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Adaptation and Validation of the University Adjustment Scale for Azerbaijani Students

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ABSTRACT

University adjustment is a multidimensional process involving academic, social, personal–emotional, and institutional adaptation. The assessment of university adjustment using culturally appropriate and psychometrically sound instruments is important for understanding students' adaptation processes and identifying adjustment-related difficulties. The purpose of this study was to adapt the University Adjustment Scale (UAS) into Azerbaijani and to examine its psychometric properties among Azerbaijani university students. The UAS is a multidimensional instrument designed to assess academic, social, personal–emotional, and institutional adjustment to university life. Following the linguistic and conceptual adaptation procedures, the scale was administered to university students in Azerbaijan. The study sample consisted of 500 students enrolled at Khazar University in Azerbaijan. Construct validity was evaluated using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Internal consistency reliability was assessed using Cronbach's alpha coefficients and corrected item–total correlations. The reliability analyses demonstrated satisfactory internal consistency for the Azerbaijani version of the UAS, with Cronbach's alpha coefficients ranging from .800 to .924 across the subdimensions and the total scale. Preliminary reliability analyses indicated that Item 41 demonstrated weak psychometric performance and was therefore excluded from subsequent analyses, resulting in a final 44-item version of the scale. The EFA findings suggested a four-factor structure broadly corresponding to the original UAS, explaining 38.25% of the total variance. However, the CFA results provided mixed evidence regarding the fit of this structure (χ^2 = 2773.83, df = 896, p <.001; CFI = .776, TLI = .764, RMSEA = .065, and SRMR = .065). Although the RMSEA and SRMR values were within commonly accepted ranges, the CFI and TLI values indicated inadequate incremental fit. Overall, the Azerbaijani version of the UAS demonstrated satisfactory internal consistency and provided preliminary evidence regarding its multidimensional structure. However, the mixed CFA results suggest that the four-factor structure was not fully supported by the data. These findings represent an initial contribution to the assessment of university adjustment in the Azerbaijani higher education context.

Keywords: University adjustment; scale adaptation; validity and reliability; confirmatory factor analysis; Azerbaijani

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1. INTRODUCTION

1.1. Statement of the Problem

University life represents a major developmental transition involving substantial academic, social, personal, and emotional changes (Baker & Siryk, 1984; Tinto, 1993). During this period, students are expected to adapt to new educational demands, establish social relationships in unfamiliar environments, develop autonomy, and manage increasing personal responsibilities. At the same time, many university students are also experiencing the developmental period of emerging adulthood, which is characterized by identity exploration, increased independence, and changing interpersonal relationships (Arnett, 2000). The combination of these developmental and environmental changes may create significant adjustment difficulties for university students.

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The transition to university may involve a variety of academic, social, and personal challenges. Students are often required to cope with increased academic expectations, unfamiliar teaching methods, greater responsibility for independent learning, and changing social environments (Guest, 2000; Kantanis, 2000; Scanlon et al., 2007). In addition, separation from previous support systems, difficulties in establishing new interpersonal relationships, uncertainty regarding academic and career choices, and adaptation to new routines may negatively affect students' psychological well-being and overall adjustment to university life (Cutrona, 1982; Fisher & Hood, 1987; Rickinson & Rutherford, 1995). Previous studies have shown that adjustment difficulties during the transition to university may be associated with stress, anxiety, depression, emotional distress, sleep problems, and decreased psychological well-being (Dyson & Renk, 2006; Pritchard et al., 2007; Tao et al., 2000).

University adjustment has therefore been conceptualized as a multidimensional construct involving academic, social, personal–emotional, and institutional dimensions of adaptation (Baker & Siryk, 1984; Credé & Niehorster, 2012). Academic adjustment refers to students' ability to manage educational demands, whereas social adjustment involves participation in social life and the development of interpersonal relationships. Personal–emotional adjustment reflects students' psychological well-being and emotional adaptation, while institutional adjustment refers to students' sense of belonging and satisfaction with their university environment. These dimensions are considered interrelated yet distinct aspects of the university adjustment process.

Successful adjustment to university life is associated with positive outcomes such as academic achievement, psychological well-being, social integration, and persistence in higher education (Baker & Siryk, 1989; Tinto, 1993). Students who successfully adapt to university environments are generally more likely to demonstrate higher academic performance, stronger institutional commitment, and better psychosocial functioning. In contrast, difficulties in adjustment may contribute to academic failure, reduced life satisfaction, emotional distress, and increased risk of university dropout (Credé & Niehorster, 2012; Gerdes & Mallinckrodt, 1994).

Over the past two decades, participation in higher education has expanded substantially worldwide. According to UNESCO (2022), global higher education enrolment more than doubled between 2000 and 2020, reaching approximately 235 million students. Despite this expansion, considerable disparities in access and participation persist across regions and population groups. These developments highlight the importance of understanding university adjustment and evaluating students' adaptation experiences in different educational and cultural contexts.

1.2. Problem of the Study

The assessment of university adjustment requires psychometrically sound measurement tools capable of evaluating the multidimensional nature of students' adaptation processes. Previous studies have used different approaches to assess university adjustment, including single-item measures, academic performance indicators, psychological well-being measures, and multidimensional self-report scales (Baker & Siryk, 1984; Cooke et al., 2006; Holmbeck & Wandrei, 1993; Lafrenière & Ledgerwood, 1997). However, researchers have emphasized that university adjustment is a complex construct involving academic, social, personal–emotional, and institutional dimensions, and that multidimensional assessment tools may provide a more comprehensive evaluation of students' adaptation experiences (Baker & Siryk, 1984; Credé & Niehorster, 2012).

