

Abstract

Objective: This study was aimed at examining the mediating role of the personality trait, namely conscientiousness in the relationship between attitudes towards addiction (which is considered to be a barrier to educational achievement) and students' academic performance.

Method: As a cross-sectional study, the number of 106 medical students of Guilan University in 2010-2011 was randomly selected as the study sample and responded to the items of conscientiousness subscale of NEO Personality Inventory and attitude measurement questionnaire towards addiction. The latest acquired grand averages of the students were considered as academic performance. Results: In the first step, the academic performance regression was significant based on tendency towards addiction. In the second step, however, with entry of conscientiousness as a mediator, a significant decrease was revealed in the β coefficient of attitude towards addiction and the significance vanished. In other words, the moderating variable of consciousness plays a mediating role in relationship between tendency to addiction and educational performance. In general, these two variables could moderately explain %12 of the variance of academic performance. Conclusion: Conscientious people enjoy higher achievement and lower degree of attitude toward addiction due to such factors as self-regulation, perseverance, and show resistance to harmful impulses.

Keywords: Conscientiousness, Academic Performance, Attitude towards Addiction

The Mediating Role of Conscientiousness in the Relationship between Attitudes toward Addiction and Academic Achievement

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Introduction

Great academic achievement is very important for a majority of students. Propat (2000) suggests that doing appropriate academic assignments can be a good criterion for measuring one's intelligence and abilities in problem solving. Studies have shown that an appropriate academic achievement for BA and BS students could be related to the job achievements and economic prosperity in the future. Thus, it is normal that students who are accepted in universities want to develop a comprehensive program to promote their grade point averages as a benchmark for their academic achievement. Students at the outset of their study usually encounter problems like time management for their studies, reduction of sleep time, personal interrelation challenges, and beginning of smoking and they are likely to make a mistake and turn to addiction for the sake of keeping their energy and conciseness or avoiding study problems. Beliefs and attitudes of people towards drugs and their negative and positive consequences are technically referred to as attitude towards addiction (Boles & Miotto, 2003). Attitude towards addiction is among the important matters in the discussions about drug abuse and has a direct relation with attitudinal fields of people like their understanding of legality and the level of social acceptance, losses resulting from substance abuse and its pleasant states (Sarvela & McClendon, 1988). There are many studies which emphasize the destructive role of drug abuse in academic achievements. For instance, the result of some studies has shown that drug abuse reduces the level of perseverance in following the educational goals. Nevertheless, findings show that the reduction of drugs resulting from treatment measures increases the presence of students in their classes among heavy drug-using adolescents (Engberg & Morral, 2006). The results of the study done by Townsend, Flisher & King (2006) showed that drug abuse (especially smoking and marijuana use) is related to drop-out rates, even after the moderation of the differences existing in sociological features. In etiology of attitude towards addiction, different hypotheses have been introduced, none of which can provide the main reason of attitude towards addiction alone. In most of the cases, a group of factors and backgrounds play a role in this tendency. However, in each cultural and social environment and for each individual, there are some factors which play a significant role. Researchers believe that drug abuse must be rooted in a powerful and an old structure which has important aspects in behavior (Walton & Roberts, 2004). Studies in this field have shown that personality traits are among the important etiological factors for tendency towards high risk behaviors like smoking, alcoholism, drug abuse, and insecure sexual relations (Polimeni, Moore & Gruenert, 2010; Stefansson & Hesse, 2008; Ball, Carroll, Canning-Ball & Rounsaville, 2006). McCrae & Costa (1987) have defined personality traits as the aspects of individual differences in tendency towards manifesting persistent patterns of thoughts, feelings and actions. Personality traits

