



Research Paper

Meta-Analysis of Factors Associated with Academic Alienation



Ramin Gharibzadeh^{1*}, Reza Mohammadzadeh²

1 Assistant Professor of Educational Administration, Sayyed Jamaledin Asadabadi University, Hamadan, Iran.

Corresponding author: gharibzadeh@sjau.ac.ir

2 PhD Student in Educational Management, Faculty of Educational Sciences and Psychology, University of Ardabili University, Ardabil, Iran.

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Abstract

Given the issues and problems of students, one of the most important concerns of efficient school administrators at different levels is how to create appropriate environments for students in schools, so that they can study with a sense of joy, security, and enthusiasm and not suffer from academic alienation. The solution to these issues considered by administrators is to accurately identify the issue of academic alienation and the factors affecting it in Iranian society. This research aims to describe, analyze, and synthesize the presented findings in the field of factors associated with academic alienation. The method of this research is a meta-analysis. The statistical population of the present study consisted of written documents, including theses, research papers, and articles published in scientific journals between 1400 and 1390 that have addressed the issue of factors associated with academic alienation. Among the published works available in the reputable scientific database and unpublished works of the reference section of the libraries of Mohaghegh Ardabili, Tehran and Urmia universities, 19 documents were selected in 28 research factors. The information collected from each of the documents and studies in question was analyzed using CMA-2 and SPSS 22 software. The research findings showed that the value of the chi-square index was 0.418 and the value of the effect size in the fixed model was calculated as 0.259, and the study of these studies identified 28 influential factors and their impact was assessed as significant. All of the aforementioned values were assessed as significant at the 95% confidence level.

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Introduction

One of the most effective and important organizations in today's world is educational centers, including education and universities. Organizations that are the model for all formal institutions of society and are inextricably linked to the growth and development of each society in terms of morality, politics, society, culture and economy (Ghaedi et al., 2020). The place where the goals of education and training of each country are realized is its schools, and undoubtedly, schools are influenced by the organizational culture that governs education in a general way. Academic alienation is one of the variables that is related to the culture of schools and universities. School alienation or academic alienation is a relatively new concept that has recently emerged as a construct for understanding the behaviors of students (Abolghaseminejad, Borhaninejad, Khanjani, Saber, & Alizadeh, 2023).

Between the 1950s and 1970s, social scientists became interested in studying the alienation of students in schools (Brown & Keith, 1998). definition and classification of alienation initiated research in this field. He defined alienation as the existence of a discrepancy between personal expectations and the amount of reward obtained in modern society. Academic alienation is one of the concepts that is raised in the educational system and is also one of the most important problems that some students experience during the educational process. This crisis is referred to as the experience of isolation from a group or activity that the individual is normally expected to feel solidarity with or be

involved in (Mann, 2001) and manifests itself in the form of various behaviors such as membership in criminal groups, vandalism or vagrancy, absenteeism from school and school truancy, or other deviant behaviors (Ghazi Tabatabaei & Vadadhir, 2001).

Considering the problems and issues of students, one of the most important concerns of efficient school administrators at different levels is how to create appropriate environments for students in schools, so that they can study with a sense of joy, security, and enthusiasm and not suffer from academic alienation. The solution to solving these problems, considered by administrators, is to accurately identify the issue of academic alienation and the factors affecting it in Iranian society. Over the past few decades, the amount of scientific research in the fields of study related to the issue of academic alienation in the country has increased, so that the scientific community has been faced with extensive and accumulated information about the factors affecting academic alienation. The abundance and diversity of research conducted and the contradictory results obtained from them and the lack of a single finding, on the one hand, may create the impression that conducting this research is futile and causes a huge waste of money, and on the other hand, confuses the scientific community and policymakers. To escape from such critical conditions in research methods and in the process of reviewing and revising them, meta-analysis has been welcomed by the scientific community and is widely used as a set of systematic techniques

