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Comparing personality characteristics and impulsivity in smokers and non-smokers dormitory male students

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Abstract

Introduction: Impulsivity, especially in smoker's students, is one of the psychological factors for future high-risk behaviors. This study was performed to compare impulsivity and personality characteristics of smokers and non-smokers male students who live in a dormitory.

Materials and Methods: The study population of this causal-comparative study consists of all Razi University male students of Kermanshah city who live in a dormitory and studying in the second semester of the academic year 2015-2016. The students were selected through a convenient method (400 smokers and 200 non-smokers). Research instrument included Cloninger Personality Inventory (TCI), Barratt Impulsivity Scale (BIS-11), modified Fagerstrom Tolerance Questionnaire (mFTQ), and Balloon Analogue Risk (BART). Data were analyzed by SPSS software version 22, using descriptive statistics and discriminant analysis test.

Results: The research findings indicated that smokers with high and low dependency and non-smokers in components of motor impulsivity, reward dependence, indecision, and novelty-seeking are significantly different (P<0.05).

Conclusion: Based on the findings, it seems that factors such as motor impulsivity, reward dependence, indecision, and novelty seeking can discriminate among low and high-dependent smokers and non-smokers.

Keywords: Impulsivity, Personality characteristics, Smoker

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Introduction

Smoking is one of the most important causes of early deaths around the world and at the same time is most avoidable (1). Tobacco consumption in the form of a cigarette is more common than other forms (2). Seventy to eighty percent of people who smoke cigarettes are classified as dependent individuals (3). Psychology focuses on emotional and personality factors in high-risk behaviors such as tobacco use and cigarette. Researchers believe that a tendency to narcotic substances and tobacco is associated with personality characteristics (4). The definition of personality in various psychological approaches is different. Among them, the traits and factor approach are the most effective approaches. According to the traits approach, personality is a behavioral, emotional, and cognitive stable characteristic. Each of these specific characteristics called traits, and the sum of traits, shape the personality. In the theory of Cloninger, personality has both dimensions of temperament and character (5). The temperament dimension is known as the biological component of personality. It includes four subscales of novelty seeking, harm avoidance, reward dependence, persistence, and character dimension that are considered social and cultural, consisting of three subscales: self-directedness, cooperativeness, and self-transcendence (5). Temperament systems in the brain are functionally organized, so that different and independent systems from each other enable the continuity and behavioral inhibition allocated in response to objective groups of the stimulus. Character includes logical findings of self, others, and the world and further includes characteristics affected by the environmental factors in the personality structure that has emerged (6). Understanding the underlying biological, psychological, and behavioral problems can help us better understand the disorder and design optimized methods for dealing with abnormal behaviors. With emphasis on biological parameters, Cloninger has attempted to create a firm theoretical framework on the character that encompasses both the normal and abnormal personality. In some approaches, impulsive behaviors are called risky behaviors, called actions that, although associated with some extent of potential damages and loss, provide access to a kind of reward (7). These behaviors included a range of actions that little thinking has taken on it, in an immature way and with instantaneous incidence, without the ability to perform focus on a specific task, and occurs in the absence of proper planning and high risk-taking (8). Overall different expressions of adaptive and maladaptive Impulsivity has been described in the clinical and personality literature, include sensation seeking, risk-taking, novelty-seeking, excitation seeking, reward-seeking, extraversion, hyperactivity, need to immediate satisfy, disinhibiting, low thought/premeditated, defect in reply reflection, low stability, lack of planning, avoiding low loss, low anxiety, weak inhibition control, poor fear conditioning, low self-control, poor self-regulation, impairment in the ability to delay, inability to delay satisfaction, inability to refuse to act on drives or impulses and low resistance (9-13). Patton, Stanford, and Barratt distinct impulsivity to three elements: A- immediate action at the moment (motor activity), B- lack of focus on work (attention), C- lack of planning and careful thought (lack of planning) (14). A review of impulsivity research indicates that impulsivity and impulsive behaviors are the core of many psychiatric disorders such as attention-deficit hyperactivity disorder, personality disorders, learning disorders, conduct disorder, impulse control disorder, substance abuse, and suicidal behaviors (15,16). What distinguishes these behaviors from compulsive behaviors is that in this type of behavior, a person is conscious of the existence of behavior, and the purpose of the behavior is not pleasure but is generally avoiding anxiety. Impulsivity is also different from the behaviors that arise from deficiencies in judgment and decision-making, and Infract, a person has impaired judgment (14). Personality characteristics are considered among the factors involved in impulsivity. The growing incidence and prevalence of this feature in the risk-seeking behaviors with potentially harmful long-term effects caused increasing attention of

