A Causal Model of Parents' Personality Traits and Academic Performance with the Mediating Role of Academic Buoyancy

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Abstract: This study aimed to present a relationship model between parenting styles and parental personality traits and academic performance with the mediating role of academic buoyancy in high school students. The study was a descriptive correlation and its statistical population included all male and female high school students in Fasa in the academic year of 2018-19 and their parents, among whom using a multi-stage cluster random sampling method. A total of 493 students (248 boys and 245 girls) were selected and the data were collected using NEO_FFI Five Personality Factor Scale, Academic Performance Scale, and Academic Buoyancy Scale. Findings from structural equation modeling showed that academic buoyancy mediates the relationship between personality traits and academic performance. The study model predicted 46% of the variance changes in the criterion variable. Examining the fit of the model through the fit indices showed a suitable and acceptable fit of the model.

Keywords: Personality Traits, Academic Buoyancy, Academic Performance

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Introduction

The success and academic performance of students in any society indicate the success of the educational system in the field of goal setting and attention to meeting individual needs. Therefore, the educational system can be considered efficient and successful when the academic performance of its students in different courses has the highest and highest figure. Nowadays, researchers have a special emphasis on the need to pay attention to the predictors of academic success, as in the last three decades, the study of factors affecting academic performance has received more attention than educational systems (Ghorbani, Zahrakar, & Mohsenzadeh, 2020). MacCann et al. (2020) argue that accurate prediction of academic performance is not based solely on the competencies measured by intelligence tests, but also on information about personality, motivational-emotional, and cognitive traits that play a mediating role. In this regard, due to the relationship between cognition, motivation, and emotion in human behavior, several variables have been developed and tested to explain students' academic performance and academic achievement in different academic areas (Walters & Pintrich). Academic

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performance affects important aspects of people's lives such as promotion to higher education, getting a better job, better social status, more satisfaction, etc. (Galla et al., 2014). Among these, the role of antecedents and factors affecting academic performance should also be considered and it seems that one of the antecedents of academic performance is academic buoyancy, which can also be examined concerning their personality traits. The concept of academic buoyancy has been proposed by Martin and Marsh (2009) as a method of examining constructive and positive reactions to a variety of barriers experienced by students in the current academic year or schools, such as high-risk exam pressures, poor grades, etc. Martin and Marsh (2009) argue because resilience specifically refers to individuals' capacity to respond constructively to major academic challenges and barriers; its application is limited to the challenges and difficulties that are specific to the daily academic life of the majority of students. The results of numerous studies show that academic buoyancy, which reflects academic resilience in the context of positive psychology, is a factor (Collie et al., 2017; Miller, Connolly, & Maguire, 2013; Putwain, Wood, & Pekrun, 2020). This affects the ability to deal with the challenges and obstacles of daily academic life (Colmar, Liem, Connor, & Martin, 2019; Martin & Marsh, 2020; Rezaei Gazki, Delavar, & Samavi, 2019).

