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Investigating the mediating role of psychological problems in the relationship between perfectionism and self-esteem in students

Abstract

In every educational environment, low self-esteem is associated with numerous psychological disorders including anxiety, depression, and stress. The present study aims to investigate the mediating role of psychological problems in explaining the relationship between self-esteem and perfectionism in students. The present research was cross-sectional and its statistical population consisted of all bachelor, master's, and basic sciences students at Isfahan University of Medical Sciences in 2019-2020. Sampling had a multi-stage random cluster method. The sample size was equal to 580. Data from 589 participants were collected according to the drop of probability sampling Depression, Anxiety, and Stress Scale- 21 Items (DASS-21), Rosenberg's Self-Esteem Scale (RSES), and Frost Multidimensional Perfectionism Scale (FMPS) were used to collect data. Data analysis was performed using structural equation modeling (SEM). The regression coefficients related to the direct and indirect effects of positive perfectionism on self-esteem were 0.375 and -0.019 respectively which were statistically significant ($p<0.05$). Furthermore, regression coefficients of direct and indirect effects of negative perfectionism on self-esteem were -0.467 and -0.251 respectively which indicates a negative and significant relationship with self-esteem ($p<0.05$). The regression coefficient of the direct effect of psychological problems on self-esteem was -0.416 which specifies a negative and significant relationship between them ($p<0.05$). Given the research results and the mediating role of psychological problems in the relationship between perfectionism and self-esteem, planning to reduce psychological problems (anxiety, depression, and stress) could play a major role in improving self-esteem by decreasing negative perfectionism and increasing positive perfectionism.

Keywords: *Psychological problems, Perfectionism, Self-esteem, Medical students*

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Introduction

Self-esteem is a psychological term that reflects the individuals' evaluation or estimation of their values (1) and is extremely important in universities (2) because it appears that low self-esteem is associated with academic problems and low emotional adaptation in both personal and social fields; hence, it is essential to consider it among students (3). Dimensions of self-esteem include the social dimension (self-feeling as a friend to others), academic dimension (self-adaptation to desirable educational standards), familial dimension (individual's self-feelings as a family member), and the general self-esteem dimension (a more general self-assessment in all fields) (4). Increasing academic self-esteem causes a feeling of empowerment, as well as positive changes such as academic achievement, greater efforts to achieve success, high self-confidence, ambition, and the desire to have better health (5).

Low self-esteem is associated with multiple psychological disorders and is known as an important cause of depression that can lead to problems such as social isolation and even addiction (6, 7). According to a study on Ohio students, there is a significant correlation between depression and self-esteem as people with low self-esteem are more likely to become depressed (8). Depression is an important problem for students and its emergence at a younger age leads to a large drop in social, academic, and occupational performance. The prevalence of depression is increasing in the world and it is predicted to become the second most important and common disease in the world by 2030 (9). Studies indicate a much higher level of depression in medical students than in other groups owing to the stressful nature of these fields (10).

Since self-esteem is the most important cause of individuals' psychological process of development with potential effects on their feelings, thoughts, values, desires, and goals, the more people fail to acquire self-esteem, the more they suffer from mental instability, anxiety, self-doubt, truth aversion, and feeling of life inadequacy. People with higher self-esteem can easily cope with threats and anxiety-provoking events in life without experiencing negative reactivity and mental disintegration (11). Erdinç Duru et al. (2019) reported that violence and social support had mutual direct effects on self-esteem, and it mediated the relationships between violence, depression, and anxiety. The findings also indicated that the

indirect impact of violence on anxiety and depression through self-esteem might be different depending on the social support level (12). A study by Meredith Wilson & Zaneta Thayer (2018) indicated that people with depression and stress significantly had lower self-esteem. (13) Evanthia Sakellari et al. (2018) reported a significant positive correlation between depression and stress in students. The correlation analysis indicated a correlation between a high level of self-esteem and a lower level of depression, while the power of religious and spiritual beliefs had a negative correlation with depression (14). Various studies indicated that maladaptive perfectionism was correlated with higher negative psychological outcomes, including lower self-esteem, higher depression, and anxiety (15-18). Perfectionists overgeneralize their failure experiences; hence, it is not far-fetched that studies indicate the correlation between perfectionism with anxiety, depression, low self-esteem, suicide, coronary heart disease, and procrastination (19).