Several multidimensional instruments have been developed to assess university adjustment. One of the most widely known measures is the Student Adaptation to College Questionnaire (SACQ), which evaluates academic, social, personal–emotional, and institutional aspects of adjustment (Baker & Siryk, 1984, 1989). Although such instruments have contributed substantially to university adjustment research, the adaptation and validation of culturally appropriate instruments remain important because adjustment experiences may vary across cultural, linguistic, educational, and social contexts (Beaton et al., 2000).

Despite the increasing importance of university adjustment research, there is a limited number of validated instruments available for assessing university adjustment among Azerbaijani university students. This situation highlights the need for culturally appropriate and psychometrically reliable assessment tools in the Azerbaijani higher education context. The University Adjustment Scale (UAS), developed by Sevinç Tuhanioğlu and Gizir (2020), was designed to evaluate university students' adjustment processes through four dimensions: Academic, Social, Personal–Emotional, and Institutional Adjustment. The scale demonstrated satisfactory psychometric properties in the original study and provides a comprehensive multidimensional assessment of university adjustment. However, to our knowledge, no Azerbaijani adaptation or psychometric evaluation of the UAS has been conducted among Azerbaijani university students.

1.3. Purpose of the Study

This study aimed to adapt the UAS into Azerbaijani and to examine its psychometric properties among Azerbaijani university students. Specifically, the study aimed to evaluate the construct validity and reliability of the Azerbaijani version of the scale using exploratory and confirmatory factor analyses, internal consistency analyses, and item analyses. Through this adaptation process, our study also aimed to provide a culturally appropriate multidimensional assessment tool for future research and student support practices in the Azerbaijani higher education context.

2. METHODOLOGY

2.1. Research Design and Participants

This methodological study was conducted to adapt the UAS into Azerbaijani and to evaluate its psychometric properties among Azerbaijani university students. The study sample consisted of 500 students enrolled in different departments at Khazar University in Azerbaijan. Participants' ages ranged from 17 to 30 years. Of the participants, 317 (63.4%) were female and 180 (36.0%) were male, two (0.4%) selected "Other," and one (0.2%) selected "Prefer not to disclose." All participants provided a response to the gender question; therefore, there were no missing data for this variable. Convenience sampling was used in the study.

2.2. Measures

2.2.1. Demographic Information Form

A demographic information form developed by the researchers was used to obtain information regarding participants' gender, educational level, living arrangements, perceived economic status, help-seeking preferences, participation in sports activities, and involvement in artistic activities.

2.2.2. University Adjustment Scale

The UAS was originally developed by Sevinç Tuhanioğlu and Gizir (2020) to assess university students' adjustment to university life. The original scale consisted of 45 items and four subdimensions: Academic Adjustment (12 items), Social Adjustment (13 items), Personal–Emotional Adjustment (10 items), and Institutional Adjustment (10 items).

Academic Adjustment evaluates students' ability to fulfill academic responsibilities and their satisfaction with the academic environment. Social Adjustment assesses interpersonal relationships, participation in social activities, and satisfaction with social life at university. Personal–Emotional Adjustment reflects students' emotional well-being and psychological adjustment. Institutional Adjustment measures students' sense of belonging and satisfaction with their university. The scale uses a 7-point Likert-type response format, and 21 items are reverse scored. Higher scores indicate higher levels of university adjustment.

2.3. Translation and Adaptation Procedure

Prior to the adaptation process, permission to adapt the scale into Azerbaijani was obtained from the original authors of the UAS. The original Turkish version of the UAS was translated into Azerbaijani independently by two translators. Following expert evaluations by two specialists in language education, a preliminary Azerbaijani version of the scale was created. Subsequently, the Azerbaijani form was translated back into Turkish using the back-translation method to evaluate semantic equivalence.

To assess comprehensibility and linguistic appropriateness, the preliminary version was administered to a pilot group of 15 students. No significant problems related to language clarity or item comprehension were identified during the pilot application. Final revisions were made based on expert feedback from a specialist in Azerbaijani Language and Literature, and the final Azerbaijani version of the scale was established. After completion of the translation and linguistic adaptation procedures, data collection was conducted among university students to evaluate the psychometric properties of the Azerbaijani version of the UAS.

2.4. Data Collection Procedure

Data collection was conducted after obtaining the necessary permissions from course instructors. The questionnaires were administered collectively in classroom settings. Before participation, students were informed about the study procedures, voluntary participation, confidentiality, and the scientific use of the collected data. Written informed consent was obtained from all participants prior to data collection.

Participants completed the Demographic Information Form and the UAS during classroom administration sessions. The administration process took approximately 15–20 minutes. Researchers were present during the administration process to answer participants' questions and provide necessary explanations. Incomplete or incorrectly completed forms were excluded from the analyses.

2.5. Statistical Analysis

Following data collection, statistical analyses were performed to evaluate the validity and reliability of the Azerbaijani version of the UAS. Data analyses were conducted using IBM SPSS Statistics 27 and Jamovi software. The dataset was examined for missing data prior to the analyses, and no missing data were identified. To examine the construct validity of the scale, both

exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted. The suitability of the data for factor analysis was assessed using the Kaiser–Meyer–Olkin (KMO) coefficient and Bartlett's Test of Sphericity.

In the EFA, principal axis factoring with oblimin rotation was performed. Factor retention decisions were based on eigenvalues greater than 1 and scree plot examination. Due to sample size considerations, both EFA and CFA were conducted using the same dataset. CFA was conducted using the maximum likelihood estimation method. Model fit was evaluated using χ^2/df, Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), Standardized Root Mean Square Residual (SRMR), and Root Mean Square Error of Approximation (RMSEA) indices.

