore, it leads to imaginary prosperity and transient relief for those who have not achieved any success in their real lives. On the other hand, industrial advances in the society, lack of sufficient skills, lack of job opportunities and economic deprivations have caused the communities to become urbanized and led to immigration from villages to cities. Prevalence of stimulants has been one of the most effective and the oldest methods employed by colonialists and humanity enemies in order to deprive human communities from growth and prosperity and thus lute them and obtain as much profit as possible and it is

increasing day after day. As a result, destructive consequences of addiction have affected all countries and rapid changes in socioeconomic situation have facilitated access to stimulants and increased their demand, all of which have enhanced the extent of this global problem. However, the issue of consuming such drugs or in better words abuse of drug has become an important social problem in the world. Numerous personality factors are related to the use of stimulants. Some of these factors predict the possibility of becoming addictive more than other ones and in general, they imagine an individual that has no connection with the social values or structures like family, school or religion or cannot afford to adapt to, control or express his/her painful feelings like guilt, anger and anxiety. These characteristics include rejecting traditional and conventional values, resisting the power, severe need, lack of control over one's life, low self-confidence, lack of necessary skills to refuse bad suggestions by others and lack of social and adaptive skills. Since the first experience of consuming drugs begins in social environments, the higher the individuals' decision-making power and communicative skills are, the more they can resist the pressure by their peers. Addiction is accompanied with other psychological disorders in about 70% of cases. The commonest diagnoses are fundamental depression, asocial personality disorder, phobia, dysthymia, obsessive-compulsive disorder, panic disorder, mania and schizophrenia. Consuming stimulants is one of the most

important reasons for referring for counseling and psychotherapy. What motivated the scholars to pay attention to the relationship between the use of stimulants and personality traits and psychological variables was the consequences of such behaviors for individuals, such as a negative attitude among peers and teachers, rejection by peers, academic failure, drug abuse and delinquency (Abedi *et al.*, 2012a).

Another finding of the present study was the significant relationship between problem solving styles and the use of stimulants among students. Problem solving styles could predict 67% of stimulant use among students. This finding is in agreement with those reported by Psainin and Mc-Crae and Babapour while it is in disagreement with the results of the studies carried out by Bahrami and Tuzandeh Jani *et al.* (2000).

In justifying this finding, it can be stated that problem solving is a vital skill in today's life. Now a days, in all activities and especially in educational practices, the practitioners are required to teach and learn high-level thinking and problem solving skills in both general and technological domains, whether in normal or problematic activities. Most communities also believe that there should be an emphasis on enhancing problem solving skills (Abedi *et al.*, 2011). Efficient methods of problem solving, as stated by Becker Wiedemann, are related with constructions like satisfaction with life, positive emotion, motivation to progress and social support. Individuals with these characteristics do not need to consume stimulants. Moreover, Psainin and Mc-Crae concluded that individuals with efficient problem solving styles can easily control their emotions like anxiety, frustration, anger and aggression which result in destruction in relationships and these findings are in line with the study's hypothesis.

CONCLUSION

Finally, the results pertinent to the main question of the study which was responded to using structural equation modelling, indicated that personality traits and problem solving styles negatively and significantly predict the use of stimulants among students, in a way that the causal effect of personality traits on the use of stimulants had a beta of -0.54 and the causal effect of problem solving styles on the use of stimulants had a beta of -0.48 which were statistically significant. These coefficients indicate that personality traits and problem solving styles can predict the use of stimulants to a large extent.

Cognitive factors play an important role in emergence of aggressive behaviors and failure in correct problem

solving skills or in other words incompatible problem solving styles can cause the use of stimulants, because by resolving cognitive failures, this problem will decrease. Moreover, studies on the relationship between the use of stimulants and big five personality theory usually have relatively similar results and in most studies, it is mentioned that some personality factors have direct relationship with aggression. According to the results of the present study, it is suggested that enough attention should be paid to providing appropriate experience during childhood, because they are effective in formation of the child's personality traits. In addition, necessary trainings and opportunities need to be provided to children, adolescents and adults in order to strengthen their problem solving capacities.

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