conceptually refer to the ways that a person selects when facing new problems. These traits usually are fixed and unchangeable (Verma & Sheikh, 1996). In general, nowadays, there are different perspectives on personality in psychology. One of the approaches with relative acceptance is the theory of 5-factor personality which includes neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. Conscientiousness is the fifth personality trait factor in this model and includes six traits, that is, competency (the personal feeling about his/her abilities, wisdom, and environmental effects), self-discipline (clarity, order and appropriate behavioral organization), dutifulness (following the morality, acting according to moral obligations, and monitoring of conscience on personal deeds), struggling for success (high level of expectations, much effort to fulfill expectations of self), internal discipline (starting and achieving an effort against hardships and problems and being committed to the determined goal) and weighty act (inclination toward a precise thinking before action, following the programs and caution) (Haghshenas, 2006). In this respect, there are some studies which survey the relationship between personal traits and drug abuse tendency. For example, Fisher, Elias & Ritz (1998) surveyed the personality traits which enforced addictive tendencies and were effective in relapse after treatment. They conducted their research on 108 hospitalized addicts via the big five personality traits. Data analysis showed that the two personality traits, that is, high neuroticism and low conscientiousness have a significant role in tendency to addiction and frequent relapse after treatments. On the other hand, conscientiousness is one of the strongest predictive factors of a group of behavioral consequences such as attitude towards addiction and even occupational consequences such as occupational performances in all kinds of occupations, educational performances and reciprocal beneficial behaviors (Berry, Ones & Sackett, 2007).

Recent studies have emphasized that personal traits, especially in higher official educational levels also play an important role in the prediction of educational performance (Westerman, Nowicki & Plante, 2002; Chamorro-Premuzic & Furnham, 2003). Although educational performance generally is measured by the index of grade average, this performance is generally related to such processes as motivation, social inclination, emotional control, all of which probably have a borderline relation with cognitive ability but have a significant relation with personality (Martin, Montgomery & Saphian, 2010). Some studies have shown that the relationship between intelligence and educational performance, especially in academic environments is much lower than what is expected. Accordingly, it seems that the lower predictive ability of the related scales of cognitive abilities in higher official educational levels increases the portion of personality variables. Kappe & Van der Flier (2010) showed that conscientiousness has a predictive role in educational performance of students. Propat (2009) also reported a meaningful

relationship between conscientiousness and educational performance. Rozendra et al (2010) investigated the relationship between personality traits and educational achievements and found a significant positive relationship between educational performance and extroversion, conscientiousness, and neuroticism. Lievens, Coetsier, Fruyt & Maesenee (2002) examined the relationship between personality traits of medical students and educational progress and concluded that conscientiousness is a significant predictive factor in the scores of final exams and educational progress of students. The results of the study done by Wagerman & Funder (2007) and Conard (2006) also showed a positive relationship between conscientiousness and education progress. All of these findings show that people with high scores in this scale seek profound goals and needs which had been determined in advance, have a tendency towards taking high scores, and do extra assignments. Such students are successful in professional and academic fields (Forenham et al, 2003). As a result, it seems that conscientiousness factor is the most important predictor in individual differences in educational achievements both in schools and universities (Ziegler, Danay, Schölmerich & Bühner, 2010; Laidra, Pullmann & Allik, 2007).

Since students form a vast majority of the population of the country, the population proportion of this group increases vulnerability potential of the society to social trauma. This issue reinforces the need for doing research and study about personality traits so that the results can be used to help people avoid addiction and increase academic progress. According to the above-mentioned discussion, the present study seeks to survey the mediating role of conscientiousness as an effective personality trait in educational progress and attitudes toward addiction among medical students. In fact, the research question is that whether the effect of conscientiousness as a personality trait can have a mediating role in the reduction of the negative relation between attitude towards addiction and educational performance. This conceptual model is shown in graph 1.

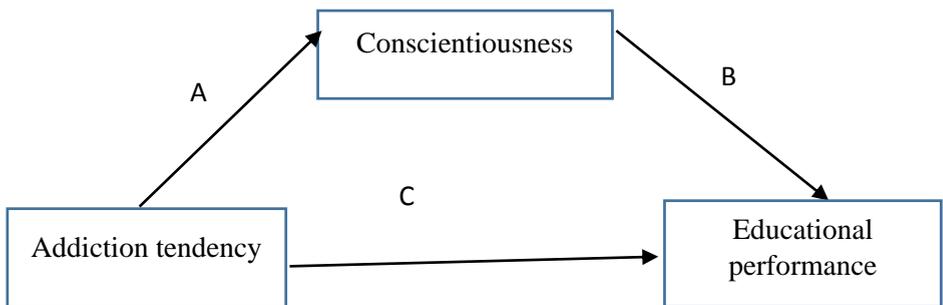


Figure 1: Hypothetical model of the effect of attitude towards addiction and conscientiousness on educational performance