Internal consistency reliability was evaluated using Cronbach's alpha coefficients and corrected item–total correlations. Preliminary item analyses were conducted to evaluate the psychometric performance of the original 45-item scale. Item 41, which belonged to the Personal–Emotional Adjustment subscale, demonstrated a low corrected item–total correlation (r = .119) and weak correlations with the other items in the subscale. In the exploratory factor analysis of the original 45-item scale, Item 41 showed a particularly low loading on its theoretically expected factor (.083), with no substantial loading on any of the four factors (maximum absolute loading = .115). Although the internal consistency of the original 10-item Personal–Emotional Adjustment subscale was acceptable (α = .712), removing Item 41 increased Cronbach's alpha to .800. Considering the consistently weak item–total correlation, inter-item correlations, and factor loadings, Item 41 was excluded from the subsequent analyses, resulting in a 44-item version of the scale. Statistical significance was accepted at $p < .05$.

2.6. Ethical Considerations

Ethical approval for the study was obtained from the Ethics Commission of Khazar University (Decision No. 1, dated September 16, 2024). Participation in the study was voluntary, and written informed consent was obtained from all participants prior to data collection.

3. FINDINGS

A total of 500 university students participated in the study. The results are presented in terms of descriptive statistics, reliability analyses, exploratory factor analysis, and confirmatory factor analysis.

3.1. Descriptive Statistics and Reliability

The descriptive statistics and internal consistency coefficients of the UAS and its subdimensions are presented in Table 1. The mean score for the total scale was 5.53 (SD = 0.78), indicating relatively high levels of adjustment among the participants.

Table 1. *Descriptive Statistics and Reliability of the UAS*

Subscale	Number of Items	M	SD	Min	Max	Cronbach's α
Academic Adjustment	12	4.95	1.27	1.00	7.00	.881
Social Adjustment	13	5.17	1.10	2.69	7.00	.862
Institutional Adjustment	10	6.16	0.82	3.60	7.00	.822
Personal–Emotional Adjustment	9	6.15	0.63	4.33	7.00	.800
Total Scale	44	5.53	0.78	3.59	7.00	.924

Note. N = 500. The Personal–Emotional Adjustment subscale was calculated after removing Item 41. Higher scores indicate higher levels of adjustment.

Among the subdimensions, Institutional Adjustment had the highest mean score (M = 6.16, SD = 0.82), followed by Personal–Emotional Adjustment (M = 6.15, SD = 0.63), Social Adjustment (M = 5.17, SD = 1.10), and Academic Adjustment (M = 4.95, SD = 1.27). Cronbach's alpha coefficients ranged from .800 to .924 across the subscales and the total scale. Cronbach's alpha values were .881 for Academic Adjustment, .862 for Social Adjustment, .822 for Institutional Adjustment, .800 for Personal–Emotional Adjustment, and .924 for the total scale, indicating satisfactory to excellent internal consistency. The original 10-item Personal–Emotional Adjustment subscale demonstrated acceptable internal consistency (α = .712). However, Item 41 showed a low corrected item–total correlation (r = .119), and its removal increased the subscale's Cronbach's alpha to .800. Furthermore, the exploratory factor analysis of the original 45-item scale revealed that Item 41 had a very low loading on its theoretically expected factor (.083), with a maximum absolute loading of .115 across the four factors. These findings indicated that Item 41 was weakly associated with the intended construct and supported its exclusion from the subsequent analyses.

3.2. Exploratory Factor Analysis

The suitability of the data for exploratory factor analysis was supported by a Kaiser–Meyer–Olkin value of .907 and a significant Bartlett's test of sphericity, $\chi^2(946) = 9026.11$, $p < .001$. Principal axis factoring with oblimin rotation of the 44-item version of the UAS yielded a four-factor solution that explained approximately 38.25% of the total variance, based on the extraction sums

of squared loadings. The first factor accounted for 23.28% of the variance, followed by the second (6.83%), third (4.69%), and fourth (3.45%) factors.

Table 2. *Exploratory Factor Analysis Results for the UAS*

Item	Academic	Personal	Social	Institutional
UAS1	.326	.054	.268	−.011
UAS2	.033	−.012	.634	.022
UAS3	.098	.538	−.057	.047
UAS4	.119	.026	−.065	**.666**
UAS5	**.442**	.023	.060	.181
UAS6	−.250	.108	**.338**	.308
UAS7	−.057	**.478**	.027	−.019
UAS8	.081	−.062	−.060	**.639**
UAS9	**.478**	−.012	.145	.156
UAS10	.075	−.055	**.667**	.011
UAS11	.104	**.589**	−.112	.005
UAS12	**.473**	−.102	.074	.254
UAS13	.311	.038	**.364**	−.030
UAS14	−.085	.074	.136	**.254**
UAS15	.041	**.569**	−.098	.005
UAS16	.025	.027	.060	**.628**
UAS17	**.634**	.037	.130	.002
UAS18	.217	.052	**.461**	−.017
UAS19	−.003	**.484**	−.018	.063
UAS20	**.521**	−.090	.178	.299
UAS21	**.519**	−.044	−.015	.085
UAS22	.133	.027	**.551**	−.104
UAS23	.047	**.668**	−.024	−.101
UAS24	.151	.093	−.043	**.403**
UAS25	**.667**	.073	.077	.055
UAS26	−.022	−.037	**.586**	−.046
UAS27	.044	**.701**	−.001	−.066
UAS28	.142	−.070	−.108	**.636**
UAS29	**.636**	.113	.121	−.005
UAS30	.164	−.128	**.673**	−.001
UAS31	.170	−.062	**.653**	−.034
UAS32	−.011	**.433**	.063	.136
UAS33	.191	.159	−.029	**.395**
UAS34	**.653**	.094	.062	−.011
UAS35	.221	−.058	**.573**	.000
UAS36	−.031	**.512**	.072	−.047
UAS37	**.523**	−.047	.194	.251
UAS38	**.622**	.074	.003	.014
UAS39	−.256	.192	**.438**	.227
UAS40	−.191	.214	**.317**	.263
UAS42	**.301**	.047	.108	.290
UAS43	**.602**	.082	.024	−.016
UAS44	.177	.030	**.672**	.005
UAS45	**.568**	.085	.166	.074