It is very important to identify factors that affect self-esteem because they can prevent negative consequences of psychological and academic problems and financial costs. Self-esteem plays a major role in students' success and motivation because it leads to their positive courageous attitudes in life, and a belief that they can achieve their goals; hence, it can play a major role in students' efforts and academic progress.

An important objective of studies on self-esteem is to identify factors that cause low self-esteem in students; hence, effective measures can be taken to prevent or reduce underlying factors of lack of self-esteem. Personality and motivational variables such as perfectionism, and psychological problems (depression, anxiety, and stress) as determinants of self-esteem, and the interactive correlation between these variables in a general model in this research helps to better understand the antecedent factors of self-esteem. Within this context, and as most of the studies used simple models and investigated the pairwise correlation of variables, and did not examine the combined effects of all variables on self-esteem in the student population, it was essential to investigate such a correlation. To this end, the present research examined the correlation between the variables in a mixed-method study to determine the correlation of each one with self-esteem and their multiple relationships, together with increasing the experts' information about students' education and helping students solve their behavioral problems with self-esteem as an important factor in teaching and learning process. The main objective of the present research was to provide a model to investigate the effect of perfectionism on self-esteem with the mediating role of psychological problems (stress, anxiety, and depression) to understand the impact of motivational and personality factors, as well as their direct and indirect effects on self-esteem to better predict and control the incidence of low self-esteem.

Methodology

The present study was a cross-sectional type and its statistical population consisted of all bachelor's and, master's degrees students of Basic Sciences and basic science course students at Isfahan University of Medical Sciences in 2019-2020. The inclusion criteria were as follows: Students of the first to fifth semesters, had? no psychological problems. The exclusion criteria were as follows: The unwillingness to participate in the study, and non-answer to most of the main questions.

In the study, some students of Isfahan University of Medical Sciences were considered as samples according to multi-stage random cluster sampling. Multi-stage sampling was performed among all faculties of Isfahan University of Medical Sciences and students of all grades and basic science courses of the faculty of medicine in a way that first, the number of students at each faculty was obtained according to the grade, field of study, and semester of entry by visiting the department of education of the university, and then, the faculty was considered as a category. According to the relative frequency of each category, the proper number of samples was considered for each faculty. Thereafter, the necessary numbers of samples from each field and each entry were obtained based on different fields of study which were considered as categories, and the year of entry. Finally, the categories were considered as clusters by visiting the department of education of the relevant faculties for the fields with more than one category. Then, the fields with only one category were randomly selected within each category.

It should be noted that the number of items involved in SEM (or in other words, the number of model parameters) played a decisive role in calculating the sample size in studies that used SEM. In the present research, there were about 60 items, and the researchers collected data from 600 students considering 10 participants per question and a total of 589 participants answered all the questions.

Research Tools

Self-esteem: Rosenberg's Self-Esteem Scale (RSES) was utilized to measure self-esteem in the present research. This scale consisted of 10 questions, five of which were negative and the other five questions were positive. Each article had two options, agreement and disagreement. The minimum score of this scale was zero and the maximum was 10. The closer the individuals' scores were to 10, the higher their self-esteem was. RSES measures overall self-esteem. The divergent and convergent validities of the tool were considered suitable and acceptable in many studies. (20) In Mohammadi's study, the reliability of the questionnaire was 0.69 and 0.68 respectively

using the Cronbach's alpha coefficient and the split-half method in students of Shiraz University, and its test-retest coefficient was also equal to 0.77 after one week, 0.73 after two weeks, and 0.78 after three weeks. (21) The reliability of the scale was 0.85 using Cronbach's alpha coefficient in the present research.