that resolve apparent contradictions and contradictions in research findings and, in addition to transforming the findings of different studies into a common scale, statistically discovers relationships between research features and findings (Gargurevich & Soenens, 2016). Today, meta-analysis, as a method for listing the strengths and weaknesses of research by quantitatively combining the results, provides the ability to evaluate and re-analyze them and creates a suitable basis for having a single estimate of multiple studies. Meta-analysis is the statistical combination of the results of independent and separate studies to reach general conclusions about the size of the sample size. In other words, this technique is a summary of previous research that uses quantitative methods to compare outcomes across a wide range of studies (Martínez-González, Atienza, Tomás, Duda, & Balaguer, 2021). Meta-analysis is a set of statistical methods that are used to combine the results of independent experimental and correlational studies that have the same research questions about a single topic and lead to a single estimate and conclusion. According to (Gargurevich & Soenens, 2016) literature review is more descriptive and narrative, but meta-analysis has an inferential and community aspect and, with the help of advanced statistical methods, goes beyond a mere review of literature and history; therefore, meta-analysis is more than a narrative review of literature (Gharibzadeh, Zahed Bablan, & Moeinikia, 2021).

Due to the rapid growth of science, researchers are faced with a vast amount of

information. In the face of this scientific explosion and for the rapid and accurate extraction of information, it is necessary for individuals to search the available sources in a structured manner. This helps to minimize biases and reduce errors. On the other hand, meta-analysis is the use of specific statistical methods to summarize the results of independent studies to find the most accurate form of relationship between the variables under study. These statistical methods help to summarize the information from different articles and summarize them objectively, and personal opinions do not have a significant impact on the process (Muyan-Yılık & Bakalım, 2022).

This work relates the results of past research in a way that, while clarifying the current state of knowledge in a particular field, removes mistrust and identifies areas that need further research and helps develop theory. Therefore, meta-analysis of academic alienation research in order to identify the causes and factors that shape and influence the emergence of academic alienation seems important. At the same time, an attempt is made to carefully examine the research conducted in order to identify, if possible, the similarities and differences of the studies conducted and to achieve patterns for modeling.

The importance of this issue is not limited to the fact that people and governments spend huge amounts of money annually on education and training and educating students. On the other hand, given the importance of the educational status of students, a lot of time, energy and costs are

spent on research on academic alienation every year, but the real factors affecting it have not yet been identified. We are faced with masses of incomplete and ambiguous information that sometimes lead to another study on academic alienation to resolve this ambiguity. However, it is possible to use previous research, even if incomplete and inadequate, using the meta-analysis method. By recording their characteristics and synthesizing their findings in the form of quantitative concepts using appropriate statistical methods, the need for re-research is eliminated and coherent and coordinated results are achieved. This leads to appropriate decisions and policies, and in this way, a suitable solution can be found to prevent the waste of human and economic capital and reduce academic alienation in students. Meta-analysis also leads to a reduction in the variance of the results of studies because it is based on a summary statistical analysis of determinants or effect sizes (Abolghaseminejad et al., 2023).

By conducting a meta-analysis study, more variables and contexts can be identified and investigated in relation to a problem. Therefore, the results of the research can be complementary to each other and presented in a relatively comprehensive pattern. From a methodological point of view, meta-analysis can be a test of the research conducted in terms of their validity and reliability, recognition of the capacities and limitations of the research and the necessity of conducting them. Meta-analysis is a technique that determines whether the studies contribute to the effect size? In other words,

is there an overall effect size that justifies the importance and impact of the intervention? If not, there must be factors that are involved in the difference between the individual effect sizes (Louyeh, Sohbatih, & Zadeh, 2014).

In the field of academic alienation, the results of some studies indicate that there is a relationship between the gender variable and academic alienation (Hemmati, Kianpour, & Aslani, 2015) but in contrast, other studies have reported no relationship between gender and academic alienation (Sharifi, Ebrahim Bay, Najafi Hodk, & Mohammadi, 2020). In addition, in the field of academic alienation, various studies believe that there is no relationship between economic and social status and academic alienation, but in contrast, other studies have reported a positive and significant relationship (Bahmani, Mahdavi Rad, & Balouchi, 2016); therefore, contradictions are observed in the research (Koldy & Safipour, 2002).

To resolve the contradictions resulting from such studies that have been conducted independently and in relation to academic alienation, statistical methods of meta-analysis can be used. Meta-analysis converts the results of different studies into a common scale and examines the relationship between the characteristics of the studies and the findings using statistical methods.

