



Original Article

Designing a casual model for academic adjustment based on personality traits with the mediating role of attribution

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Abstract

Introduction: Academic adjustment is a specific area of the general concept of adjustment that deals with the issue of an individual's adjustment to the course and field of study, educational environment and its requirements. Therefore, the research sought to design a causal model for academic adjustment based on personality traits with the mediating role of attributional styles.

Materials and Methods: The research method was descriptive-correlational and of structural equation modeling in particular and the statistical population included all undergraduate students of Islamic Azad University of Marvdasht city, Iran in the academic year 2017-2019. The statistical sample consisted of 600 students who were selected by multi-stage cluster random sampling and answered the questionnaires including Academic Adjustment Scale by Anderson et al., personality traits by McCrae and Costa, and attribution styles by Patterson and Seligman. Data were analyzed by descriptive statistics, structural equation modeling, correlation coefficient, SPSS, and AMOS software.

Results: Commitment and acceptance-based therapy has a significant effect on increasing psychological flexibility ($P=0.001$), and reducing perfectionism ($P=0.000$).

Conclusion: Based on the research findings, it can be concluded that attributional styles have a significant mediating role in the relationship between personality traits and academic adjustment.

Keywords: Academic adjustment, Attribution styles, Personality traits.

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Introduction

Education in university is accompanied by stress and worry for many students. New learning environment and rules, different expectations than the past, beginning of an independent living, and entering the world of adulthood are new conditions that require the adoption of new strategies. Adjustment is a

dynamic process in which one tries to balance what one does or wants to do and what the environment and society demand.

In other words, adjustment is a perpetual process (1). Adjustment is a more or less intentional process by which an individual adapts to a social, natural, and cultural environment (2).

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This adjustment requires the individual to change him/herself to actively make changes in the environment, resulting in the required coordination between the individual and the environment. Therefore, it can be said that adjustment is a two-way process that includes the individual's adjustment to existing conditions and changing the environment to adapt to the individual's needs (3). One type of adjustment is an academic adjustment. Academic adjustment is a specific area of the general concept of adjustment that deals with an individual's adjustment to the course and field of study, educational environment, and requirements (4). It includes staying at university, enjoying education, psychological well-being, two-way social and intimate relationships, and appropriate academic performance (5). Theories of learning and academic achievement have identified two types of factors that affect academic adjustment: 1) individual factors with the tendencies that students have before entering the university, and 2) interactive factors that relate to experiences after entering the university (6). In examining the various factors associated with academic adjustment, personality traits (individual factors) play an essential role. This means that, in principle, some personality traits are likely to increase academic adjustment and others reduce it (7). In other words, the student's personality can affect the quality of academic adjustment since personality is said to be one of the characteristics of a person that includes his/her fixed intellectual, emotional and behavioral patterns (8); these fixed characteristics may affect environmental interaction. The model of the Big Five Personality Factors is the result of several studies of factor analysis among different sample groups with different languages and cultures. It consists of six subscales with a range of personality and behavioral traits that can help clarify the convergent or differential relationship of another personality structure (9).

Among these factors, one can name the two factors of extraversion and agreement to personality traits that have an interpersonal nature, the conscientiousness factor, goal-oriented behavioral traits, and the control of impulses in a prosocial manner. Neuroticism is related to emotional stability against a range of negative emotions such as sadness, irritability, nervous tension, etc. Finally, the factor of

openness to experience is related to the breadth, depth, and complexity of one's intellectual aspects and experiences (10). Based on Perret et al. study, personality traits such as extroversion could be positively related to learners' academic and social adjustment (11). Cummings et al. concluded that conscientiousness is associated with academic adjustment (12).

Hugh et al. found that personality traits such as neuroticism and openness to experience could reduce academic adjustment, and traits such as conscientiousness and agreeableness are positively related to academic adjustment (1). Finally, McCredie and Kurtz (2) concluded in a coherent study that extraversion and agreeableness have a positive and significant relationship with academic adjustment. However, personality can also affect academic adjustment in other indirect ways, such as attributional styles.