Psychological Problems: The state of stress, anxiety, and depression was examined using the short-form Depression, Anxiety, and Stress Scale- 21 Items (DASS-21). Therefore, the participants with mild, moderate, severe, and very severe levels of stress, anxiety, and depression were placed in a class of subscales. DASS-21 was designed by Lovibond in 1995 to assess stress, anxiety, and depression using 21 questions. It comprised 3 components and each of its subscales included 7 questions, and the final score for each question was obtained by summing the scores of the questions. Each question was scored from 0 (it is never true about me) to 3 (it is extremely true about me). Since DASS-21 is a short form of the main scale (42 questions), the final score of each subscale should be doubled. Lovibond reported a validity of 0.77 for DASS-21, and also the reliability of DASS-21. Its components were obtained using Cronbach's alpha method (0.88 for depression, 0.82 for anxiety, and 0.90 for stress). (22)

Perfectionism: In the present study, Frost Multidimensional Perfectionism Scale (FMPS) was utilized to measure perfectionism. FMPS was designed by Frost et al. based on the multidimensional model of perfectionism in 1990. The multidimensional model of perfectionism introduced by Frost et al. in 1990 comprised six components as follows: Concern over Mistakes (CM), Doubts about actions (D), Parental Expectations (PE), Parental Criticism (PC), Personal Standards (PS), and Organization (O). FMPS also included 6 subscales which were measured by 35 questions. (23) There are two positive and four negative dimensions in this questionnaire. The positive dimensions include personal standards and organization, and the negative dimensions include concern over mistakes, doubts about actions, parental expectations, and parental criticism. (24) In the Iranian version of this questionnaire, the internal consistency coefficient was equal to 0.86 for the entire questionnaire and 0.85, 0.72, 0.78, 0.47, 0.57, and 0.83 for concern over mistakes, doubts about actions, parental expectations, parental criticism, personal standards, and organization respectively. The retest-test coefficient was 0.90 with an interval of one week for the entire questionnaire. This coefficient was as follows for the subscales: 0.84 for CM, 0.81 for D; 0.79 for PE, 0.53 for PC; 0.85 for PS, and 0.83 for O. The convergent validity of FMPS was reported suitable based on the relationship with positive and negative perfectionism questionnaires (25).

Data Analysis

Data were analyzed by SPSS and MPLUS. The descriptive report of normal numerical variables was in mean and standard deviation. The report of non-numerical variables was in number and percentage. The correlation of numerical variables was examined using Pearson (or Spearman) correlation coefficient. Direct and indirect correlation between variables of perfectionism dimensions (positive and negative perfectionism) with self-esteem was also examined in the presence of mediating variables (psychological problems) using structural equation modeling (SEM).

Structural equation modeling (SEM) is a very powerful general multivariate analysis from the multivariate regression family, or in other words, an extension of the general linear model which allows researchers to simultaneously test a set of regression equations (26). This technique is not a single statistical method but it refers to a family of relevant processes and has various equivalents such as covariance structure analysis, covariance structure modeling, and causal modeling (27).

Finally, the fitted main model adequacy was examined using the adequacy indices. The indices for presenting the results of the model in the present study included the Bonett- Bentler index or normed fit index (NFI) (with a value 0 to 1, acceptable range: values greater than 0.9), Tucker Lewis index (TLI) (with a value of 0 to 1, acceptable range: values greater than 0.9), Comparative fit index (CFI) (with a value of 0 to 1, acceptable range: values greater than 0.9), Relative fit index (RFI) (with a value of 0 to 1, acceptable range: values greater than 0.9), and the root mean square error of approximation (RMSEA) (with a value of 0 to 1, acceptable range: values less than 0.05). (28-32)

Findings

According to Table 1, 68.2% (n=268) of female students and 62.8% (n=123) of male students were studying for a bachelor's degree and 16.3% (n=64) of female students and 9.7% (n=19) of the male students were studying at masters level, and 15.5% (n=61) of the female students and 27.6% (n=54) of the male students were studying at the doctoral level, and 7.7% (n=15) of male students and 14.5% (n=57) of female students were married.

Table 1: Distribution of Students under Study at Isfahan University of Medical Sciences in 2018-2019 according to Demographic Variables

Demographic characteristics	**Female**	**Male**
Age (mean ± standard deviation)	23.51±5.62	23.31±5.5
Marital status: Number (percentage) Married Single	57 (5.5) 336 (85.5)	15 (7.7) 181 (92.3)
Education level: Number (percentage) Bachelor Master Doctorate	268 (68.2) 64 (16.3) 61 (15.5)	123 (62.8) 19 (9.7) 54 (27.6)

The data in Table 2 indicate the mean and standard deviation of the scores obtained separately from students.