psychologists to this issue because the reduction of harmful consequences and effects of impulsivity and risky behaviors and issues related to them is one of the important aspects of mental health promotion of society and individual (11). According to statistics, 40 percent of male students and 8.5 percent of female students are smokers (17). Our country has a young population, and tobacco control programs, particularly to prevent the onset of young people's consumption, are especially important. Identification cognitive basis of behavior in smokers can be helpful for behavior change interventions in these individuals. The present study aimed to assess the personality characteristics and impulsivity in smoker and non-smoker male students.

Materials and Methods

The current research aimed to compare impulsivity and personality characteristics among smoker and non-smoker students. The population of this causal-comparative study consists of all Razi University male students in the second semester of the academic year 2015-2016, who live in a dormitory. Through convenient method of sampling 400 smokers and 200 non-smokers were selected through the snowball technique. The inclusion criteria included students aged 18-30 years, living in dorms, not having physical defects, psychiatric history, abuse of substances, narcotics, hallucinogens, stimulants, etc. If non-smokers samples smoking during the study, were excluded. The samples were coded and described as: A) Nonsmoker student: a student who even does not smoke one cigarette. B) Smoker student with low dependency: Students who obtain a score below the normal from the modified Fagerstrom Tolerance Questionnaire (i.e., 7). C) Smoker student with high dependency: Student who obtains a score above the normal from the modified Fagerstrom Tolerance Questionnaire (i.e., 7). Finally, smoker group compared to the nonsmoker group that was matched for age and education level. At the beginning of the sampling process, in three groups, individuals who were qualified to participate in the groups were given a structured interview. Data analyzed by SPSS software version 22, using descriptive statistics and discriminated analysis test.

Research instrument

A) The Cloninger Temperament and Character Inventory (TCI): This 125-item questionnaire includes two dimensions of temperament and character. Temperament includes novelty seeking, harm avoidance, reward dependence, and persistence; and character dimension includes self-directedness, cooperativeness, and self-transcendence. These dimensions are independent of each other. This questionnaire was validated in different age groups and both genders (18). In this study, reliability of factors by Cronbach's alpha method as follows: novelty seeking of non-smokers and smokers 0.788, 0.781, harm avoidance of non-smokers and smokers 0.63, 0.74, reward dependence of non-smokers and smokers 0.47, 0.43, the persistence of non-smokers and smokers 0.69, 0.74, cooperativeness of non-smokers and smokers, 0.48, 0.42, self-directedness of non-smokers and smokers 0.70, 0.53, and self-transcendence of non-smokers and smokers 0.75, 0.74. The internal reliability of this test is reported as 0.80-0.89. The internal reliability of revised version translated by Ayati, Chemikar, and Pourshahbaz, is calculated equal to 0.82 (18).

B) Barratt Impulsivity Scale (BIS-11): This questionnaire has 30 questions with four options that measure impulsive decisions and lack of foresight. Items are divided into three factors of indecision, motor impulsivity, and cognitive impulsivity. The Cronbach's alpha coefficient of the Persian version was reported in two groups of addicts and healthy subjects, respectively, 0.84 and 0.83 (19).

C) Modified Fagerstrom Tolerance Questionnaire (mFTQ): This modified version of the FTQ assesses the level of nicotine dependence among adolescents. The instrument uses a 5-point Likert scale for all seven items, except for one item on smoking during the first two hours of the day. The original FTQ item, assessing nicotine content in the respondent's "usual" cigarette brand, was excluded from this adolescent version. Internal consistency estimated 0.75, association with duration of smoking (in years): r= 0.36, association with

smoking intensity (Minnesota Smoking Index): r= 0.45, test-retest reliability (20): r= 0.71 (2-month interval). The MFT can be used as a continuous index of dependence or to classify participants into one of 3 levels of dependence.