Personality is an "abstract concept," meaning that it is something like the energy in physics that is not observable but is inferred through a combination of behavior, thoughts, motivation, emotion, and so on. Personality makes the difference between all people (humans) from each other. But these differences are only in some "features and characteristics". Freud considers personality to be a combination of the three elements of "institution, self, transcendence." (Mayer, 2007) considers personality as a dynamic organization of the perceptual, passive, voluntary, and physical aspects of man. Personality traits are a precursor to academic performance and academic buoyancy. Motowidlo, Hooper, and Jackson (2006) believe that personality traits can predict situational behaviors. These traits interact with situations and the environment. This determines the behavior and how you interact with others. Due to this, we expect that the way people interact and communicate with others, like many other activities, will be influenced by their personality. The effect of personality dimensions on behavior and cognition causes behavioral, cognitive or non-cognitive consequences in such a way that it has a significant effect on the rate of academic buoyancy and subsequently in the organization and implementation of education programs and students' treatment of current academic challenges (Bauer & Liang, 2003). Parents' personality traits can also determine their educational status and performance due to their children's close relationship with them. Many of a child's personality traits are influenced by parental personality traits. Parents raise their children in different ways based on their cultural patterns and ideals. In many educational and professional environments and situations, individual abilities are emphasized as the main factor of success, but it should be noted that abilities alone cannot be a factor of success, but individual differences between individuals should be considered as important and effective factors in the job and academic success of individuals (Poropat, 2014). A review of the research background shows that there is a significant relationship between personality traits and academic performance (Chamorro□Premuzic & Furnham, 2003; Hakimi, Hejazi, & Lavasani, 2011; Hazrati-Viari, Rad, & Torabi, 2012). Furthermore, there is a relationship between personality traits and academic buoyancy (Martin, 2013; Martin, Colmar, Davey, & Marsh, 2010; Putwain, Connors, Symes, & Douglas-Osborn, 2012) as well as academic buoyancy and academic performance (Martin, 2014; Putwain & Daly, 2013; Putwain, Daly, Chamberlain, & Sadreddini, 2016).

The importance of the mentioned findings on the one hand and the lack of studies related to the interactive

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study of these variables in the educational context of the country, on the other hand, has been the most important motivator for the present study. In this regard, an attempt was made to investigate and explain the mediating role of academic buoyancy in the relationship between parents 'personality traits and students' academic performance. Therefore, the hypothesis of the present study has been expressed and examined in the following format: Academic buoyancy plays a significant mediating role in the relationship between parental personality traits and academic performance in high school students.

Material and Method

The present research design is a descriptive correlation in which the hypothetical relationships between the variables of the research model in the form of structural equation methods have been investigated. In this study, personality traits play a role as an exogenous variable, academic buoyancy as a mediating variable, and academic performance as an endogenous variable. The statistical population of this study was all male and female high school students in Fasa in the academic year of 2018-19 who were studying in high schools in Fasa. To estimate the sample using a multistage cluster random sampling method, 493 students (248 girls and 245 boys) were selected as a statistical sample. Out of 14 boys 'schools and 14 girls' schools in Fasa, four girls 'schools and four boys' schools were randomly selected and two classes were selected from each school. Students in selected classes were the sample size, and the parents of the same students also participated in the statistical sample.

After collecting the scales, statistical analysis was performed on data from 493 people (245 boys and 248 girls) as a final sample. The following scales were used to collect data.

A) Five-factor personality scale NEO_FFI: NEO questionnaire is one of the newest questionnaires related to the evaluation of personality construction based on the perspective of factor analysis. In terms of reflecting the 5 main factors, this test is considered as a comprehensive model based on factor analysis today and its wide application in evaluating the personality of healthy people as well as in clinical affairs can be one of the most appropriate tools for evaluating personality. The NEOPI-R Personality Questionnaire replaces the NEO test developed in 1985 by McCreery and Costa. This questionnaire measures 5 main personality factors and 6 characteristics in each factor or other words 30 characteristics. In the standardization of the NEO test, which was performed by Grossi Farshi (Joshanloo, Daemi, Bakhshi, Nazemi, & Ghafari, 2010) on a sample of 2000 students from Tabriz, Shiraz, and medical universities of these two cities, the correlation coefficient of the 5 main dimensions was between 0.56 and 0.87 has been reported. Cronbach's alpha coefficients in each of the main factors of penness to Experience, Conscientiousness, Extraversion/Introversion, Agreeableness, and Neuroticism were 0.86, 0.73, 0.56, 0.68, and 0.87, respectively. To evaluate the content validity of this test, the correlation between the two forms of the personal report (S) and the observer evaluation form (R) was used. The maximum correlation was 0.66 in the extraversion factor and the minimum was 0.45 in the adjustment factor cited by Grossi Farshi (Joshanloo et al., 2010). In the present study, the reliability of this scale was determined by calculating Cronbach's alpha, the value of which was 0.89 for irritability, 0.81 for extroversion, 0.75 for openness, 0.78 for compatibility, and 0.91 for conscientiousness.