Table 2: Mean and Standard Deviation of the Variables of Psychological Problems, self-esteem, and Dimensions of Perfectionism in the Entire Research Sample

Variable/component	**Mean (standard deviation)**
Depression	14.41 (5.63)
Anxiety	12.56 (4.46)
Stress	16.41 (5.52)
Self-esteem	4.41 (5.45)
Concern over Mistakes (CM)	28.05 (6.77)
Doubts about actions (D)	11.77 (3.01)
Parental Expectations (PE)	16.13 (4.20)
Parental criticism (PC)	10.33 (3.48)
Personal Standards (PS)	26.81 (4.01)
Organization (O)	24.27 (4.27)

Table 3: Correlation Coefficients between Dimensions of Perfectionism, Psychological Problems, and Self-esteem in the Entire Research Sample

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1-Depression	1								
2-Anxiety	.686**	**1**							
3-Stress	.761**	.721**	**1**						
4- Self-esteem	-.725**	-.554**	.618**	**1**					
5-Concern over mistakes	.528**	.432**	.569**	-.517**	**1**				
6- Doubts about actions	.503**	.512**	.562**	-.493**	.597**	**1**			
7- Parental expectations	.187**	.206**	.250**	-.141**	.363**	.269**	**1**		
8- Parental criticism	.562**	.489**	.538**	-.525**	.463**	.451**	.422**	**1**	
9-Personal standards	-.124**	-.054	.016	.154**	.212**	.179**	.191**	-.119**	**1**
10- Organization	-.169**	-.154**	-.094*	.194**	-.001	-.010	.040	-.168**	-.379**

According to Table 3, there is a significant correlation between psychological problems and dimensions of perfectionism with self-esteem ($p<0.01$).

According to the findings of Table 3, there was a positive and significant correlation between self-esteem and the positive dimension of perfectionism, but a negative significant correlation between the negative dimension of perfectionism and psychological problems (Stress, anxiety, and depression). Furthermore, self-esteem had the highest correlation (-0.525) with parental criticism (a negative perfectionism dimension), while it had the lowest correlation (-0.141) with parental expectations (a negative perfectionism dimension). According to the table, depression had a positive significant correlation with anxiety, stress, and dimensions of negative perfectionism,

but had a negative significant correlation with self-esteem and dimensions of positive perfectionism.

Based on the data of this table, anxiety had a positive significant correlation with stress, depression, and negative dimensions of perfectionism, while it had a negative significant correlation with positive dimensions of perfectionism.

Table 3 indicates that stress had a positive significant correlation with dimensions of perfectionism, while it had a negative significant correlation with self-esteem.

In this research, the authors performed several modelings to obtain an optimal model in terms of goodness and fit indices. Finally, we reached a model with optimal criteria with optimal CFI and TLI of over 0.9 (Table 4).

Table 4: Goodness and Fit indices of the Whole Population Model

Indicator	**Recommended value**	**Fitted model**	**Result**
The ratio of chi-square minimum and DF (CMIN/DF)	≥0.05	6.107	Fitted
Comparative Fit Index (CFI)	≥0. 90	0.929	Fitted
Tucker-Lewis Index (TLI)	≥0. 90	0.929	Fitted

Table 5: Direct and Indirect Correlation between Perfectionism and Psychological Problems with Self-esteem

Indicator	**Direct correlation**	**Indirect correlation**	**Total effect**
Positive perfectionism	0.218	-0.019	0.355
Negative perfectionism	-0.344	-0.251	-0.718
Psychological problems	-0.451	0	-0.416

All direct and indirect relationships were significant at a 0.05 level. The regression coefficient of the total effect of the correlation between positive perfectionism and self-esteem was 0.355. This indicates a positive significant correlation with self-esteem, while the total effect of the correlation coefficients between negative perfectionism and psychological problems with self-esteem were -0.718 and -0.416 respectively which signifies a negative and significant correlation with self-esteem.

The regression coefficient was equal to 0.218 for the direct correlation of positive perfectionism variables and psychological problems with self-esteem that indicates a significant correlation with self-esteem, while the regression coefficients of negative perfectionism and psychological problems with self-esteem were -0.344 and -0.451 respectively signifying a negative significant correlation with self-esteem.