D) Balloon Analogue Risk (BART): The Persian version of this test is a computerized model for measuring risk-taking behavior; in this test, participants are presented with 30 balloons the computer screen, which they may inflate by clicking the mouse button. Following each click, the balloon is either burst or further inflated, after which a specific amount of money is added to a temporary bank for that balloon. After each click, the participant may collect the temporary account before the balloon bursts by clicking on a button marked as "collect," which would end the balloon inflation and add the temporary account to a safe account displayed on the screen. The more the eventual number of clicks for each balloon, the more money won from that balloon. The eventual size of balloon was variable and not predictable; hence, some balloons would reach the size while others would burst after several inflations. BART has a good correlation with the Iowa Gambling Task. The dependent measures of risk-taking in BART are defined as adjusted value, unadjusted value, minimum, and maximum of inflation. Since Bart test is not dependent on culture and has a neurological basis, the mention of non-Iranian validity and reliability can be cited in this regard. Cronbach's alpha of this scale estimated equal to 0.80 (18).

Results

Three groups were homogeneous in terms of demographic variables. One of the assumptions of discriminant analysis is equality of variance. Therefore the standard deviation of the three groups has no significant difference; the mean and standard deviation data of variables is presented in Table 1.

Table 1. The mean and standard deviation of the participants

Group	Mean	SD
Smokers with high dependency	36.80	7.24
Smokers with low dependency	38.27	6.22
Non-smokers	34.06	8.31

In Table 2, the highest correlation is between motor impulsivity and discriminant analysis. Respectively the variables of Impulsivity, reward dependence, novelty-seeking, and indecision show the highest correlation with the audit function. Table 3 indicates summary information relevant to a discriminant analysis by simultaneous and stepwise methods.

Table 2. Standardized coefficients, non-standardized, structural and categorical stepwise method

	Predictor variables	Standardized coefficients	Non-standardized coefficients	Structural coefficients	The categorical coefficient of non-smokers	The categorical coefficient of smokers with low dependency	The categorical coefficient of smokers with high dependency
1	Motor impulsivity	0.526	0.228	*0.622	0.32	0.51	0.76
2	Reward dependence	0.464	0.130	0.555	0.26	0.31	0.40
3	Novelty seeking	0.460	0.032	0.488	0.28	0.34	0.30

4	Indecision	0.356	0.063	0.422	0.20	0.27	0.33
5	Unadjusted Score	0.444	0.024	0.401	0/15	0.23	0.29
6	Self-directedness	0.222	0.093	0.332	0.34	0.27	0.26
7	Max of Inflating	0.191	0.026	0.239	0.19	0.37	0.46
8	Adjusted Score	0.119	0.020	0.224	0.20	0.29	0.35

Table 3. Summary information of discriminant analysis by entering method and stepwise method

Information of the discriminant analysis	Enter method	Stepwise method
Eigen values	3.29	3.25
Variance percent	200	200
Cumulative percentage	200	200
Canonical correlation	0.876	0.865
Eta coefficient	0.76	0.73
Wilks Lambda	0.233	0.234
Chi-square test	134.778	135.225
df	14	8
Sig of discriminant analysis	0.001	0.001
Data centroid for non-smoker	-0.875	-0.823
Data centroid for low dependency	0.875	0.823
Data centroid for high dependency	0.875	0.823
Group membership	%87.2	%86.7
Kappa coefficient	0.783	0.759
Sig of the kappa coefficient	0.001	0.001

Discussion

This study was performed to compare the impulsivity and personality characteristics of smokers and non-smokers male students of Razi University. This study showed that smokers with high and low dependency and non-smokers are different in personality characteristics, Impulsivity, and risk-taking in some components. Results indicated that smoker students were significantly higher than non-smokers in motor impulsivity and reward dependence. Also, smoker Students were significantly different in novelty-seeking and indecision compared to non-smokers. The results of the study are parallel with (21-25).