B) Academic Performance Scale: To measure academic performance, the academic performance test in the Dortaj, Mousavi, and Rezaei (2013) has been used. This test has 48 questions. Some questions affect only one factor while others affect more than one factor. This questionnaire measures five factors of self-efficacy,

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emotional effects, planning, lack of outcome control, and motivation. The reliability of this test was obtained by Dortaj et al. (2013) by the internal consistency method (Cronbach's alpha, 0.73). The degree of reliability obtained in each of the areas related to academic performance is the first factor (0.92), the second factor (0.93), the third factor (0.73), the fourth factor (0.74), and the fifth factor (0.72). In the present study, the reliability of this questionnaire was determined by calculating Cronbach's alpha, the value of which was 0.92 for the whole scale, 0.84 for self-efficacy, 0.91 for planning, 0.88 for emotional effects, and 0.82 for lack of outcome control and 0.79 was obtained for the motivation component.

C) Academic Buoyancy Scale: Martin (2013) Academic Buoyancy Scale were used to measure the Academic Buoyancy Scale. The responses on the Martin and Marsh (2009) scale are calculated on a 7-point Likert scale (strongly disagree 1, strongly agree 7). The Martin and Marsh scales were stable in terms of internal consistency and retesting (Cronbach's alpha, 0.80, and retest, 0.67). In Iran, Cronbach's alpha coefficients obtained by deleting item 8 were equal to 0.80 and the retest coefficient was equal to 0.73. Also, the correlation range of items with the total score is 0.51 to 0.68 (Jahedizadeh, Ghonsooly, & Ghanizadeh, 2019). In the present study, the reliability of this questionnaire was determined by calculating Cronbach's alpha, the value of which was 0.87 for the whole scale. Note that the conditions of the research were explained to all participants in the research and after obtaining their permission; their answers were used as the main data in this research.

Results

In this section, first, the descriptive findings of the research variables and then the model test results are presented. Descriptive findings related to the mean, standard deviation, minimum and maximum scores of the subjects on the research variables are shown in Table 1.

Table 1. Descriptive findings related to research variables in the sample

Variable	Mean	SD	Min.	Max.
Academic Buoyancy	38.45	2.58	32	45
Planning	59.40	6.20	28	70
Lack of Outcome Control	11.84	2.81	5	18
Emotional Effects	23.83	5.90	8	37
Motivation	52.72	5.22	21	65
Efficacy	31.20	3.35	15	38
Neurosis	21.37	6.73	12	38
Extroversion-Introversion	46.04	4.86	32	60
New Experiences	46.04	4.70	33	60
Agreeableness	46.03	4.92	33	60
Conscientiousness	45.98	4.68	33	60

N=493

Results revealed the highest correlation coefficient is related to the liberal style with extroverted introversion (0.92) and the lowest correlation coefficient is related to the lack of outcome control with new experiences (0.14). To use the structural equation modeling method, first, the assumptions were examined and the missing data were restored by the data replacement method with the mean of the variable. They were not above or below the mean, and to examine the multivariate outlier data, the Mahalanobis distance was calculated

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along with the significance level for the observed variables. Kolmogorov-Smirnov Test was used to check the normality of the data. Considering that the significance level values in all variables were higher than 0.05, the normality of the research variables was ensured. Tables 2 and 3 present the parameters for measuring the direct relationships of the variables in the whole sample and the suitability indicators of the research model.