These contradictory results have also been seen in some other studies on the relationship between other variables and academic alienation, which forces the researcher to conduct a meta-analysis on the research conducted and present accurate and uniform

results. In addition to the importance and necessity of the research presented in the field of academic alienation, it has been considered necessary to apply a meta-analysis on academic alienation. The reasons for this can be many, which will be mentioned in the continuation of the study. Differences in sample size, measurement tools, research methods and situations make it more difficult to compare the findings. Therefore, the application of contradictory research results, their publication, interpretation and

evaluation require a solution that focuses on reviewing and analyzing the study history correctly, applying evidence and using a mixed method (Gharibzadeh et al., 2021). Therefore, the main goal of the present study is to conduct a meta-analytic review of domestic research on the relationship between research variables and academic alienation, to establish connections between studies, and to obtain a coherent result from scattered results using powerful statistical methods to answer the basic research question.

Research methodology

Given that the aim of this research is to describe, analyze, and synthesize the studies presented in the field of factors correlated with academic alienation based on the research conducted; the method of this research is meta-analysis. Meta-analysis is a set of statistical methods that are used to combine the results of independent experimental and correlational studies that have the same research questions on a single subject and lead to a single estimate and result (Gharibzadeh et al., 2021). Meta-analysis research is of an applied type and is classified as quantitative research. The method used to collect data in this research is library. In this research, the focus is on research conducted on a specific topic. Therefore, the population studied in this research is theses and articles (results of research conducted) related to factors correlated with academic alienation in Iran. This community more precisely includes theses from some universities, articles published in reputable domestic journals and

publications, and articles and abstracts related to this topic in a number of reputable and well-known Iranian scientific sites (such as noormagz, magiran, irandoc, sid) and universities of Tehran, Urmia, and Ardabil. Also, this research was not based on sampling, and the researcher's attempt was to examine the entire community (entire census). Therefore, the researcher's focus is on studying and collecting the information needed to summarize and draw appropriate conclusions from all members of the community. Therefore, a total of 24 articles and theses with completely matching topics or relatively high topic similarity and suitable for meta-analysis were collected between 1400 and 90. Then, by examining the conditions for entering each study into meta-analysis, 19 studies were identified as eligible and meta-analysis tests will be performed on them. 5 studies were excluded from the research sample, and their titles and reasons for exclusion were mentioned in a separate

table. It is necessary to explain that in the meta-analysis method, there is no specific limitation regarding the number of studies.

A coding form is used to collect the data required for meta-analysis. The coding form is an information collection tool used in meta-analysis. This form is equivalent to a questionnaire or interview form in other types of research. The coding form is used to obtain specific information such as the name of the researcher, type of article and year of publication and additional information such as sample size, measured variables, research implementation organization, statistical data obtained, etc.

Research Findings

In the 19 research documents presented in this study, the basic factors of each study, including the research method, statistical population, statistical sample, data collection tool, and the validity and reliability of this tool (if presented in the document), as well as the data analysis method, and finally the research results within the range of variables in the field of academic alienation, are mentioned. First of all, it is important to mention that in a number of studies, the researcher did not mention the validity and reliability of the tool used or used coefficients that other researchers have achieved in the process of validating and achieving the validity of the tool. In other words, the researcher himself did not try to achieve a coefficient that indicates the validity and validity of that tool.

The second and noteworthy point about the documents reviewed is that in some studies

In this study, fixed effects and random effects meta-analysis models will be used to analyze the data, and Hedges' g effect size will be used to obtain the disaggregated and total effect size for studies, funnel plots and Duval Tweedie's correction and fitting test will be used to examine publication bias, the error-free N test will be used to examine the number of missing studies, and the Q and I^2 tests will be used to examine the heterogeneity of studies. All these operations will be performed using Excel software and editing the Comprehensive Meta-Analysis Software (CMA2) using the combined effect size method.

that have followed the research process in the form of parametric statistical tests; It has been observed that the necessary test to examine the assumptions of parametric tests is not provided in the document, so in order to benefit from these studies, the researcher assumes that all the necessary assumptions have been observed by the researchers in all the documents used. For example, in a number of studies, the assumption of normality of data distribution should be examined by the relevant test (Kolmogorov-Smirnov), but no results that support this purpose are observed in the document. Therefore, with a little indulgence, all documents that have not tested the assumption of normality of data distribution have been used as other studies that are eligible for the aforementioned test.

