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Evaluation of the Psychometric Properties of Student Adaptation to College Questionnaire Among Iranian Freshmen

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Abstract

Background: Freshmen have to face different requirements, such as deciding on a future job, establishing a relationship with the other gender, adapting to a new environment, building new relationships, being away from family, and experiencing different courses and teachers. These different demands might make this period one of the most stressful times and turn the adaptation process into a difficult stage. Therefore, it is necessary to provide appropriate tools to determine the levels and difficulties of adaptation in various fields.
Objectives: This study aimed to investigate the psychometric properties of Baker and Siryk 67-Question Student Adaptation to College Questionnaire (SACQ) to provide an appropriate tool for diagnosing freshmen's problems.
Methods: The current study is a methodological study with a descriptive cross-sectional design. Given the construct structure of the questionnaire, it was tried to select 445 freshmen across different undergraduate fields using a multi-stage sampling method. Then, SACQ, Brief Psychological Adjustment-6, the Social and Emotional Loneliness Scale for Adults - Short Version, and the Beck Depression Inventory were administered. Then, confirmatory factor analysis, convergent and divergent validity, and Cronbach's alpha were calculated for data analysis.
Results: The results showed that the internal consistency coefficient of this questionnaire for all components was higher than 0.70, and it indicated that the tool was a suitable one. The confirmatory factor analysis showed that the 4-factor model of original developers had a better fit than the one-factor and six-factor models in this sample.
Conclusions: Since the factor structure of this scale was approved, it could be used to measure adaptation to college to determine and identify troubled or at-risk freshmen.

Keywords: Adaptation, Adolescent Behavior, Emotional Adjustment, Psychological Tests, Psychological, Social Adjustment, Student Dropouts, Students Public Health

1. Background

First-year students undergo a certain amount of stress due to difficulties in coping with their studies and with possible financial and social issues in their new life (1). In other words, during this period, students experience many social challenges and intelligence challenges (e.g., the requirement to complete homework) (2), which might be accompanied by emotional disturbances, such as loneliness, the grief of strangeness, mourning, and increased likelihood of drug use (3). Additionally, the results of several studies have shown that the highest rate of academic probation and dropout is related to freshmen (4, 5), and a significant number of this group of psychological problems meet the criteria of adaptation disorders in the Diagnostic and Statistical Manual of Mental Disorders (DSM) (6). Therefore, adaptation to the academic environment is an important issue for students and individuals related to students' mental health.

Adaptation to university can be considered an individual's ability to feel academic and social involvement in the university environment, development of emotional and personal well-being based on these feelings and conflicts, followed by a sense of commitment to the university and receiving a degree (7). It was defined as a "student's rapid and efficient adaptation to the various challenges faced by the student in the new academic environment" (8).

Although the concept of adaptation to the university

has been considered by researchers for many years, it seems that, until the 1980s, students' academic performance and success were considered the most important indicators of adaptation, and only a few studies have paid attention to its social dimension (9). However, both international and national Higher Education Institutions or HEIs generate and implement strategies and tools to meet the needs of first-time students and facilitate their adaptation to university life or AUL in areas that need to be strengthened. This adaptation can be characterized by four dimensions: academic, social, personal-emotional, and institutional (10).

A measure that has gained relevance is the Student Adaptation to College Questionnaire (SACQ) due to the ample evidence of its association with academic and personal variables related to the academic context of first-year students (8). This measure, which was presented by Baker and Siryk in 1989, is parallel with the four dimensions of AUL (7).

Baker and Siryk (11) considered adaptation to the university as a multifaceted concept and successful adaptation as responding to educational requirements, establishing a good social relationship with other students, professors, and administrative and educational staff, participating in various activities and programs, maintaining physical and psychological health and feelings, and undertaking commitment and institutional attachment. They considered the four dimensions of academic adaptation, social adaptation, personal-emotional adaptation, and institutional attachment/commitment to adapt to the university. The definition of each dimension is given in Table 1.