The attributional style reflects a person's interpretation of events that happen to him/her (13). This means that different personality traits are likely to form different attributional styles (6), and these attributional styles can contribute to or reduce academic adjustment (14). Homan et al. revealed that neuroticism is one of the best predictors of negative attribution (15). Alatorre, DePaola, and Haefel concluded that some personality traits, such as neuroticism and higher agreeableness with negative attributes, and others, such as extroversion, are associated with positive attributes (16). The effectiveness of neuroticism and conscientiousness on the growth of negative attribution has also been mentioned (6). Research has shown that new extrovert students use more positive attributions and show more academic adjustment than introverts (17). Accordingly, attributions can affect the degree of academic adjustment. Attributional styles can predict the degree of adjustment significantly. It seems that controllable positive attributions can increase adjustment (18).

Also, a strong significant relationship has been found between negative attributional styles and academic incompatibility (19).

Research has also shown that successful students often use positive attributions, making them more likely to succeed again (14,20).

Therefore, the present study aimed to assess the fitness of causal model of academic adjustment based on personality traits with the mediating role of master styles.

Materials and Methods

This descriptive-correlational research approved by Islamic Azad University, Marvdasht Branch. The statistical population included all undergraduate students of Islamic Azad University of Marvdasht in the academic year 2017-2019. The statistical sample of the research included 600 undergraduate students of this university according to Kline (2010) rule, i.e., 40 cases for each component and a total of 14 components, who were selected by multi-stage (cluster) random sampling method. In the first phase, six classes were randomly selected from the faculties of the Islamic Azad University of Marvdasht (educational sciences and psychology, humanities, engineering, and basic sciences). In the second phase, after a short explanation about the research purpose and how to answer, questionnaires were provided to students. Inclusion criteria included undergraduate students of Islamic Azad University, Marvdasht Branch, lack of apparent psychological disorders, non-participation in counseling courses, and willingness to complete questionnaires.

Research instrument

A) Academic Adjustment Questionnaire: This questionnaire was used by Anderson et al. (21) to assess academic adjustment. It has nine questions and three adjustment components, including academic lifestyle (questions 1-2-3), academic achievement (questions 4-5-6), and academic motivation (questions 7-8-9), which is based on a 5-point Likert scale, scored from strongly disagree to agree strongly. Some questions are reversed (questions 2, 3, and 9). From the three components, an overall score is obtained, which indicates the general academic adjustment. Examining the validity of the questionnaire using factor analysis by Anderson et al. (21) in two separate studies showed that the questionnaire could explain 64% of the variance of adjustment in the three components. The reliability coefficient of the questionnaire by Cronbach's alpha method in two studies showed that the coefficient was equal to 0.79, 0.71, 75, and 0.76, respectively. In the first study for the mentioned components and total items, and the second study, it was equal to 0.72, 0.74, 0.92 and 0.84, respectively for the mentioned components and total items. In the present study, the ability to verify the three-factor structure of the Academic Adjustment Questionnaire was also on the

agenda. The results of this analysis showed that all the statements well confirm the three-factor structure of the questionnaire. According to the results, the factor load range for the components of this questionnaire ranged from 0.75 to 0.82. In addition, the fit indices of the model indicated the goodness of fit of the confirmation model of the academic adjustment questionnaire (TLI= 0.98, RMSEA= 0.04, CFI= 0.99, $df/\chi^2= 2.16$, NFI= 0.97, GFI= 0.98). In the present study, Cronbach's alpha method was used to evaluate the reliability. The results showed that the value of this coefficient was 0.89 for the whole questionnaire, and it was equal to 0.92, 0.85, and 89 for the components of academic lifestyle, academic achievement, and academic motivation, respectively, which indicates the optimal reliability of the questionnaire.

B) Neo Personality Inventory: This questionnaire measures the five main dimensions of personality and traits related to dimensions. The five leading indicators of the questionnaire include neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. The long form of the questionnaire has been validated in different countries. Studies conducted by Costa and McCrae showed that the correlation of 5 subscales of short-form with long-form is from 0.77 to 0.92. Also, the internal consistency of its subscales is estimated in the range of 0.68 to 0.86. They reported the reliability of the mentioned components to be 0.83, 0.75, 0.80, 0.79, and 0.79 (22). The short form of this test was standardized by Haghshenas in Iran (23).