Mitchell and skinner, by using the Barratt Impulsivity Scale in two subscales indecision

and Impulsivity, significant differences were between smokers and non-smokers. Also, by considering the age Confounding variable, the difference remained only in the indecision subscale. However, in this study and the difference in the total score of test and motor impulsivity subscale between smokers with high dependency and non-smokers, two groups with high dependency and low dependency differed significantly from each other in subscale and total scores. A study by Lejuez et al. showed that three groups of non-smokers and smokers with low and high dependency have a significant difference in the components of impulsivity (23). Also, Mitchell et al. (21) and Harmsen et al. (3) showed a significant difference between cigarette smokers and non-smokers at experience seeking subscale. In this study, the same difference in sub-scales of impulsivity and novelty seeking was seen even between smokers with low dependency and non-smokers. The difference in total score of low dependent smokers and non-smokers was also significant. About components of Cloninger temperament and character, Dinn (24) and Rotheran-Fuller (25) compared two groups of smokers and non-smokers. They reported a significant difference in the subscale of novelty seeking and reward dependency between non-smokers, high, and low smokers. Smokers with high dependency and smokers with low dependency compared to non-smokers showed more tendencies to immediate rewards. Studies conducted by Mitchell (21) and Reynolds (16) confirmed this finding. The cause of some observed discrepancies can be attributed to the heterogeneity of definitions. For example, the definition of a smoker is different in various studies, or the demographic characteristics of the samples are not the same in different studies. Factors such as risk-seeking, a total score of Zuckerman Sensation Seeking Questionnaire, adventure, experience seeking, uncontrolled behavior, novelty-seeking, and a reasonably good total score of BIS test play a vital role in predicting the high dependency of individuals on smoking. However, total score of Zuckerman sensation seeking and risk-seeking have an important role in predicting low dependency on smoking. Careful attention to different aspects of impulsivity (which are involved in smoking behavior), developing cause-centered therapies such as strengthening the decision-making, internal impulse control, etc., will be possible shortly. Smoking can be influenced by internal (i.e., negative mood, stress) and external stimuli (such as advertising) (26,27). The inhibition mechanisms of these individuals are weak because of a defect in properly inhibitory control (for smoking), so they begin and continue the consumption. It can be said about behaviors related to dependence to reward in smokers, in comparison to nonsmoker individuals that these individuals because they are influenced by internal and external stimulus and yet cannot adequately control the situation thus experiencing impulsive behavior and by receiving the smallest reward which may be the effect of nicotine and relaxing effect of it, continue behavior. Studies showed that smokers compared with healthy individuals experiencing higher risky decision-making. This means that smokers are unbalanced in assessing profit and loss and be more inclined to risk-seeking behavior. In other words, risk-taking that identified with adjusted and unadjusted scores and the number of inflating balloons during the test (28-31).

In explaining the findings, the new research literature suggests a possible link between nicotine dependence and defects in indecision and even risky decisions. It seems that smokers, due to the defect in the decision-making, are expected to reinforce and get a more mental reward from cigarette. Moreover, this would tend to smoke. Since smokers have a firm belief that cigarette provides pleasurable experiences and harm reduction may show a greater craving for smoking.

Also, the performance of smokers in indecision, such as neurological test BART is similar to the performance of patients with damage to the prefrontal cortex. People who acquire a high score in the novelty-seeking component are more prone to hasty decisions because they decide based on emotion and carelessness about saving resources (e.g., money). So the finding that smoker gets a higher score in this

component than non-smokers seems familiar and can be explained.

Conclusion

According to the findings of the importance of impulsivity and its influence on risk-taking behaviors, this feature can be considered one of the risk factors in smoking and used in prevention and treatment. It also suggested that the results of this study can be used in higher education institutions for refining projects and students' mental health and communities, such as addicts, criminals, and substance abusers. Moreover, using BART for the selection of sensitive jobs can be useful.

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