Based on the information obtained, the studies in the field of variables correlated with

educational alienation are divided into three categories, the highest frequency of which is related to the studies of the last 5 years, equivalent to 48.3 percent, and the lowest number of studies related to the years 87-90, equivalent to 12.7 percent of the studies. Also, the largest volume of research is related to cases in which two groups of men and women were used to conduct research, which is 72.9 percent. The least amount of research in this field was conducted in the male statistical population, which is 2.6 percent. Also, the most sampling method used in research is the simple random sampling method, which accounts for 32.8 percent of research, and the least used method is the convenience sampling method, which accounts for 0.8 percent of research. On the other hand, the most used research method in research is the correlation research method, which accounts for 49.1 percent of research, and the least used method is the causal-comparative method, which accounts for 23.4 percent of research. Also, based on the information obtained, the most used statistical test in research is the F test, which accounts for 40.8 percent of research, and the least used statistical test is the Lambda-Wickles, Levine, Mann-Whitney, and Kruskal-Wallis tests, which accounts for 2.7 percent of research. Also, among the research conducted, 59.6% of the research was conducted among students and 40.4% among students.

Data analysis in the main research question: What are the factors correlated with academic alienation?

Research review has shown that in relation to the factors correlated with academic alienation (total index) of the statistical degree under study, 28 factors (hypotheses) have been extracted from 19 studies, of which 6 factors have emphasized the absence of a relationship and the rest have emphasized the existence of a relationship. In fact, H0 of the research has been rejected in 22 hypotheses (2χ is equal to 0.418) and the rest have been confirmed. From the comparison of the chi-square distribution table, it is concluded that 2χ of the rejected hypotheses is smaller than 2χ of the chi-square distribution table by a value of 0.418, therefore H0 is rejected and H1 of the research is confirmed at the 0.05 level.

In this section, first, a funnel plot is presented based on the standard error and precision indices in each of the studies in uncorrected and corrected forms. After that, the calculated results of the effect size for each of the studies are reported. The homogeneity test of the studies and the determination of the safe incomplete number for each of the studies are also examined.

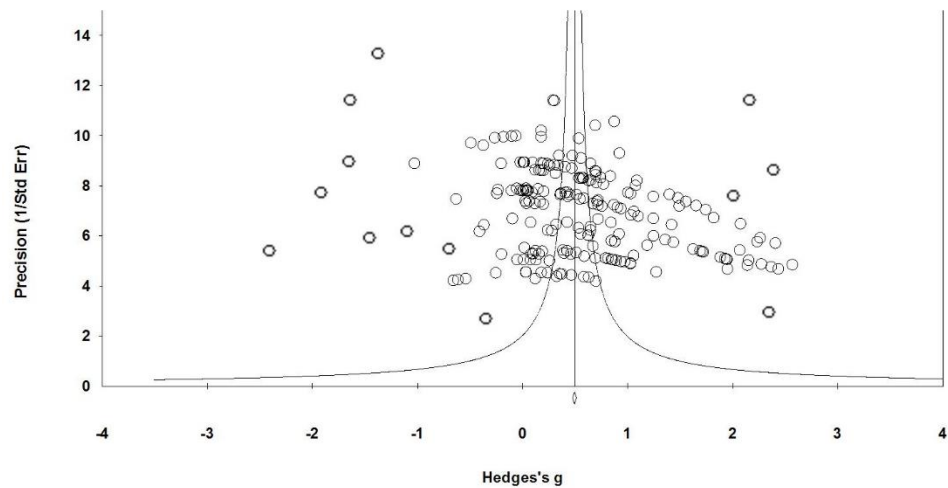


Figure 1: Funnel diagram based on precision index

According to Figure 1, it can be seen that the studies used in this study are not symmetrically distributed around the mean effect size axis, and the dispersion of studies around one side of the mean indicates the presence of bias in the studies. Large studies appear at the top of the chart and small studies

at the bottom of the chart. In order to examine and, consequently, eliminate this bias, the Duval-Tweedi imputation method was used. This method calculates the missing studies on the left side of the chart, the creation of which eliminates the bias. The results of using this method are reported in the table below.