Baker and Siryk (11), based on their previous studies and conceptualization, developed the SACQ. Their purpose was to provide an appropriate and cost-effective tool for identifying students at risk of transfer problems upon entering high school from university to provide appropriate counseling and psychological services. The first version of the SACQ consisted of 52 components, including four dimensions of academic adaptation (18 components), social adaptation (14 components), personal-emotional adaptation (10 components), and general adaptation (10 components). In 1985, Baker and Siryk (11) presented a new version of this scale that was an extended version of the previous questionnaire. In the new version, the number of components was increased to 67, and the general adaptation subscale was removed. In addition, a new subscale called institutional attachment was added. The SACQ has been introduced as a tool for research or diagnostic purposes to identify students with poor adaptation to the university (12). The SACQ is one of the most widely used and popular tools for measuring the adaptation of students to the university, which has been used in various cultures and samples to measure the level of student's adaptation (9, 13-15) and for purposes, such as investigating the validity of other scales (16).

Although the psychometric properties of SACQ in Iran have not been studied in a study individually, few non-Iranian studies have examined the psychometric properties of the SACQ (7, 10-12, 17-21). The results of these studies showed that there was a sufficient correlation between the components of the scale, which indicates its appropriateness, and internal consistency coefficients (Cronbach's alpha) reported in different studies for the subcomponents, and the total score of the questionnaire has been above 0.84. Reports about the structure and factors of the SACQ model are different. Some studies indicated that the four dimensions- 27 item model has the best statistical adjustment, presenting evidence in support of its internal structure (7, 10, 11, 17, 19, 20). It was shown that the SACQ measured four factors of academic adaptation, social adaptation, personal-emotional adaptation, and institutional attachment, and its theoretical model was approved. However, some studies have not been able to confirm the 4-factor model considered by the original developers. In this regard, a 6-factor model (emotional adaptation, social adaptation, studying, academic adaptation, organizational adaptation, and educational adaptation) has also been proposed (12, 21).

Therefore, researchers have suggested that further studies could be performed on this tool, especially in different cultures (12, 19, 20). In addition, while there is still no evidence on the use of the SACQ in student retention programs, its dimensions have shown negative relationships to dropout (22) and negative effects (23) and positive relationships to remaining enrolled (24) and negative effects (23). Furthermore, there is a pressing need for the field of higher education to have instruments with evidence of validity in the newly enrolled university population. By completing the first semesters of their degree program, students can offer a realistic appreciation of how their transition to college has gone. Therefore, such tools that are designed for research and diagnostic purposes are of great value to therapists and researchers in the fields of counseling, clinical psychology, and students' mental health, especially given the large student population. Accreditation tools, such as the SACQ, are valuable for use in universities and student counseling centers.

Table 1. Specifications of Adaptation to College Questionnaire (Four-Factor Model)

No.	Adaptation Subscale	Definition	Measured Variables	Number of Items	Component Questions
1	**Educational**	Students' success in dealing with various educational and academic requirements (e.g., academic performance)	- Motivation (individual's attitude toward educational goals and required work); - Application (how to turn motivation into a real academic effort); - Performance (academic efficiency or success in various fields); - Educational environment (satisfaction with the educational environment and its related matters)	24	3, 5, 6, 10, 13, 17, 19, 21, 23, 25, 27, 29, 32, 36, 39, 41, 43, 44, 50, 52, 54, 58, 62, 66
2	**Social**	Students' success in meeting the interpersonal-social requirements of the university (e.g., communication with others)	- Public (degree of individual's success in various social activities) - Others (the degree of relationship and involvement of the individual with other individuals and individuals in the university); - Grief of strangeness (adapting to social displacement and being away from family); - Social environment (satisfaction with the social aspects of academic life)	20	1, 4, 8, 9, 14, 16, 18, 22, 26, 30, 33, 37, 42, 46, 48, 51, 56, 57, 63, 65
3	**Personal-emotional**	Students' mental state during adaptation to the university and the amount of physical problems and psychological pressures experienced during this period	- Psychological (feeling of psychological well-being); - Physical (feeling of physical well-being)	15	2, 7, 11, 12, 20, 24, 28, 31, 35, 38, 40, 45, 49, 55, 64
4	**Institutional attachment**	The degree of student's commitment and attachment to the educational and organizational goals of their university	- General (degree of satisfaction with the university in general); - This university (individual's feeling about being admitted to the current place of study)	15	1, 4, 15, 16, 26, 34, 36, 42, 47, 56, 57, 59, 60, 61, 65
5	**Overall adaptation** [a]			2	53, 67

[a] Items 67 and 53 are used exclusively to calculate overall adaptation.