According to data in Table (5), the regression coefficients of the indirect correlation between positive perfectionism and negative perfectionism with self-esteem were -0.019 and -0.251 respectively. It indicates a negative and significant correlation with self-esteem.

Table 6: Regression Coefficients of Pand Psychological Problems Variables for Predicting Self-esteem in Students

Row	**Correlation of Variables**	**Regression Coefficients**	**SE**	**P-value**
1	Negative perfectionism ⟶ Psychological problems	0.870	0.026	<0.0001
2	Positive perfectionism ⟶ Psychological problems	-0.264	0.046	<0.0001
3	Negative perfectionism ⟶ Self-esteem	-0.344	0.097	<0.0001
4	Positive perfectionism ⟶ Self-esteem	0.218	0.054	<0.0001
5	Psychological problems ⟶ Self-esteem	-0.451	0.094	<0.0001

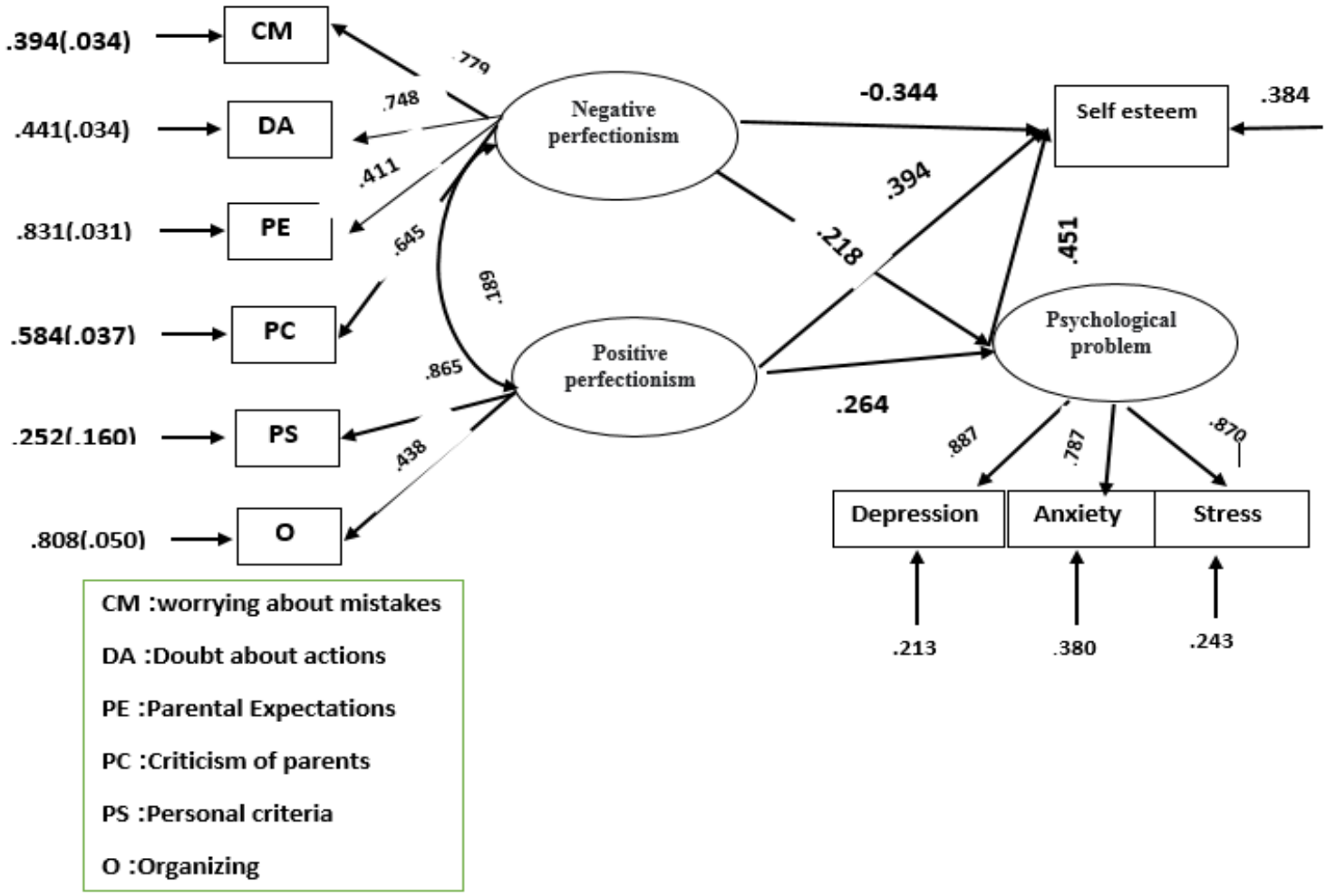

Figure 1: Direct and Indirect Relationship between Psychological Problems and Perfectionism with Self-esteem using SEM

Discussion

An objective of the present research was to determine the direct correlation between positive and negative perfectionism with self-esteem in medical students of Isfahan in 2020. The analysis of this hypothesis indicated that positive perfectionism had a positive significant correlation with self-esteem, indicating that the higher people had positive perfectionism, the higher they had self-esteem. According to this hypothesis, positive perfectionism created realistic and rational expectations according to individuals' abilities and limitations. This realism helped individuals not to impose hard standards and unattainable goals on themselves and others by limiting expectations in both personal and interpersonal fields. Therefore, in light of this psychological fact, they could strengthen their self-esteem by reducing the fear of failure and increasing personal satisfaction. However, negative perfectionism had a negative significant correlation with self-esteem, indicating that the higher people had negative perfectionism, the lower they had self-esteem. In other words, negative perfectionism can be determined based on dissatisfaction and constant criticism of personal performance which causes a feeling of non-competence. In this regard, the present research was consistent with studies by Rice et al. (1998) (33), Ashby et al. (2002) (34), and Monica Fearn (2021) (35).

The results also indicated a negative significant correlation between psychological problems and self-esteem in a way that self-esteem decreased as psychological problems increased. According to this hypothesis, psychological problems (anxiety, depression, and stress) threatened students' mental health and affected efficiency, development of talent, and social identity. It had negative effects on their optimal performance as a widespread problematic phenomenon among the students. Since there was a mutual relationship between individuals' perceptions of their abilities and self-esteem, an increase in psychological problems led to a lower sense of worth and thus self-esteem by reducing their abilities and increasing failure. In this regard, the results were consistent with studies by Shah et al. (2020) (36), and Ezquiaga et al. (1999) (37).