Table 1: Duval-Tweedi imputation method

Q value	Random effects			Fixed effects			Ad ded studie s	
	Upp er limit	Low er limit	Estim ation point	Upp er limit	Low er limit	Estim ation point		
38965.5845	0.58623	0.45215	0.36254	0.44785	0.32652	0.28458		Obser ved Value
4452.1865	0.28652	0.15632	0.24516	0.26325	0.20315	0.18659	26	Adjus ted Value

Based on the results in Table 1, 26 missing studies were included. And the point estimate in the fixed effects model using the Duval and Tweedie arrangement and completion method has changed from 0.28458 to 0.18659, and the

point estimate in the random effects model has changed from 0.36254 to 0.24516. In other words, by adding 26 studies to the left of the average effect size, a state of symmetry is created in this diagram.

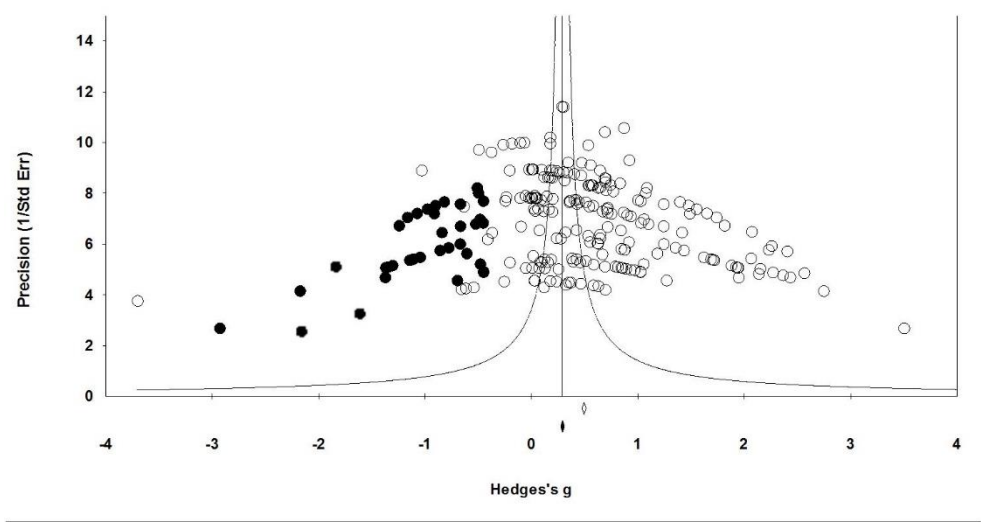


Figure 2: Modified funnel plot based on the precision index

Based on the results of Figure 2, by adding 26 studies to the left of the average, the existing bias in the diagram is eliminated and the distribution of studies changes from an asymmetric state to a symmetric state. The added studies are displayed as solid circles.

Study homogeneity assessment

The Q test was used to assess the degree of homogeneity of studies. The results of this test are given in Table 2.

Table 2: Results of the homogeneity test of studies

I^2	p value	df	Q-value	Model
4.65297	0.000	27	3652.000	Fixed

As can be seen in Table 2, the Q value is 3652, which is significant with a probability of less than 0.05. Therefore, the null hypothesis based on the homogeneity of the studies is rejected, which indicates that the group of studies under investigation is heterogeneous. Also, the I2 index shows that 65297.4 percent of the effect size changes in all studies are due to the heterogeneity of the studies.

Calculation of the effect size values for each study

For each study, the effect size values were calculated based on the Hedges g index (ordered from smallest to largest), the lower

limit, the upper limit, the z and p values at the 95% confidence interval, and their significance was assessed using the Fisher's z test.

Based on the results obtained, with the exception of some studies - demographic characteristics (Motahari Nejad & Gemini, 2020) for which non-significant effects were evaluated; for the remaining studies, significant effects were reported.

To examine the overall significance of the effect size after combining the studies, two fixed and random models were used, the results of which can be seen in Table 3.

Table 3: Results of combining the effect size of the studies and their significance

Calculating the average effects		Statistical indicators					Model
Negative	Positive	P value	Z value	Upper limit	Lower limit	g Hedges	
0.172	0.296	0.000	52.037	0.419	0.132	0.259	Fixed
		0.000	38.485	0.540	0.328	0.384	Random

As can be seen in Table 3, the overall effect size for studies in the fixed effects model based on Hedges' g index is estimated to be 0.259 with a 95% confidence interval of 0.132 to 0.419, and for the random effects model it is estimated to be 0.384 with a 95% confidence interval of 0.328 to 0.540.