Method

The present study is a correlational one which falls among descriptive ones. The subjects of the study consisted of all the medical students of Guilan medical science university in 2010-2011 who had referred to one of the counselling centers of medicine, nursery, obstetrics faculty of Shahid Beheshti in Rasht and Hazrate Zeinab faculty of Health, nursery, obstetrics and medicine in east of Guilan. The number of 106 students was selected according to random sampling method from October to December, 2011. Firstly, the quantity of sampling ($n=106$) was obtained as 92 in accordance with the Kohen's table of sampling determination with two independent variables in multiple regression (Kohen, 1998) and considering the type 1 error possibility of 0.05. Therefore, the number of 106 participants was selected as the final sample. In fact, the possibility of the sampling shrinkage was considered and, thereby, the desired sample was selected % 15 higher.

Each of the students came to the students' counseling centers and was put under supervision of a trained counselor to fill in the questionnaires. All the counsellors had a unified conception of the goals and instruments of the research. They participated in a briefing session for one hour and a half in the central department of students' counseling administration. Assessment of each student usually took 20 minutes and each student was informed about the goal and content of the package by an attached paper to his/her questionnaire. Since the aim of this study is to examine the effective factors in educational performance of the students, the participants were made sure about confidentiality of their identity and test's data. In this paper, some demographical information of students such as their age, gender, marital status, major, and faculties was gathered. After collecting the questionnaires, the overall average score of each participant was received from the educational department of each faculty and was recorded in assessment sheets as the average level of educational performance of the students.

Instrument

1. Attitudinal measurement of addiction and drug abuse questionnaire: this is a self-report instrument developed by Nazari (2001) and was scored according to a Likert scale and each of the answers as "totally agree, agree, no idea, disagree, and totally disagree" was given 5, 4, 3, 2, and 1 points, respectively. In the case of unfavorable answers or negative attitudes toward addiction, scoring was done inversely. As a result, the individual range of scoring in this questionnaire fluctuated from 32 to 160 and higher scores indicated favorable attitude towards addiction and drug abuse. Face and content validity and also parallel-form reliability and internal consistency of this scale were reported positive (Nazari, 2001). Nevertheless, Cronbach's Alpha scale was reported 0.89 (Nunnally & Bernstein, 1994).

2. NEO Personality inventory: conscientiousness sub-scale of NEO five factors Inventory was used for the assessment of conscientiousness. This inventory is a measuring instrument that is scored by 5-point Likert scale from totally agree to totally disagree and includes 60 questions. This inventory evaluates five main aspects of Personality, including neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness, each of which consists of 12 items. This test has been translated into Persian by Garousi (2001) in Iran and validated on Iranian students. Its validity for sub-scales has been reported to lie in the range of 0.56 to 0.78 by Cronbach's Alpha. In this research, only the scores of 12 items of conscientiousness have been extracted and used in data analysis.

Results

All the 106 questionnaires distributed among students were analyzed. The average age of students was 29.98 ± 3.74 years and 40 participants (37.7%) were male and 66 ones (62.3%) were female. The average age of males and females was 22.57 ± 5.56 and 21.65 ± 1.94 years, respectively. The number of 94 participants (88.7%) was single and the rest of them were married. In terms of major, 3 (2.8%) participants studied medicine, 3 (2.8%) dentistry, 21 (19.8%) nursery, 23 (21.7%) midwifery, 8 (7.5%) radiology, 17 (16.0%) laboratory sciences, 14 (13.2%) anesthesiology, 7 (6.6%) operating room, 8 (7.5%) health education, and 2 (1.9%) emergency medical services. Descriptive statistics for age, attitudes toward addiction, conscientiousness, and grand point average are shown in the following table.

Table 1: Descriptive statistics of the variables of the study for the participants

Variables	Min	Max	GPA	SD
Age	19	47	21.98	3.76
Conscientiousness	26	47	21.98	4.95
Attitudes toward Addiction	32	47	36.00	13.99
Educational Performance	11.07	18.88	15.95	2.00

Pearson correlation coefficient's matrix is presented for all variables of the study in the following table.