Table 2. Parameters for measuring the direct relationships of variables in the whole sample

Path	Beta	B	Standard Error	Sig.	Result
Personality traits to academic buoyancy	0.76	0.49	0.023	0.01	Confirmed
Personality traits to academic performance	0.36	0.18	0.03	0.01	Confirmated
Academic buoyancy to academic performance	0.52	0.40	0.054	0.01	Confirmated

According to the reported fit indices, CMIN/DF index (3.61) is less than 5, the RMSEA index with a value of 0.072 is less than 0.08, and the GFI, AGFI, NFI, CFI, and IFI indices are higher than 0.9 which indicated a good consistency level. The direct relationships of the variables in table 2 show the standard coefficients of personality traits to academic buoyancy ($\beta = 0.76$, $P < 0.01$), personality traits to academic performance ($\beta = 0.36$, $P < 0.01$), and academic buoyancy to academic performance (=($\beta = 0.52$, $P < 0.01$) is positive and significant. To examine the indirect relationships of variables was done through the bootstrap method. Table 3 shows the mediation test of the indirect relationships between the variables of parental personality traits and academic performance based on the mediating variable of academic buoyancy by the bootstrap method.

Table 3. Indirect mediation test of parental personality trait variables with academic performance based on the mediator of academic buoyancy variable

Path	Data	Bootstrap	Bias	Error	Low Limit	Upper Limit
Parents' personality traits to academic performance through academic buoyancy	0.821	0.080	0.0019	0.0271	0.028	0.138
Neurosis to academic performance through buoyancy	0.059	-0.061	-0.0017	0.0817	-0.223	0.110
Extroverted Introversion to academic performance through academic buoyancy	0.355	0.0351	-0.0045	0.0815	0.227	0.563
New experiences to academic performance through academic buoyancy	0.105	0.082	-0.0233	0.1734	0.227	0.358
Adaptability to academic performance through academic buoyancy	0.233	0.216	-0.0173	0.1549	0.106	0.498
Conscientiousness to academic performance through academic buoyancy	0.168	0.153	-0.0150	0.1657	0.172	0.475

The results of Table 3 revealed that the indirect relationship between personality traits and academic performance through academic buoyancy does not include zero. Therefore, the research hypothesis is confirmed. In other words, the variable (academic buoyancy) mediates the relationship between the exogenous variable (personality traits) and the endogenous variable (academic performance).

Discussion

The present study was conducted to investigate the mediating role of academic buoyancy in the relationship between personality traits and academic performance of high school students. In this regard, the findings of data analysis by structural equation method indicated that academic buoyancy mediates the relationship between exogenous variables (parental personality traits) and academic performance. This finding is consistent

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with the earlier studies (Hazrati-Viari et al., 2012; Martin, 2013, 2014; Martin et al., 2010). In general, personality traits such as positive self-concept, sociability, intelligence, adequacy in educational work, self-regulation and self-regulation, self-esteem, good communication, mental and physical health, and problem-solving skills are among the factors affecting the increase of academic buoyancy. Therefore, we can expect that if students have high positive personality traits and low negative personality traits, they will be better able to do their homework and continue their education with more effort and seriousness, which will lead to their academic buoyancy and high motivates and interests them to study and affects their academic performance and lead them to progress in education.

In addition to the findings, the present study also had some limitations. One of the limitations of the present study is that due to the correlational nature of the research, caution should be exercised in causal inference. Considering that the present study has been performed on high school students in Fasa, the results obtained apply to the same community and in generalizing the results to other age and educational groups, caution should be exercised and observed. Self-reporting tools were used to collect data from students and parents, which should be considered as a limitation of self-reporting tools. The results of the present study, like many other studies, may encourage participants to use socially validated methods due to the use of self-report tools instead of studying actual behavior. Also, due to the study of several variables in this study and the simultaneous implementation of questionnaires and its time-consuming, it increased the incidence of fatigue in students.

We suggest that to better understand and better understand individual and environmental factors as well as cultural and social factors, variables such as religion, self-regulation, and parental resilience should be considered in future research. We suggest that in future research, students in other academic courses and separated based on sex be examined. Also, we suggest that interested researchers study demographic variables such as sex, age, socio-economic status, and household income concerning the proposed research model.

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