2. Objectives

Our interest in the SACQ focuses on two general reasons. First, the SACQ is the most popular questionnaire that measures multi-dimensionally the students' adaptation to college, and secondly, the present study aimed to bring to the market an instrument that might be useful to all counseling centers from the universities and high schools in Iran. Although the SACQ has been used in Iranian research (25-29), a study that independently aimed to validate this scale was not found. Therefore, in this study, an attempt has been made to investigate the construct validity and the psychometric properties of the SACQ in the Iranian sample. In this regard, one-factor, four-factor, and six-factor models were examined.

Furthermore, previous studies support that loneliness increases among students during the college transition. Research also points out that students might have limited resources to deal with adjustment problems during this period, such as loneliness (30, 31). According to the literature, loneliness is a predictor of adjustment difficulties and has a significant negative relationship with academic adjustment (32-35). In addition, students in higher education appear to suffer a higher prevalence of psychiatric issues, such as depression, which has a significant impact on students' academic adjustment (36). Research has shown a significant negative association between adjustment and depression (37, 38). Then, along with the SACQ, measures of loneliness and depression were conducted to investigate the divergent validity. Additionally, a measure of general adjustment was used to study the convergent validity.

3. Methods

The current study is a methodological study with a descriptive cross-sectional design.

3.1. Participants

Since freshmen experience more difficulties, it seemed that the SACQ was more appropriate for them (39). Therefore, in the present study, freshmen from Urmia University, Azerbaijan, Iran, in October 2019 were selected as the research population. The sample was selected using a multi-stage sampling method. Seven faculties of literature and humanities, basic sciences, agriculture, natural resources, veterinary medicine, sports sciences, and economics and management were selected from the number of faculties of Urmia University. Then, one field

was randomly selected from each faculty. In the next step, a class of students was selected randomly from each field in undergraduate, master's, and doctoral degrees. To collect the data, first, the researcher was present among the research participants, explained the answering process, and then distributed the questionnaires among the research participants to answer. A brief explanation was provided about the purpose of the research, and the right to withdraw from filling out the questionnaire was also reminded. From 500 questionnaires, 445 cases were completely answered. The final sample size was 445 (n = 445). There is no consensus among researchers in the literature in terms of the sample size in confirmatory factor analysis. Some authors (40) recommend recruiting at least 5 or 10 participants per item. Considering that 67 items require at least 335 or 670 participants, it can be said that the sample size (n = 445) was sufficient to perform factor analysis in the current study.

3.2. Procedure

The SACQ was originally compiled and published in English. For this reason, in the first step, the scale was translated into Persian. Then, it was translated back into English by two faculty members of the English Language and Literature Department. Afterward, the necessary corrections were made, and the test was presented to 30 freshmen to check the comprehensibility of the sentences and their applicability. Then, according to the obtained results, the final corrections were made to the test. Next, the main sample was selected, and the test was performed in groups. Then, the reliability and validity of the SACQ were investigated.

3.2.1. Inclusion and Exclusion Criteria

Studying at Urmia University, not having a job, being in the first term of the university, and informed consent to participate in the study were the inclusion criteria. The exclusion criteria were the unwillingness of students to respond to the SACQ at any stage of research and an incomplete test.

3.3. Statistical Analysis

Descriptive statistics were used to analyze the demographic characteristics and to calculate frequencies, means, and standard deviations. There was no missing data. In addition, internal consistency validity using calculating Pearson correlation coefficients and reliability through Cronbach's alpha coefficient were investigated. Furthermore, the construct validity and the structure of the SACQ were assessed.