Table 2: Correlation Matrix for Studied Variables

<i>Variables</i>	<i>Conscientiousness</i>	<i>Attitudes toward Addiction</i>	<i>Educational Performance</i>
Conscientiousness	1	-	-
Attitudes toward Addiction	-0.19*	1	-
Educational Performance	0.35**	0.21*	-

*P< 0/05, **P< 0/01

The mediation model of the study was tested according to Baron and Kenny's (1986) model. In addition to the correlation between predictive variable (attitudes towards addiction) and criterion variable (educational achievement), this model requires some conditions for taking the role of mediator, including: 1) There should be a significant relation between predictive variable and mediator variable (Path A in graph 1). 2) There should be a relationship between mediator variable and criterion variable (conscientiousness and educational achievement) (Path B in graph 1). 3) There should be a significant relationship between predictor variable and criterion variable (attitude towards addiction and conscientiousness) (Path C graph 1). 4) The relationship between predictor variable and criterion variable should be significantly reduced at the time of entrance of the mediator variable into the regression equation, that is, the correlation between attitude towards addiction and educational achievement should be reduced after control of conscientiousness. If the relationship between the independent and dependent variables gets reduced towards zero and it is not significant anymore, the variable will be completely mediator. However, if the relationship between the two variables is reduced but it is still significant, the variable will have a slight mediator role. Therefore, for the purpose of predicting the educational achievement from conscientiousness and attitude towards addiction, regression analysis was used as follows.

Table 3: Results of regression analysis of the mediating role of educational performance based on attitude towards addiction and conscientiousness

steps	variables		β	R²	ΔR²	F	Sig
1 st step	Attitude toward Addiction	toward	-0.20	0.04	0.04	4.060	0.04
2 nd step	Attitude toward Addiction	toward	-0.14	0.14	0.10	7.910	0.15
	Conscientiousness		0.32				0.001

As it is shown in table 3, mediator regression analysis for attitude towards addiction and conscientiousness was done by entering attitude toward addiction in the first step and conscientiousness variable in the second step.

In the first step, attitude towards addiction was revealed to have a significant predictive power of educational performance with Beta coefficient of -0.20 ($P < 0/0.05$). With the entrance of the mediator variable of conscientiousness in the second step ($\beta = 0/32$, $P < 0.001$), the magnitude of β coefficient was reduced significantly (that is, it gets from -0.20 to -0.14) and its significance was lost. In general, these two variables in the second step could relatively define 12 percent of educational performance variance.

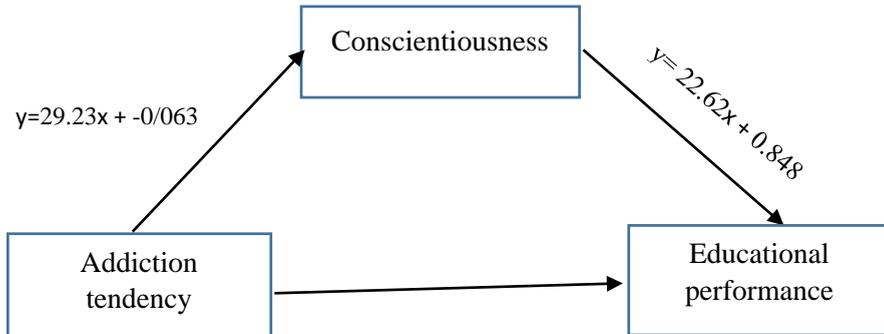


Figure 2: Tested mediation model and slope equations

In terms of exploring the mediating effect of conscientiousness on the relationship between attitude towards addiction and educational achievement, it was found that the aforementioned variable has been fully mediated. The slope equation for bivariate regression relations has been shown in figure two for the obtained model.

Discussion and Conclusion

This study aimed to examine the mediating role of the personality trait, namely conscientiousness in the relationship between attitudes towards addiction and students' academic performance of medical university students of Guilan. The results showed that there is a meaningful positive relationship between conscientiousness and educational achievement and there is a meaningful negative relationship between attitude towards addiction and educational performance. The results of regression data analysis showed that attitude towards addiction is a meaningful predictor of students' educational performance. Generally, these two variables could define 12 percent of educational performance variance with mediation. Also, the test of mediator effect of conscientiousness on the relationship between attitude towards addiction and educational achievement showed that the intended variable plays a fully mediator role. The positive relationship between conscientiousness and educational achievement in this research is in line with those results reported by Rozendra et al (2011), Martin et al (2010), Nofle &

Robins (2007) and Paunonen & O'Connor (2007). People with conscientiousness are reliable, accountable and goal-oriented persons. It seems that conscientiousness has a positive relationship with motivation and some related features of performance such as hardworking for progress, discipline and accountability. Conscientiousness due to its relationship with motivation is among one of the performance predictors, especially when internal determinants of motivation are considered (Nofle & Robins, 2007). Discipline, hardworking, perseverance, tendency towards progress and accuracy can positively predict the performance of individuals in different fields, including educational settings. Interestingly, it is possible that some of these learners have lower intellectual abilities (Nofle & Robins, 2007).