The internal stability of the scales and their correlation coefficients indicated the high correlation of each index with the relevant scale and no significant positive correlation with the indicators related to other scales. A retest with an average of 7.6 months on 26 cases also reported a correlation coefficient between 0.53 and 0.76 for the test scales. Alpha coefficients have been calculated for scales between 0.71 and 0.83. In this study, the reliability calculation was performed by confirmatory factor analysis.

Based on the results, the factor loads for the components of neuroticism, extraversion, and openness to experience, agreeableness, and conscientiousness were 0.84, 0.78, 0.70, 0.86, and 0.86, respectively. This basis had the highest factor load than agreeableness and conscientiousness components and the lowest

factor load compared to openness to experience components. In general, confirmatory factor analysis results indicated that the personality traits questionnaire has a suitable structural validity, and the mentioned five-factor structure is confirmed.

In addition, the fit indices of the mentioned model indicated the good fit of the confirmatory model of the personality traits questionnaire with the studied data (RMSEA= 0.05, CFI= 0.98, TLL= 0.97, NFI= 0.98, GFI= 98, $df/\chi^2= 2.64$). In the present study, Cronbach's alpha method was used to evaluate the reliability.

The results showed that the value of this coefficient was 0.92 for the whole questionnaire and 0.91, 0.89, 0.85, and 0.93 for the components of neuroticism, extraversion, and openness to experience, agreeableness, and sense of duty, respectively, which indicates the desired reliability of the questionnaire.

C) Attributional Style Questionnaire: This questionnaire was provided by Patterson and Seligman (24) and includes 12 situations and 48 questions. The questionnaire has two general subscales of positive and negative attributions and six subscales of negative internal attributions, positive internal attributions, permanent negative attributions, positive, permanent attributions, and positive general attributions.

The scoring of this questionnaire is such that for each of the 12 situations, the first question is not scored and is only for a better understanding of the other questions. Bert et al. (25) reported the Cronbach's alpha coefficient of this questionnaire to be 0.80.

Mahesh et al. (26) also mentioned the reliability coefficient by Cronbach's alpha method to be 0.91 for all the questions. Azimi et al. (27) also reported the reliability of the questionnaire to be 0.84 by Cronbach's alpha method.

Islami (28) reported the Cronbach's alpha for this questionnaire for subscales of internal failure position being equal to 0.75, stable failure position equal to 0.43, overall failure position equal to 0.73, internal success position equal to 0.74, stable success position equal to 0.56 and the overall success position equal to 0.76.

In this study, the verifiability of the mentioned questionnaire with the assumption of two positive and negative attribution styles and six components of a positive internal, positive

stable, positive general, negative internal, negative stable, and general negative attributions was examined. The results showed that the attribution style questionnaire has two positive and negative attribution styles, which are well confirmed by all components.

According to the results, the factor loads for the attributional styles questionnaire were between 0.86 and 0.97, based on the highest factor load related to the negative general attribution style component and the lowest factor load related to the negative internal attribution style component.

In addition, the fit indices of the mentioned model indicated the good fit of the confirmation model of the attributional style questionnaire with the studied data (RMSEA= 0.03, CFI= 0.98, TLI= 0.95, NFI= 0.94, GFI= 97, $df/\chi^2= 1.29$). In the present study, Cronbach's alpha coefficient was used to evaluate the reliability. The results showed that the value of this coefficient was 0.90 for the whole questionnaire and 0.92 and 0.87 for the dimensions of positive and negative attributions, respectively, which indicates the optimal reliability of the attributional styles questionnaire.

In this study, data were examined at two levels. At the descriptive level, demographic characteristics, mean and standard deviation, and the assumptions of modeling structural equations and evaluation of the measurement model and the correlation coefficient between the research variables, were examined. The structural model was evaluated at the inferential level, and the research hypothesis was investigated using SPSS version 22, and AMOS20 software.

Results

In term of demographic characteristics of the participants, two hundred fifty-six cases of them (42.66%) were men and three hundred forty four (57.34%) were women.

Two hundred fifty-six people of the sample group were at the first and second semesters (16.44%), 157 people from the third and fourth semesters (16.26%), 110 people from the fifth and sixth semesters (33.18%), and 68 people from the seventh and eighth semesters (11.33%), and finally 386 people in the sample group (33.64%) were single, while 214 cases (66.35%) were married.