Regarding the comparison and fitting of models, the root mean square error of approximation (RMSEA), standardized root mean square error of approximation (SRMSEA), and comparative fit index (CFI) were considered absolute fit indices. Additionally, the Akaike information criterion (AIC), chi-square, normed fit index (NFI), and Tucker Lewis index (TLI) were used as relative fit indices to compare the models. In structural equations, the chi-square indicates whether the covariance structure of the findings is consistent with the proposed theoretical model. The smaller numbers indicate the proper fit of the tested model. Some sources have suggested that to accept the model, the ratio of chi-square to the degree of freedom should be less than 3 (41). The CFI, also known as the Bentler adaptive fit index, compares the covariance matrix predicted by the model to the covariance of the zero model (theoretical model). This index ranges between 0 and 1, and the closer size to 1 indicates a suitable fit. In the case of RMSEA, a value equal to or less than 0.05 is appropriate (42). The NFI compares the fits of two different models in a data set, and its value should be higher than 0.95. The TLI or non-normed fit index (NNFI) is an NFI-like index that is not sensitive to sample size and compares a model to different models. The appropriate value is between 0.96 and 1, although a value above 1 might be obtained for it. The AIC, or maximum probability estimation index, is a good indicator for comparing different models tested on a data set. A model with a smaller value (compared to other models) is a more fitted model (43).

All data analyses were conducted using SPSS version 22 software, except for CFA, which was conducted using LISREL version 8.80.

3.4. Instruments

3.4.1. The Student Adaptation to College Questionnaire

The The Student Adaptation to College Questionnaire (SACQ) is a 67-item scale that measures four dimensions presented in Table 1 and was developed by Baker and Siryk (7) in 1999. The Cronbach alpha of the subscales of academic adaptation, social adaptation, personal-emotional adaptation, and institutional attachment ranges from 0.83 to 0.89, 0.83 to 0.91, 0.77 to 0.85, and 0.85 to 0.91, respectively (17). In another study, reliability coefficients for the above-mentioned subscales were 0.88, 0.89, 0.85, and 0.88, respectively (12). In different studies, diverse scales, such as the five-point Likert scale (7) and nine-point Likert scale (21), have been used to score the SACQ. Michaeli Manee (44) translated the SACQ into Persian, and the validity of the translated SACQ was confirmed by a team of psychology and language professionals. The values of Cronbach alpha for all subscales and whole scale were 0.69 to 0.90; and 0.78, respectively. Due to the familiarity of the Iranian

society with the five-point Likert scale, this scale was used in the present study.

3.4.2. Brief Psychological Adjustment-6

The Brief Psychological Adjustment-6 (BASE-6) was used to investigate the convergent validity of the SACQ. This measure was developed by Cruz et al. in 2019, and it is a self-report instrument of general psychological adjustment comprising six items. Each item assesses how a participant has been feeling in the past week. Items are rated on a 7-point scale (ranging from 1 = Not at all to 5 = Extremely). By using three different adult samples, the original study demonstrated good internal consistency (α = 0.87 - 0.93) and test-retest reliability (intraclass correlation = 0.77) over a week (45). This measure was translated and used in the current research for the first time in Iran. Cronbach's alpha coefficient was 0.88 and 0.86 in the study by Yıldırım and Solmaz (46) and the current study, respectively.

3.4.3. The Social and Emotional Loneliness Scale for Adults - Short Version

The Social and Emotional Loneliness Scale for Adults - Short Version (SELSA-S) was used to study the divergent validity of the SACQ. This measure was developed by DiTommaso and Spinner in 2004 and is a 15-item scale that yields three loneliness subscales: social, family, and romantic. Items are rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Scores for each subscale range from 7 to 35, with higher scores indicating a greater level of loneliness in that given domain (47). In a study by Ingram et al., internal consistency for the 15 items (Cronbach's alpha) was calculated to be 0.81, and the social loneliness subscale was α = 0.80 (48). In Iran, the psychometric properties of the social loneliness scale in a student sample have been examined and confirmed (49). Cronbach's alpha coefficient for social loneliness was obtained at 0.91 and .80 in a study by Besharat (49) and the current study, respectively.

3.4.4. The Beck Depression Inventory

Another measure to study the divergent validity of the SACQ was The Beck Depression Inventory (BDI). The Beck Depression Inventory-II (BDI-II) was developed by Beck et al. in 1996. This inventory was used to assess the presence of depressive symptoms. The BDI-II is a 21-item self-report rating inventory measuring the characteristic attitudes and symptoms of depression. Likert scale responses for each of the 21 items are rated from 0 (no more) to 3 (all the time), with summary scores ranging from 0 (absence of depressive symptoms) to 63 (presence of severe depressive symptoms). Cut-off score guidelines for the categorization of depression severity among patients diagnosed with a major depressive disorder are as follows: Normal and minimally depressed: 0 - 13; mildly depressed: 14 - 19; moderately depressed: 20 - 28; severely depressed: 29 - 63 (50). Cronbach's alpha coefficient for this scale was obtained at 0.91 and 0.88 in the study by Fata et al. (51) and the current study, respectively.