The results of the analysis indicated that negative and positive perfectionism could affect self-esteem by two methods; first, in a direct way, and second, through psychological problems. The first hypothesis presents an explanation of the direct

effects of the dimensions of perfectionism on self-esteem. The findings of a mediating role of psychological problems indicated that negative perfectionism affected self-esteem mediated by psychological problems. The findings also indicated that the direction of this effect was negative. In this regard, negative perfectionism decreased self-esteem by increasing psychological problems. This finding indicated that negative perfectionism had a negative and incompatible nature which caused an increase in psychological problems. Furthermore, higher psychological problems (stress, depression, and anxiety) decreased self-esteem in students.

The higher positive perfectionism in the students decreased their psychological problems, which led to higher self-esteem. Therefore, psychological problems could probably play a mediating role between perfectionism and self-esteem constructs.

Even though the present study had a large sample size and a strong statistical method for data analysis the selection of the statistical population followed an appropriate method; it also had some limitations that must be taken into consideration for a better interpretation of the findings. The first limitation of the research was the cross-sectional type of study and thus the discovered correlation could not be assumed as a causal relationship. Second, data collection was performed with a self-report questionnaire way in the present study; hence, there was a possibility of carelessness in answering the questionnaires due to a large number of tools and students' impatience. Third, the research samples of the study were selected only from the students in one university. Therefore, it might not be able to be generalized in the universities or the students of different fields of study and other social groups such as students and employees. Therefore, more extensive studies should be conducted using representative samples of universities, different fields of study, and other groups.

Conclusion

The research results indicated that higher negative perfectionism directly and indirectly (by increasing psychological problems (anxiety, stress, and depression)) decreased self-esteem in the students; while increasing positive perfectionism directly and indirectly (by reducing problems psychological) increased their self-esteem. Furthermore, psychological problems (stress, anxiety, and depression) directly decreased their self-esteem in them.

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