Note. Extraction method: Principal Axis Factoring. Rotation method: Direct Oblimin with Kaiser normalization. All factor loadings, including cross-loadings, are reported without suppression. Bold values indicate the highest absolute factor loading for each item. The signs of all loadings on the Institutional Adjustment factor were reversed for ease of interpretation. Item UAS41 was excluded from the analysis. Rotation converged in nine iterations.

Table 2 presents the complete pattern matrix, including all factor loadings and cross-loadings without suppression. Although most items showed a relatively clear primary loading, some items exhibited low or overlapping loadings. Specifically, UAS6 showed loadings on the Social (.338) and Institutional (.308) factors, while UAS13 loaded on both the Social (.364) and Academic (.311) factors. UAS40 showed its highest loading on the Social factor (.317), with a secondary loading on the Institutional factor (.263). Similarly, UAS42 showed comparable loadings on the Academic (.301) and Institutional (.290) factors. UAS14 had a maximum absolute loading of .254, indicating a weak association with the extracted factors.

3.3. Confirmatory Factor Analysis

Confirmatory factor analysis was conducted to evaluate the four-factor structure of the University Adjustment Scale. The standardized path diagram of the CFA model is presented in Figure 1, illustrating the relationships between the observed variables and the four latent adjustment dimensions.

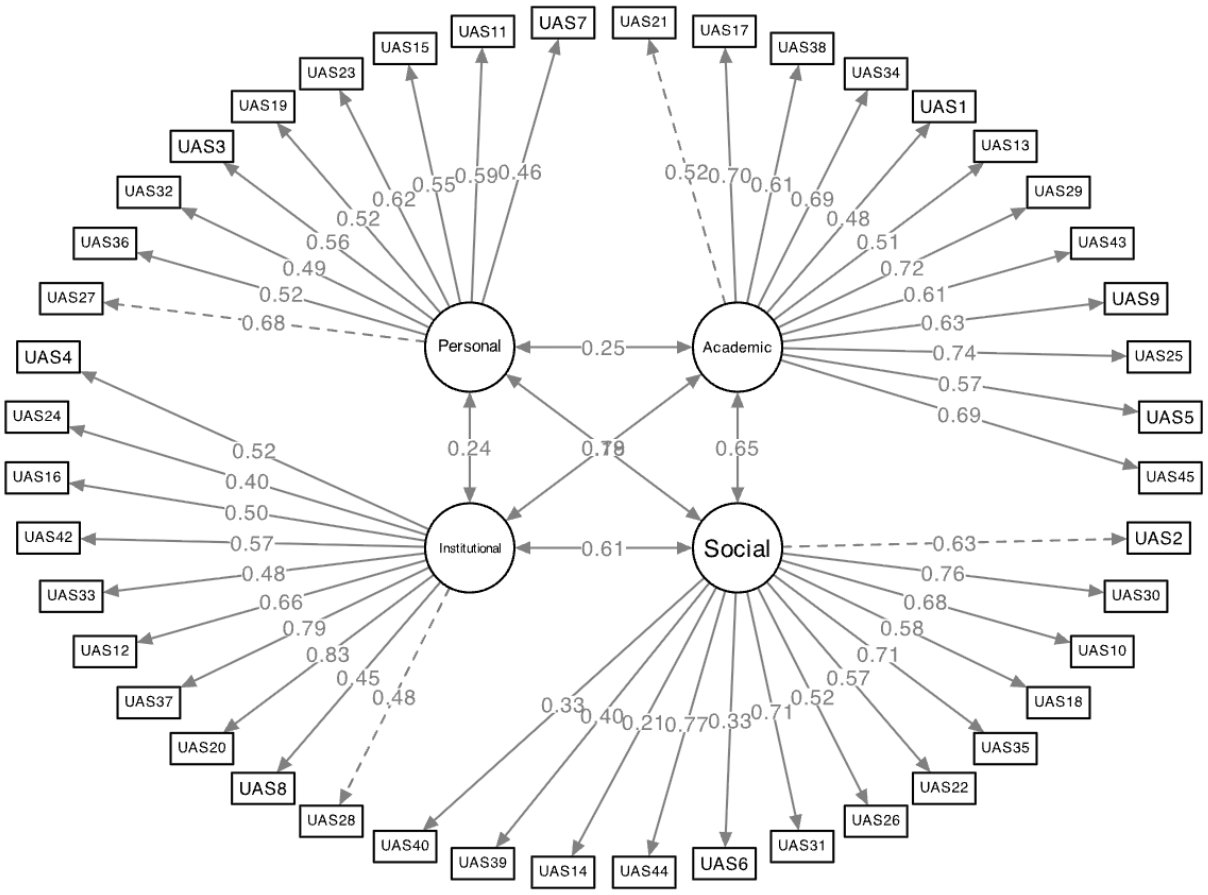


Figure 1. *Four-Factor Confirmatory Factor Analysis Model of the Azerbaijani University Adjustment Scale*

Note. Standardized factor loadings and correlations between latent factors are presented. Academic = Academic Adjustment; Social = Social Adjustment; Institutional = Institutional Adjustment; Personal–Emotional Adjustment.