4. Results

The participants were 445 freshmen, of whom 232 were female ($mean_{age}$ = 18.3, SD_{age} = 1.4) and 213 were male ($mean_{age}$ = 19.2, SD_{age} = 1.8). The range of age was from 19 to 28 years old ($mean_{age}$ = 21.83, SD_{age} = 1.4). Moreover, 424 (95.3%) and 21 (4.7%) of the sample were married and single, respectively. The participants were studying sciences (n = 159, 35.7%), history (n = 29, 6.4%), geography (n = 52, 11.43%), English language and literature (n = 62, 13.63%), Persian language and literature (n = 35, 7.7%), and engineering and agriculture (n = 108, 24.7%).

4.1. Construct Validity

The one-factor model, the 4-factor model, and the 6-factor model were studied. The information about the factor loadings of the test questions is provided in Table 2. Table 2 shows that the number of factor loads related to items 2, 26, 42, 36, and 40 are less than 0.40, and their significance *t* is less than 2. Therefore, it can be argued that the concerned items are not appropriate questions, and their removal will probably not damage the structure of the test.

Table 3 shows that the 4-factor model has a better fit than the other two models. However, this correspondence is not complete.

4.2. Internal-Consistency Validity

As observed in Table 4, all correlation coefficients are significant at the level of 0.01. This result shows that the SACQ has good internal consistency validity.

4.3. Convergent Validity

The correlations in Table 5 revealed that the association of the SACQ with alternative measures of adjustment was confirmed. The scores of the SACQ correlated positively with a measure of general adjustment (r = 0.70, $P < 0.01$). Higher scores on the SACQ correlated with higher levels of general adjustment. This result confirms the convergent validity of the SACQ.

Table 2. Factor Loadings of the Test Questions

Item	Factor Loadings	Item	Factor Loadings	Item	Factor Loadings	Item	Factor Loadings
1	1	**20**	0.66	**39**	0.52	**58**	0.49
2	1	**21**	0.90	**40**	0.05	**59**	0.87
3	1	**22**	0.70	**41**	0.60	**60**	0.77
4	0.55	**23**	0.59	**42**	0.19	**61**	2.54
5	0.70	**24**	0.93	**43**	0.78	**62**	0.89
6	0.86	**25**	0.82	**44**	0.86	**63**	0.97
7	0.79	**26**	0.12	**45**	0.90	**64**	0.56
8	0.80	**27**	0.68	**46**	0.21	**65**	0.76
9	0.95	**28**	0.55	**47**	0.91	**66**	0.45
10	0.88	**29**	0.84	**48**	0.94	**67**	0.82
11	0.71	**30**	0.54	**49**	0.88		
12	0.69	**31**	0.78	**50**	0.95		
13	0.75	**32**	0.76	**51**	2.19		
14	0.86	**33**	0.94	**52**	0.54		
15	1	**34**	0.80	**53**	0.44		
16	0.96	**35**	0.88	**54**	0.60		
17	0.74	**36**	0.11	**55**	0.82		
18	0.79	**37**	0.64	**56**	0.63		
19	0.82	**38**	0.55	**57**	0.47		

Table 3. Fitting Indices of Tested Models

Model	Chi-square (df)	NFI	CFI	GFI	RMSEA	P-Value
One-factor	0.76 (2154) 8765	0.82	0.52	0.87	0.088	0.00
Four-factor	0.02 (2138) 6388	0.90	0.71	0.92	0.067	0.00
Six-factor	0.98 (2126) 6569	0.90	0.64	0.88	0.072	0.00

Abbreviations: NFI, normed fit index; CFI, comparative fit index; GFI, goodness of fit index; RMSEA, root mean square error of approximation.

Table 4. Correlation Coefficients Among the Student Adaptation to College Questionnaire (SACQ) Components

Component	Academic Adaptation	Social Adaptation	Personal-Emotional Adaptation	Institutional Attachment
Academic adaptation	1			
Social adaptation	0.56 [a]	1		
P-value	0.000			
Personal-emotional adaptation	0.63 [a]	0.71 [a]	1	
P-value	0.000	0.000		
Institutional attachment	0.65 [a]	0.78 [a]	0.51 [a]	1
P-value	0.005	0.000	0.008	
Total score	0.78 [a]	0.85 [a]	0.72 [a]	0.75 [a]
P-value	0.000	0.000	0.000	0.000

[a] Correlation is significant at the 0.01 level (2-tailed).