Table 1. Descriptive indicators of research variables

Predictive variables		M	SD
Personality features	Neuroticism	32.44	7.53
	Extraversion	28.3	6.53
	Openness to experience	31.57	5.13
	Agreeableness	27.28	6.53
	conscientiousness	23.26	8.64
Attributional styles	Positive attribution style	102.52	14.72
	Negative attribution style	97.7	19.15
Academic adjustment		36.68	6.15

The dual variable relationships between observable variables were investigated by calculating the Pearson correlation coefficient.

Table 2 presents the results of examining these relationships in the framework of the zero-order correlation matrix of variables.

Table 2. Correlation matrix for the studied variables

Variables	1	2	3	4	5	6	7	8
Inbreeding	1							
Extraversion	-0.53**	1						
Personality traits								
Openness to experience	-0.59**	0.37**	1					
Agreeableness	-0.64**	0.37**	-0.27**	1				
conscientiousness	-0.34**	0.33**	-0.31**	0.37**	1			
Attribution								
Positive attribution style	-0.32**	0.37**	-0.27**	0.27**	0.27**	1		
Negative attribution style	0.29**	0.29**	0.13**	0.27**	0.31**	0.37**	1	
Academic adjustment	-0.34**	0.27**	-0.36**	0.36**	0.42**	-0.31**	0.37**	1

The results indicate that there is a significant relationship between research variables. Examining the relationship between research variables showed that the correlation between personality traits as an exogenous variable and attributional styles as a mediating variable is significant with academic adjustment. Also, the relationship between personality traits and attributional styles is significant. Then, the assumptions of structural equation modeling were examined. In this section, three basic assumptions of structural equation modeling, including lost data, outliers, and the normality of the distribution of variables, were examined. In the present study, the lost data were replaced by the mean values of the variables. The study of outliers in the present study variables showed that there are no outliers in any of the research variables. To evaluate the normality condition of multivariate data, the Mardia coefficient was

used, and the value of this coefficient was 93.1 (acceptable value: less than 3), which showed the normality of the data. In order to investigate the multiple alignment condition of the predictor variables using tolerance statistics and variance inflation factor, the results showed that the tolerance values obtained for the variables were higher than 0.10 and the value of variance inflation factor was less than 10 for the variables, which indicates a lack of multiple alignments between the predictor variables. In general, the results showed that all the basic assumptions of structural equation modeling analysis are established. In addition, fit indices were calculated, and the results indicated a good fit of the confirmatory model of the variable under study with the data. In the following, the results related to the structural relationships of the research model and investigation of the degree of conformity of the

research model with the data and testing indirect effects revealed in the model are reported. To investigate the fit of the causal model of academic adjustment based on personality traits with the mediating role of

attributional styles, the direct effect and then the indirect effect of exogenous and mediating variables were investigated on the endogenous variable.

Table 3. Direct effect of personality traits on academic adjustment

Variables		B	S.E	β	T	P
Predictor	Measure					
Neuroticism	Academic adjustment	-0.13	0.03	-0.19	-4.21	0.001
Extraversion		0.20	0.03	0.26	5.91	0.001
Openness to experience		-0.11	0.04	-0.11	-3.65	0.001
Agreeableness		0.05	0.03	0.07	1.66	0.09
conscientiousness		0.05	0.03	0.08	1.92	0.05

As can be seen in the table above, neuroticism ($P= 0.001$, $\beta= -0.19$) and openness to experience ($P=0.001$, $\beta=-0.11$) predict academic adjustment in a negative and significant way. Extroversion ($P= 0.001$, $\beta=0.13$) and consciousness ($P= 0.05$,

$\beta= 0.08$) predict it positively and significantly, while agreeableness ($P= 0.09$, $\beta= 0.07$) is not able to predict academic adjustment significantly.