Table 3 presents the standardized factor loadings obtained from the confirmatory factor analysis of the University Adjustment Scale. All items loaded significantly on their hypothesized factors ($p < .001$). Standardized factor loadings ranged from .484 to .744 for the Academic factor, from .206 to .769 for the Social factor, from .405 to .827 for the Institutional factor, and from .465 to .678 for the Personal factor. The strongest loadings were observed for UAS25 within the Academic factor ($\lambda = .744$), UAS44 within the Social factor ($\lambda = .769$), UAS20 within the Institutional factor ($\lambda = .827$), and UAS27 within the Personal factor ($\lambda = .678$).

Table 3. *Standardized factor loadings for the UAS*

Academic	λ	Social	λ	Institutional	λ	Personal	λ
UAS21	.519	UAS2	.627	UAS28	.479	UAS27	.678
UAS17	.701	UAS30	.756	UAS8	.447	UAS36	.522
UAS38	.611	UAS10	.677	UAS20	.827	UAS32	.495
UAS34	.693	UAS18	.577	UAS37	.793	UAS3	.556
UAS1	.484	UAS35	.715	UAS12	.664	UAS19	.517
UAS13	.507	UAS22	.567	UAS33	.476	UAS23	.624
UAS29	.717	UAS26	.520	UAS42	.572	UAS15	.552
UAS43	.610	UAS31	.714	UAS16	.497	UAS11	.589
UAS9	.625	UAS6	.325	UAS24	.405	UAS7	.465
UAS25	.744	UAS44	.769	UAS4	.519		
UAS5	.569	UAS14	.206				
UAS45	.693	UAS39	.395				
		UAS40	.334				

Note. Only standardized factor loadings are presented. All factor loadings were statistically significant at $p < .001$. Loadings below 0.40 were observed for UAS6, UAS14, UAS39, and UAS40 within the Social factor.

Most items demonstrated satisfactory standardized loadings above .40. However, four items in the Social factor—UAS6, UAS14, UAS39, and UAS40—had relatively low loadings (.325, .206, .395, and .334, respectively), indicating that these items were more weakly associated with the latent construct compared with the remaining items. Despite these relatively low loadings, the items were retained in the final model to preserve the content coverage of the original scale.

The goodness-of-fit indices for the confirmatory factor analysis model are presented in Table 4. The χ^2/df ratio was 3.10, while the SRMR (.065) and RMSEA (.065; 90% CI = .062–.068) values were within commonly accepted ranges. However, the comparative fit index (CFI = .776) and Tucker–Lewis index (TLI = .764) were substantially below the recommended threshold of .90, indicating inadequate incremental model fit. Thus, the CFA results provided mixed evidence regarding the proposed four-factor structure, which was not fully supported by the data.

Table 4. *Goodness-of-fit indices for the confirmatory factor analysis model*

Fit index	Value	Recommended value	Interpretation
χ^2	2773.83	–	–
df	896	–	–
χ^2/df	3.10	< 5.00	Acceptable
CFI	0.776	≥ 0.90	Poor
TLI	0.764	≥ 0.90	Poor
SRMR	0.065	≤ 0.08	Acceptable
RMSEA	0.065	≤ 0.08	Acceptable
90% CI for RMSEA	0.062–0.068	–	–

To further evaluate the decision to exclude Item 41, the original 45-item four-factor model was also examined using confirmatory factor analysis. The 45-item model yielded $\chi^2(939) = 2862.00$, CFI = .772, TLI = .760, RMSEA = .064 (90% CI [.061, .067]), and SRMR = .066. The corresponding values for the 44-item model were $\chi^2(896) = 2773.83$, CFI = .776, TLI = .764, RMSEA = .065 (90% CI [.062, .068]), and SRMR = .065. Thus, removing Item 41 resulted in only marginal changes in overall model fit. However, Item 41 demonstrated a very low standardized factor loading (.133) in the 45-item CFA model, providing additional evidence of its weak association with the Personal–Emotional Adjustment factor.

3.4. Factor Correlations

The correlations among the four factors of the UAS are presented in Table 5. All factors were positively and significantly associated with one another ($p < .001$). The strongest correlation was observed between the Academic and Institutional factors (r = .795), followed by the correlation between the Academic and Social factors (r = .652). The weakest relationship was found between the Social and Personal factors (r = .179). These findings suggest that although the four dimensions of university adjustment are related, they represent distinct constructs.

Table 5. *Correlations among the factors of the UAS*

Factor	1	2	3	4
Academic	1.000			
Social	0.652	1.000		
Institutional	0.795	0.614	1.000	
Personal	0.252	0.179	0.240	1.0

Note. All correlations were statistically significant at p ≤ .001.

4. RESULTS, DISCUSSION AND RECOMMENDATIONS

This study aimed to adapt the UAS into Azerbaijani and to examine its psychometric properties among Azerbaijani university students. The findings demonstrated satisfactory to excellent internal consistency across the total scale and its subdimensions. Exploratory factor analysis identified a four-factor structure broadly corresponding to the original dimensions of Academic, Social, Institutional, and Personal–Emotional Adjustment. However, confirmatory factor analysis provided mixed evidence regarding the proposed structure. Although the RMSEA and SRMR values were within commonly accepted ranges, the CFI and TLI values indicated inadequate incremental model fit. Therefore, while the Azerbaijani version of the UAS demonstrated promising reliability and preliminary evidence of its multidimensional structure, its structural validity requires further investigation before the instrument can be recommended for widespread use.