Investigating publication bias of studies

The safe incompleteness index was used to investigate and determine the publication bias of the combined studies. Table 4 shows the results of publication bias

Table 4: Results of publication bias of studies

Number of Missing Studies	Number of Observed Studies	Z-Alpha	Alpha Value	P-Value	Z Observed Studies
2653	28	1.52609	0.04000	0.00000	45.30254

The results of Table 4 show that 2653 missing studies with an effect size of zero are needed to turn the above significant result into a non-significant result and the P value obtained reaches the alpha limit.

In the study of research conducted in the field of factors correlated with academic alienation, 28 factors from 19 studies were in the statistical sample, and the influential variables correlated with academic alienation in them are motivation for academic achievement, social capital, information technology, economic and social base, emotional intelligence, discipline, repetition and practice, marital status, family income, self-esteem, quality of educational factors, hope for the future, family emotional climate, physical health, mental health, self-regulated learning, academic self-concept, family size, learning environment, peer relationships, relationship between instructor and trainee, interest in education, virtual recreation, role modeling, learning styles, cultural factors, and individual factors. Among these variables, the null hypothesis was confirmed in the hypotheses related to the aforementioned variables, and in other cases, the research hypothesis was confirmed and the null hypothesis was rejected. In analyzing the results of rejecting or confirming H0 in existing studies using the chi-square

statistical index, the calculated value is 0.418, which, considering that this value is less than the critical chi-square, the calculated value is significant at the 0.05 level.

Discussion and Conclusion

Regarding the examination of the safe incomplete number test to eliminate publication bias in the studies used, it is important to mention one important point; that is, paying attention to the null hypothesis in this test, as the null hypothesis of the safe incomplete number test indicates the existence of heterogeneity in the studies, and this heterogeneity indicates the existence of a moderating variable (Gharibzadeh et al., 2021). Therefore, if the significant value does not exceed 0.05, an error occurs, and this error, which is evident in all research questions, is forced to accept significance due to the improbability of adding a large number of research documents with a zero effect size to the studies used, and the results obtained are trusted with the assumption of heterogeneity of the studies.

The research review showed that 28 hypotheses and factors have been developed in the form of 19 research works regarding the factors correlated with academic alienation.

The results indicate that out of 28 correlated factors, some studies parental education (Gharibzadeh et al., 2021) had non-significant effects, while significant effects were reported for the remaining studies.

In general, the results of the meta-analysis of studies in the field of academic alienation showed that the influential variables correlated with the academic alienation under study, in which a positive and significant relationship was confirmed, are: Academic achievement motivation (3 cases), social capital (1 case), information technology (2 cases), economic and social base (4 cases), emotional intelligence (2 cases), discipline (2 cases), repetition and practice (2 cases), marital status (2 cases), family income (3 cases), self-esteem (1 case), quality of educational factors (4 cases), hope for the future (2 cases), family emotional climate (2 cases), physical health (2 cases), mental health (2 cases), self-regulated learning (1 case), academic self-concept (5 cases), family size (1 case), learning environment (2 cases), peer relationships (2 cases), relationship between instructor and trainee (2 cases), interest in education (1 case), virtual leisure (4 cases), role-playing (2 cases), learning styles (2 cases), cultural factors (2 cases), and individual factors (4 cases). The results of the present study showed that the above research has the power to explain and predict academic alienation, and these results can be a serious solution to reduce academic alienation. Therefore, it seems logical here that the results of this finding are in line with the theories of the predecessors. And the theories

proposed in this field indicate that the results of the present study are reliable in order to act on it.

According to the meta-analysis, it was determined that most of the researchers' attention has been focused on the issues of academic achievement, individual factors, quality of educational factors, environment, economic and social base, academic self-concept, and virtual entertainment, and the areas related to other causal variables have been neglected. Therefore, it is better for other researchers to examine the correlation in other areas with academic alienation. It is also suggested that future researchers categorize the factors identified in the present study and use a new researcher-made tool to measure the level of academic alienation and the correlation between causal variables and academic alienation. Based on the findings of this study, the most important factor affecting academic alienation is the factor of academic self-concept and virtual entertainment. Based on this finding, it is recommended that educational organizations pay more attention to this factor in order to advance the goals related to the aforementioned variable. Therefore, it is hoped that officials and managers of educational centers will take measures to reduce academic alienation by relying on various tools and resources, including research, and especially the present study.

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