After conscientiousness comes negative attitude towards addiction and drug abuse as another factor influencing educational achievement and even it can meaningfully predict the educational performance. The students with positive attitude towards addiction and drug abuse have weaker educational performance. This finding is in line with the results reported by Tansend et al (2007) and DeBerard, Spielmans & Julka (2004). To interpret these findings about how drug abuse is related to unfavorable educational consequences, two main mechanisms are explained by King, Meehan, Trim & Chassin (2006). First, it is possible that drug abuse damages the cognitive capacity (attention and working memory) and, in turn, reduces the educational achievement and disturbs the educational performance. Second, drug and alcohol use can lead to antisocial behaviors in peers and consequently reduce the engagement with studies and engender other behavioral and social problems. In both cases, the similar consequence would be the educational failure. It seems that modifying attitudes and eliminating false beliefs such as "drug use is an appropriate instrument for forgetting the problems and reinforcing memory and attention", "drug use strengthens the muscles and reduces tiredness", "drug use under unfavorable and stressful situations is helpful and reduces concerns", and "drug use brings tranquility". The maintenance and promotion of students' educational performance seems to be logical and justified by one or some training courses and workshops in each academic year.

The findings of present study implicated a relationship between conscientiousness and attitude towards addiction. Thus, students with high scores of conscientiousness have a negative attitude towards addiction. The results of many other studies approve the finding of this research (Fisher et al, 1998; Roberts, Walton & Bogg, 2005; Bogg & Roberts, 2004). Thoughtful performance, cautious decision making, and effective responses rather than impulsive habitual reactions are among the attributes of these persons. Conscientious people are able to resist to impulses for succumb or inappropriate expressions of emotions (Vollrath, 2001). These people are able to control their impulses and have a lower tendency towards alcohol or drug

abuse. Also, these people have an inclination to avoid the behaviors dangerous for their health and take part in activities which have positive behavioral consequences (Roberts et al, 2001). In addition, conscientiousness has a positive relationship with healthy behaviors. It means that conscientiousness can affect health by some social-environmental factors and behaviors related to health. Social-environmental factors such as professional achievements, marital stability, religious faith, and healthy way of life indirectly affect individual health. So it is reasonable to consider conscientiousness as a mediator in the relationship between attitude towards addiction and educational achievement. The results of the study done by Musgrave-Marquart, Bromley & Dalley (1997) are relatively similar to those of the present study. Musgrave-Marquart et al (1997) found that educational performance is positively related to conscientiousness and has a negative relationship with alcohol and nicotine use. Conscientiousness could account for 10 percent of educational performance variance. In addition, conscientiousness and lack of nicotine use were reported to be the best predictors of educational achievement. The related literature shows that the people deprived of conscientiousness have no profound and pre-determined goals and desires (Fat-hi, Ashtiani & Dastani, 2009). On the other hand, students with conscientiousness trait are logically and reasonably hardworking people with progress orientation and typically do their academic assignments better than the students with lower levels of conscientiousness since they are able to keep their efforts in following their goals (Propat, 2009). These individuals do not need to review how to spend their time because they are so successful in time management. This reflects the reality that they are self-regulatory and goal-oriented. They are able to make decisions appropriately and do their assignments as best as possible. In addition, these people seek more positive behavioral consequences and avoid harmful activities and seem impossible to be inclined towards addiction since they are more powerful against impulses.

As a whole, according to the results of the present study, conscientiousness is among the important etiological factors for attitude and tendency towards addiction and achievement or failure in education. According to the findings of this study, since personality traits are stable and durable and are rooted in childhood period, intervention for preemptive considerations to avoid addiction should be established in the locus of family so that people can enjoy the privileges of educational achievements students by keeping their endeavors, discipline and accountability for progressing as a result of negative attitude toward addiction.

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