The reliability analyses indicated that the Azerbaijani version of the UAS demonstrated satisfactory internal consistency, with Cronbach's alpha coefficients ranging from .800 to .924 across the subdimensions and the total scale. The total scale demonstrated high internal consistency ($\alpha = .924$), while the subscale coefficients were .881 for Academic Adjustment, .862 for Social Adjustment, .822 for Institutional Adjustment, and .800 for Personal–Emotional Adjustment. Compared with the original scale development study conducted by Sevinç Tuhanioğlu and Gizir (2020), the reliability coefficients obtained in our study were generally comparable, although slightly lower in some subdimensions. In the original Turkish version, Cronbach's alpha

coefficients ranged from .88 to .94 across the subdimensions and the total scale. Despite these minor differences, the four-factor structure of the original instrument was largely preserved in the Azerbaijani adaptation, supporting the conceptual consistency of the scale across the two cultural contexts.

One of the important findings of our study concerned the psychometric performance of Item 41 within the Personal–Emotional Adjustment subscale. Although the original 10-item subscale demonstrated acceptable internal consistency (α = .712), Item 41 showed a low corrected item–total correlation (r = .119) and weak correlations with the remaining items. Furthermore, exploratory factor analysis revealed a very low loading on its theoretically expected factor (.083), with a maximum absolute loading of .115 across the four factors. The removal of Item 41 increased the internal consistency of the subscale to α = .800. Taken together, these findings provided a stronger justification for item exclusion than the improvement in Cronbach's alpha alone.

Item 41 assesses the frequency of headaches, which may be associated with psychological distress but can also reflect various physical and contextual factors. Therefore, this item may be less specifically related to personal–emotional adjustment than other items in the subscale. The original Turkish wording and its Azerbaijani translation were semantically similar, with no obvious change in meaning. Nevertheless, cross-cultural adaptation requires consideration of conceptual as well as linguistic equivalence (Beaton et al., 2000). Item 41 was also reverse-scored, and previous research has highlighted potential measurement difficulties associated with negatively worded or reverse-scored items, including response inconsistencies and method effects (Marsh, 1986; van Sonderen et al., 2013; Wong et al., 2003). Cultural differences in the expression and interpretation of emotional experiences may also influence responses to psychological measures (Markus & Kitayama, 1991). However, these explanations remain hypothetical, as the reasons for the weak performance of Item 41 were not directly investigated in the present study. A comparison of the original 45-item and revised 44-item CFA models revealed only marginal differences in overall fit indices, indicating that item removal did not substantially improve the fit of the four-factor model. Although the available psychometric evidence supported its removal, the exclusion of Item 41 may affect the content coverage and comparability of the Azerbaijani version with the original 45-item scale.

The findings of the exploratory factor analysis generally supported the original structure proposed by Sevinç Tuhanioğlu and Gizir (2020). The four-factor structure identified in the original scale was largely preserved in the Azerbaijani adaptation, suggesting that the conceptual dimensions of university adjustment may be similarly represented across the two cultural contexts. The factors obtained in our study corresponded to the Academic, Social, Institutional, and Personal–Emotional Adjustment domains defined in the original model. This finding supports the theoretical framework proposed by Baker and Siryk (1984), which conceptualizes university adjustment as a multidimensional construct involving academic performance, interpersonal relationships, emotional well-being, and institutional belonging.

The preservation of the Academic, Social, Institutional, and Personal–Emotional Adjustment dimensions indicates that the Azerbaijani version of the scale maintained the theoretical integrity of the original instrument. These findings are also consistent with previous literature emphasizing that adjustment to university is not a unidimensional construct but rather a multifaceted process involving academic adaptation, social integration, emotional well-being, and institutional attachment (Baker & Siryk, 1984; Credé & Niehorster, 2012; Tinto, 1993).

In our study, the four-factor structure explained 38.25% of the total variance. Although this value was lower than the variance explained in the original study, explained variance values in multidimensional psychological scales may vary depending on the complexity of the construct and the characteristics of the study population (Fabrigar et al., 1999; Henson & Roberts, 2006). In cross-cultural adaptation studies, differences in language structure, cultural context, educational systems, and response tendencies may influence item functioning and factor distributions (Beaton et al., 2000). Therefore, some reduction in explained variance may be expected when a scale is adapted to a different cultural setting.

The confirmatory factor analysis findings provided mixed evidence regarding the proposed four-factor structure of the Azerbaijani version of the UAS. Although the RMSEA (.065) and SRMR (.065) were within commonly accepted ranges, the CFI (.776) and TLI (.764) values remained below the commonly recommended cutoff values. These findings suggest that the four-factor model did not achieve satisfactory fit across all indices and that the evidence for its structural validity remains limited. Compared with the original scale development study conducted by Sevinç Tuhanioğlu and Gizir (2020), the fit indices obtained in our study were relatively lower, particularly for the incremental fit indices. Several factors may have contributed to the observed model misfit. The multidimensional nature of university adjustment, potential differences in item interpretation across linguistic and cultural contexts, and possible method effects associated with reverse-worded items may have influenced the relationships among the observed variables (Beaton et al., 2000; Marsh, 1986; van Sonderen et al., 2013). However, these explanations remain hypothetical, as their specific contributions to model fit were not directly examined in the present study. Therefore, while the exploratory factor analysis identified dimensions broadly corresponding to the original theoretical framework and the scale demonstrated satisfactory internal consistency, the CFA findings do not provide sufficient evidence to confirm the proposed four-factor structure.