Table 5. Correlations Between Scores of the Student Adaptation to College Questionnaire (SACQ), the Brief Psychological Adjustment-6 (BASE-6), the Social and Emotional Loneliness Scale for Adults - Short Version (SELSA-S), and the Beck Depression Inventory (BDI)

Variables	Depression	Social Loneliness	General Adjustment	SACQ
Depression	1			
Social loneliness	0.844[a]	1		
P-value	0.000			
General adjustment	-0.726[a]	-0.701[a]	1	
P-value	0.000	0.006		
SACQ	-0.620[a]	-0.682[a]	0.704[a]	1
P-value	0.009		0.004	

Abbreviation: SACQ, Student Adaptation to College Questionnaire.
[a] Correlation is significant at the 0.01 level (2-tailed).

4.4. Divergent Validity

According to Table 7, the scores of the SACQ correlated negatively with social loneliness ($r = -0.68$, $P < 0.01$) and depression ($r = -0.62$, $P < 0.01$). The coefficient correlations are high. Consequently, the SACQ has desirable divergent validity.

4.5. Questionnaire Reliability

According to Table 8, the obtained Cronbach alpha for SACQ components and the total score of the scale is higher than 0.70, which is suitable for tests used in research (52). If this test is used for decision-making or diagnostic purposes, it is necessary to increase its reliability through using appropriate methods.

5. Discussion

This study aimed to investigate the model proposed by developers of the SACQ and other competing models in a sample of Iranian freshmen. In this line, confirmatory factor analysis, convergent and divergent validity, and Cronbach's alpha were used. The findings provided good evidence to support the 4-factor structure of the scale. The findings of the present study are consistent with the results of several studies (7, 10, 11, 17, 19, 20). They showed that the SACQ measured four factors of academic adaptation, social adaptation, personal-emotional adaptation, and institutional attachment, and its theoretical model was approved. Various researchers believe that adaptation to the university is a multidimensional concept, and this should be considered when assessing or intervening in such a matter (2, 9).

However, the findings of this study contradict the results of some studies (12, 21). Taylor and Pastor (12), after failing to confirm the theoretical model through confirmatory factor analysis, used heuristic factor analysis to determine the data structure and the number of factors. Given their survey data, they obtained a 4-factor model that differed from the original model. In their model, some questions were omitted. They believed that this tool needed a major overhaul, and it was necessary to re-conceptualize and rethink it, and then it was possible to develop the measurement tool. The non-normality of distribution can explain the contradictory finding. In addition, the SACQ is more appropriate for freshmen; however, they included sophomores who might have been affected by the lack of model fit in the above-mentioned study (12).

Another study conducted by Feldt et al. also failed to confirm the 4-factor structure of the SACQ. The researchers proposed a 6-factor model in which the component of academic adaptation was divided into two components, studying and academic performance, and the component of institutional attachment was divided into components of adaptation to the student role and suitability for a particular university/institution. Although these components seem new, they are components of academic adaptation and institutional attachment. This classification can be useful for identifying students who have problems in the above-mentioned components. However, since each of these new components is a derivative and subset of the previous components and is likely to have a very strong correlation with them, it does not make sense to determine and distinguish these components in the present study (21).

The examination of correlation coefficients among the components of the studied scale, which are all positive and significant, shows that the SACQ has good internal consistency validity, which has been confirmed in other studies (19, 20). In addition, this finding indicates that all four factors of the questionnaire are separate, and

Table 7. Descriptive Statistics and Results for Investigation of Normality of Research Variables

Variables	Depression	Social Loneliness	General Adjustment	SACQ
Mean ± SD	22.5371 ± 8.91004	24.0831 ± 8.37466	24.5955 ± 8.42203	190.7185 ± 19.59257
Skewness	0.499	0.339	-0.460	-0.141
Kurtosis	-0.617	-0.235	-0.686	0.080

Abbreviation: SACQ, Student Adaptation to College Questionnaire.