Table 4. The direct effect of personality traits on positive and negative attributions

Variables		B	S.E	β	T	P
Predictor	Measure					
Neuroticism	Positive attribution style	-0.21	0.06	-0.11	-3.3	0.001
Extraversion		0.06	0.07	0.02	0.78	0.43
Openness to experience		0.27	0.09	0.10	2.84	0.004
Agreeableness		0.19	0.07	0.09	2.53	0.01
Conscientiousness		0.86	0.06	0.52	15.14	0.001
Neuroticism		Negative attribution style	0.89	0.09	0.31	9.3
Extraversion	-1.37		0.11	-0.41	-12.34	0.001
Openness to experience	-0.94		0.14	-0.22	-6.67	0.001
Agreeableness	-0.19		0.11	-0.06	-1.78	0.07
Conscientiousness	-0.25		0.08	-0.10	-3.03	0.002

As can be seen, neuroticism ($P= 0.001$, $\beta= -0.11$) in a negative and significant way and agreeability ($P= 0.001$, $\beta= 0.09$) and openness to experience ($P= 0.004$, $\beta= -0.10$), and consciousness ($P= 0.001$, $\beta= -0.52$) are the predictors of positive attributions in a positive and significant way. But extraversion ($P= 0.43$, $\beta= 0.02$) is not able to predict positive attributions significantly.

On the other hand, based on the results, neuroticism ($P= 0.001$, $\beta= 0.31$) in a positive and significant way, and extraversion ($P= 0.001$, $\beta= 0.41$), openness to $P= 0.001$, $\beta= -0.22$), and consciousness ($P= 0.002$, $\beta= -0.10$) negatively and significantly predict negative attributions, while agreeableness ($P= 0.07$, $\beta= -0.06$) is not able to predict negative attributions significantly.

Table 5. The direct effect of attribution styles on academic adjustment

Variables		B	S.E	β	T	P
Predictor	Measure					
Positive attribution style	Academic adjustment	0.03	0.04	0.09	2.75	0.006
Negative attribution style		-0.03	0.008	-0.13	-3.71	0.001

As shown in the table above, positive and negative attribution styles have a direct and significant effect on academic adjustment. In fact, positive attribution styles ($P= 0.006$,

$\beta=0.09$) in a positive way and negative attribution styles ($P= 0.001$, $\beta=-0.13$) in a negative and significant way predict academic adjustment.

Table 6. The effect of direct, indirect, and general personality traits on academic adjustment

Variables		Direct effect	P	Indirect effect	P	Total effect	P
Predictor	Measure						
Neuroticism		-0.19	0.001	-0.13	0.004	-0.32	0.001
Extraversion		0.26	0.001	-0.14	0.009	0.12	0.003
Openness to experience	Academic adjustment	-0.11	0.001	0.01	0.61	0.10	0.02
Agreeableness		0.07	0.09	-0.17	0.007	-0.10	0.03
conscientiousness		0.08	0.05	-0.31	0.002	-0.23	0.002

As can be seen in the table above, the indirect coefficients and the results of the bootstrap test indicate that neuroticism ($P= 0.004$, $\beta = -0.13$), extraversion ($P= 0.009$, $\beta= 0.14$), agreeableness ($P= 0.007$, $\beta= -0.17$) and conscientiousness ($P= 0.002$, $\beta=-0.31$) can predict academic adjustment as indirect and significant through attribution styles. Thus, attributional styles play a mediating role in the relationship between personality traits and academic adjustment. Overall, the results showed that the present study model explains 49% of the variance of academic adjustment, 33% of the variance of negative attribution styles, and 30% of the variance of positive attribution styles. In order to evaluate the fit of the research model, several indicators were used, the results of which indicated a sufficient fit for the final model (RMSEA= 0.05, CFI= 0.91, TLI= 0.91, NFI= 0.92, GFI= 94, $df/\chi^2= 2.12$).

Discussion

This study aimed to design a causal model of academic adjustment based on personality traits with the mediating role of attribution styles. Examining the direct effect of exogenous predictor variables (personality traits on endogenous academic adjustment) showed that neuroticism and openness to experience negatively and significantly and extroversion and conscientiousness positively and significantly predict academic adjustment. These results are consistent with the studies by Pert et al. (11), Cummins et al. (12), Hugh et al. (1), and McCurry and Kurtz (2). In these studies, the results have shown that personality traits can be a significant predictor of academic adjustment. According to the results of this

research and studies, it can be said that each personality trait can affect the type of response to environmental challenges such as education and its challenges.