Several items demonstrated weak or overlapping factor loadings, suggesting that certain aspects of university adjustment may not be clearly differentiated in the Azerbaijani student sample. In particular, UAS6, UAS14, UAS39, and UAS40 showed relatively

low standardized loadings in the confirmatory factor analysis. Although these findings raise concerns about their contribution to the proposed factor structure, the items were retained in the present version to preserve the content coverage of the original scale. Nevertheless, their retention should not be interpreted as evidence of satisfactory psychometric performance. The factorial structure and functioning of these items require further investigation in independent samples. Future studies should examine whether revising or removing these items improves model fit and construct validity without compromising the conceptual coverage of the scale.

Another possible explanation may be related to the multidimensional nature of university adjustment itself. University adjustment is a complex construct influenced by academic, emotional, interpersonal, and institutional experiences, and these domains may not always demonstrate perfectly homogeneous relationships within different student populations (Baker & Siryk, 1984; Credé & Niehorster, 2012). In addition, the heterogeneity of university students in terms of social background, educational expectations, coping styles, and interpersonal experiences may also contribute to lower incremental fit indices in multidimensional adjustment models. Furthermore, the presence of reverse-coded items may have affected model fit. Previous psychometric studies have suggested that reverse-worded items may increase measurement error and weaken model fit indices by introducing respondent confusion and method effects (Marsh, 1986; van Sonderen et al., 2013). This issue may become more pronounced in translated and culturally adapted instruments. Nevertheless, the acceptable RMSEA and SRMR values, together with the generally satisfactory internal consistency coefficients, provide preliminary support for the scale's psychometric properties, although the low CFI and TLI values indicate that its structural validity requires further investigation.

The correlations among the subdimensions of the UAS further supported the multidimensional structure of university adjustment. In our study, the strongest correlation was observed between Academic Adjustment and Institutional Adjustment. This finding may suggest that students who feel academically competent and satisfied with their academic performance are also more likely to develop a stronger sense of belonging and satisfaction toward their university. This interpretation is conceptually consistent with Tinto's (1993) student integration model, which emphasizes the close relationship between academic integration and institutional commitment in the university adjustment process.

In contrast, the correlations involving the Personal–Emotional Adjustment dimension were relatively lower, particularly in relation to the Social Adjustment dimension. This finding may indicate that emotional well-being and psychological adjustment represent relatively distinct aspects of university adaptation compared with academic and institutional experiences. Similar patterns have been reported in previous studies suggesting that emotional adjustment may be influenced by individual psychological characteristics and coping processes beyond social and academic integration (Bewick et al., 2010; Credé & Niehorster, 2012). Overall, the pattern of factor correlations observed in our study supports the theoretical assumption that university adjustment is a multidimensional but interrelated construct.

Our study has several important strengths. First, to the best of our knowledge, this is the first study to adapt the UAS into Azerbaijani and to evaluate its psychometric properties among Azerbaijani university students. Second, the study included an adequate sample size for psychometric analyses and employed both exploratory and confirmatory factor analyses to evaluate the construct validity of the scale. In addition, the multidimensional assessment of academic, social, institutional, and personal-emotional adjustment provided a comprehensive evaluation of university adaptation processes among Azerbaijani students.

Several limitations should also be considered when interpreting the findings of our study. First, the study sample consisted of students from a single university in Azerbaijan, which may limit the generalizability of the findings to other university populations and educational settings. Second, exploratory and confirmatory factor analyses were conducted using the same sample, which may have increased the likelihood of sample-specific findings. Third, although the RMSEA and SRMR values were within commonly accepted ranges, the low CFI and TLI values indicated inadequate incremental model fit and limited support for the proposed four-factor structure. Therefore, the factor structure requires further examination in an independent sample. Fourth, the removal of Item 41 resulted in a 44-item version of the scale. Although this decision was supported by the item's weak psychometric performance, the revised version requires further validation, particularly regarding its structural validity and comparability with the original 45-item instrument. Fifth, the cross-sectional design prevented the evaluation of changes in university adjustment over time. In addition, test–retest reliability was not assessed; therefore, the temporal stability of the Azerbaijani version of the UAS remains unknown.

Considering these findings, several recommendations may be proposed for future research and practice. First, the psychometric properties of the Azerbaijani version of the UAS should be re-evaluated in larger and more diverse university samples from different regions of Azerbaijan. Second, longitudinal studies examining university adjustment over time may provide a better understanding of the developmental nature of the adjustment process. Finally, future studies may further investigate the functioning of reverse-coded items and explore possible cultural influences on emotional adjustment and response patterns in Azerbaijani university students. Overall, this study represents an important initial step in the adaptation and psychometric evaluation of the UAS for Azerbaijani university students. The findings provide encouraging evidence of internal consistency and contribute to understanding the multidimensional assessment of university adjustment in the Azerbaijani higher education context, while also identifying aspects of the proposed factor structure that warrant further investigation.

Research and Publication Ethics Statement

Permission to adapt the University Adjustment Scale into Azerbaijani was obtained from the original authors prior to the study. Ethical approval for the study was obtained from the Ethics Commission of Khazar University (Decision No. 1, dated September 16, 2024). Written informed consent was obtained from all participants prior to data collection. The authors declare that the study was conducted in accordance with research and publication ethics principles.

Contribution Rates of Authors to the Article

Study design: MY, MK, MM
Data collection: MK, MM
Data analysis: MY
Drafting and revising the manuscript: MY, MK, MM

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Statement of Interest

The authors declare no conflict of interest.