Table 8. Reliability Coefficients of Student Adaptation to College Questionnaire (SACQ)

Component	Cronbach's Alpha
Academic adaptation	0.88
Social adaptation	0.84
Personal-emotional adaptation	0.79
Institutional attachment	0.77
Total score	0.90

they measure the different dimensions of a common structure independently of each other. One of the reasons for obtaining such a high correlation is the existence of common questions between these two components. However, in line with MacCormack's belief, it can be argued that the existence of high correlations does not necessarily mean the same components or questions because even high values, such as r = 0.95, can indicate that two correlated variables are correlated with the third variable, and, therefore, they can be independent (9).

Meanwhile, the large amount of correlation coefficient between the component of social adaptation and institutional attachment indicates the relationship between the student's commitment and attachment to the educational and organizational goals of their university and their success in meeting the interpersonal-social requirements of the university. In other words, on the one hand, students who are more socially adaptable have a greater commitment and interest in the issues and goals of their university or educational institution. On the other hand, students who are committed and attached to their university have a higher level of social adaptation (9). In general, students who are more attached to their parents, peers, and university are more adaptable (53).

Another point is the high correlation between personal-emotional adaptation and social adaptation, which is in line with the results of other studies (54). The more the student feels stressed and anxious in responding to academic requirements or responding to them with physical signs and symptoms (e.g., insomnia), the more social problems they will experience in this environment and the lower their level of adaptation will be. At the same time, emotional health and psychological well-being are important factors in optimal social functioning and coping with the requirements of the social environment (55).

The other findings are related to a significant positive correlation between general adaptation and the SACQ and a significant negative correlation between loneliness (32-35) and depression (36, 37) with the SACQ. Duru (35) believes that students who have higher levels of loneliness in transition to university might also experience loss or lack of social relationships, social networks, and social ties that might affect, directly or indirectly, the levels of adjustment of these students. Loneliness might hinder freshmen's good academic adjustment as they lose interest in mastering learning skills and take a negative attitude toward their surroundings (56). Feelings of loneliness can reduce the individual's abilities of self-regulation and cognitive processing and might, in turn, negatively influence that individual's academic adjustment (57). Furthermore, factors such as the transition stage to adulthood, workload, relationships, and low performance contribute to psychological problems, such as depression (36). Students could counter psychological problems if they can adjust to their academic setting (58). In general, the aforementioned results confirm the convergent and divergent validity of the SACQ.

The results of the SACQ's reliability using Cronbach's alpha indicate the acceptable internal consistency of the measure. This finding has been repeated in some studies (7, 19, 59, 60). Given the insignificance of the factor load of some of the questions in the questionnaire, it might be necessary to reconsider these items. Feldt, Graham, and Dew also believe that some questions need to be reconsidered, especially those that are common to the two components (21).

5.1. Limitations

However, when using this tool and interpreting the results, one should consider the limitations of generalizing the results. Firstly, this study was performed on seemingly healthy and problem-free students, and it is necessary to conduct additional studies to investigate the distinguishing power of this tool in identifying troubled

students. Secondly, it is necessary to pay attention to influential demographic variables (e.g., gender) in future studies because different studies have shown different levels of adaptation in male and female students (61).

5.2. Conclusions

In general, the results of the present study, in line with the findings of some studies (4, 14, 19, 20), confirming the 4-factor structure of the adaptation to college questionnaire, provided the necessary support for the multidimensional structure of this tool and, at a higher level, of the concerned construct. Based on this issue, it can be concluded that the SACQ can be a good tool for the early diagnosis and identification of individuals at risk of adaptation problems in the academic context. Despite the limitations, the present study could expand knowledge and provide the possibility of using the most widely used tool for measuring academic adaptation among freshmen for researchers and those involved in the counseling and mental health of Persian language students. Therefore, the results of this study, on the one hand, have gathered new empirical evidence, and, on the other hand, these results have provided a reliable tool to measure the important variable of academic adaptation to be used by psychologists and counselors.

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Footnotes

Authors' Contribution: Presenting the research concept, designing the study procedures, analyzing and interpreting the research data, writing and reviewing the paper, confirming the final draft, and being accountable for all aspects of research: F. M.; Writing and reviewing the paper and analyzing and interpreting the research data: B. A. and Sh. A.

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