A person with different personality traits responds to academic requests and related needs based on their personality traits, which can be adaptive or maladaptive. In other words, if the assignments related to education match the personality traits of the individual, adjustment is likely to increase, and if this is not possible, the academic adjustment will decrease. The two factors of extraversion and agreement to personality traits have an interpersonal nature. This could mean that if the educational process

can implement an interpersonal nature in the academic context, academic adjustment is likely to increase (12). The conscientiousness factor includes goal-oriented behavioral traits as well as impulse control in a socially friendly manner. Here we can highlight that for students with this academic personality trait; it helps them adapt and value progressiveness and individual effort. Neuroticism is related to emotional stability against a range of negative emotions such as sadness, irritability, nervous tension, etc. Ultimately, the factor of openness to experience is related to the breadth, depth, and complexity of one's intellectual aspects and experiences (29). If the university cannot satisfy the desire for excitement in openness to experience, incompatibility will increase, and neurotic tendencies can lead to incompatibility. In general, it can be concluded that individuals with extroverted personality traits and conscientiousness show a positive adaptation in the group according to the study population,

which indicates the compatibility of these personality traits with the demand related to education. The results showed that neuroticism negatively and significantly and agreeableness and openness to experience and conscientiousness positively and significantly predict positive attributions. However, extroversion is not able to predict positive attributions significantly. On the other hand, the results showed that neuroticism positively and significantly, and extraversion, openness to experience, and conscientiousness in a negative and significant way predict negative citations. However, agreeableness is not able to predict negative attributions significantly. These results are consistent with the studies by Haman et al. (15), Story et al. (16), Bittner et al. (16), and finally, Seel and Abrell (17). The results of these studies have shown that personality traits can affect the causal explanation of the results so that people act differently in terms of the characteristics of different personalities in their causal attributions. Based on the results of research and studies, it can be said that each of the personality characteristics can provide a person with the basics to function and explain the causes of events. This means that some personality traits, such as neuroticism, may provide a better environment for developing negative attributions (16). On the other hand, a person with introverted nature can explain the same social challenges related to education with negative attributions. The results showed that positive attribution styles positively and negatively affect a negative and significant way of predicting academic adjustment. These results are consistent with studies by Reynolds et al. (18), Murray et al. (19), Very et al. (20), Ding et al. (14) and Reynolds et al. (18) concluded that attribution styles significantly predict the degree of individual adjustment. It seems that controllable positive attributions can increase adjustment. Therefore, the basic premise of the attribution theory is based on the fact that man wants to know more about the causal structure of his/her environment and to know why an event occurs and what motivates it (30). Each personality trait provides the basis for explaining positive or negative causes differently, and these different causal explanations can change a person's academic adjustment. Finally, people with different attribution styles pursue different academic approaches to their realization. Thus, personality can indirectly affect adaptation.

The results showed that the direct effect of attributional styles on academic adjustment is significant. Based on these results, it can be suggested that positive attributional styles be replaced through training and workshops to increase students' academic adjustment. This means that each of the personality traits can affect a person's attributions (15). For example, a person with neuroticism is more likely to choose adverse and uncontrollable attribution styles that can escape the negative consequences of remorse (6). Therefore, each personality trait provides the basis for explaining positive or negative causes differently, and these different causal explanations can change a person's academic adjustment. Finally, people with different attribution styles pursue different academic approaches to their realization. Thus, personality can indirectly affect the adjustment by influencing student attributions. The limitations of this research included descriptive and cross-sectional design of the research, using the questionnaires, and lack of other sample groups. Therefore, the authors suggest that the further studies examine the independent role of other variables affecting academic adjustment (such as the type of public or private university), demographic and personality characteristics such as identity and attachment, and conducting longitudinal studies that can show changes in adjustment to academic incompatibility over time. The results showed that the direct effect of attributional styles on academic adjustment is significant. Based on these results, it can be suggested that positive attributional styles through training and workshops be replaced to increase students' academic adjustment.

Conclusion

Based on the results, it can be concluded that the causal model of academic adjustment based on personality traits with the mediating role of attributional styles has a good fit, and attributional styles can play a significant role in the relationship between personality traits and academic adjustment.

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