5. REFERENCES

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55*(5), 469–480. https://doi.org/10.1037/0003-066X.55.5.469

Baker, R. W., & Siryk, B. (1984). Measuring adjustment to college. Journal of Counseling Psychology, 31(2), 179–189. https://doi.org/10.1037/0022-0167.31.2.179

Baker, R. W., & Siryk, B. (1989). *Student adaptation to college questionnaire manual*. Western Psychological Services.

Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. Spine, 25(24), 3186–3191. https://doi.org/10.1097/00007632-200012150-00014

Bewick, B., Koutsopoulou, G., Miles, J., Slaa, E., & Barkham, M. (2010). Changes in undergraduate students' psychological well-being as they progress through university. *Studies in Higher Education*, *35*(6), 633–645. https://doi.org/10.1080/03075070903216643

Cooke, R., Bewick, B. M., Barkham, M., Bradley, M., & Audin, K. (2006). Measuring, monitoring and managing the psychological well-being of first year university students. *British Journal of Guidance & Counselling, 34*(4), 505–517. https://doi.org/10.1080/03069880600942624

Credé, M., & Niehorster, S. (2012). Adjustment to college as measured by the Student Adaptation to College Questionnaire: A quantitative review of its structure and relationships with correlates and consequences. Educational Psychology Review, 24(1), 133–165. https://doi.org/10.1007/s10648-011-9184-5

Cutrona, C. E. (1982). Transition to college: Loneliness and the process of social adjustment. In L. A. Peplau & D. Perlman (Eds.), *Loneliness: A sourcebook of current theory, research, and therapy* (pp. 291–309). Wiley.

Dyson, R., & Renk, K. (2006). Freshmen adaptation to university life: Depressive symptoms, stress, and coping. *Journal of Clinical Psychology, 62*(10), 1231–1244. https://doi.org/10.1002/jclp.20295

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods, 4*(3), 272–299. https://doi.org/10.1037/1082-989X.4.3.272

Fisher, S., & Hood, B. (1987). The stress of the transition to university: A longitudinal study of psychological disturbance, absent-mindedness and vulnerability to homesickness. *British Journal of Psychology, 78*(4), 425–441. https://doi.org/10.1111/j.2044-8295.1987.tb02260.x

Gerdes, H., & Mallinckrodt, B. (1994). Emotional, social, and academic adjustment of college students: A longitudinal study of retention. *Journal of Counseling & Development, 72*(3), 281–288. https://doi.org/10.1002/j.1556-6676.1994.tb00935.x

Guest, K. (2000). Introducing critical thinking to 'non-standard' entry students. The use of a catalyst to spark debate. Teaching in Higher Education, 5, 289–299. https://doi.org/10.1080/713699139

Henson, R. K., & Roberts, J. K. (2006). Use of exploratory factor analysis in published research: Common errors and some comment on improved practice. *Educational and Psychological Measurement, 66*(3), 393–416. https://doi.org/10.1177/0013164405282485

Holmbeck, G. N., & Wandrei, M. L. (1993). Individual and relational predictors of adjustment in first-year college students. *Journal of Counseling Psychology, 40*(1), 73–78. https://doi.org/10.1037/0022-0167.40.1.73

Kantanis, T. (2000). The role of social transition in students' adjustment to the first-year of university. Journal of Institutional Research, 9, 100-110.

Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). Guilford Press.

Lafreniere, K. D., & Ledgerwood, D. M. (1997). Influences of leaving home, perceived family support, and gender on the transition to university. Guidance & Counseling, 12, 14-18.

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*(2), 224–253. https://doi.org/10.1037/0033-295X.98.2.224

Marsh, H. W. (1986). Negative item bias in rating scales for preadolescent children: A cognitive-developmental phenomenon. Developmental Psychology, 22(1), 37–49. https://doi.org/10.1037/0012-1649.22.1.37

Pritchard, M., Wilson, G., & Yamnitz, B. (2007). What predicts adjustment among college students? A longitudinal panel study. *Journal of American College Health, 56*(1), 15–22. https://doi.org/10.3200/JACH.56.1.15-22

Rickinson, B., & Rutherford, D. (1995). Increasing undergraduate student retention rates. *British Journal of Guidance & Counselling, 23*(2), 161–172. https://doi.org/10.1080/03069889508253002

Scanlon, L., Rowling, L., & Weber, Z. (2007). "You don't have like an identity…you are just lost in a crowd": forming a student identity in the first year transition to university. Journal of Youth Studies, 10, 223-242. https://doi.org/10.1080/13676260600983684

Sevinç Tuhanioğlu, S., & Gizir, C. A. (2020). Development of university adjustment scale: Validity and reliability studies. Pamukkale Üniversitesi Eğitim Fakültesi Dergisi, 49, 67–87. https://doi.org/10.9779/pauefd.547409

Tao, S., Dong, Q., Pratt, M. W., Hunsberger, B., & Pancer, S. M. (2000). Social support: relations to coping and adjustment during the transition to university in the People's Republic of China. Journal of Adolescent Research, 15, 123-144. https://doi.org/10.1177/0743558400151007

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). University of Chicago Press.

UNESCO. (2022). *Beyond limits: New ways to reinvent higher education*. https://unesdoc.unesco.org/ark:/48223/pf0000389912

van Sonderen, E., Sanderman, R., & Coyne, J. C. (2013). Ineffectiveness of reverse wording of questionnaire items: Let's learn from cows in the rain. *PLOS ONE, 8*(7), Article e68967. https://doi.org/10.1371/journal.pone.0068967

Wong, N., Rindfleisch, A., & Burroughs, J. E. (2003). Do reverse-worded items confound measures in cross-cultural consumer research? The case of the material values scale. Journal of Consumer Research, 30(1), 72–91. https://doi.org/10.1086/374697