THE BELONGING TO THE UNIVERSITY SCALE

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Abstract: The aim of the study is to develop a belonging to the university scale (BUS) in order to determine the level of fulfillment of the need to belong among university students at the higher education institutions they attend. The population of the investigation includes university students studying at the campus of Ordu University**.** A 5 point Likert-type scale was created in the study. The SPSS 15 and LISREL-8.15 programs were used in the statistical analysis performed during development of the scale. Content validity and construct validity techniques were used for validity analysis. The internal consistency checks of belonging to the university scale were completed. The research data is given as mean and percent, and t-test and one-way variance analysis were conducted in order to determine the differences between the groups and the values of belonging to the university. The internal consistency Cronbach α reliability coefficient values of the scale and the test-retest reliability of the test results were satisfactory. Exploratory and confirmatory factor analyses were performed for the construct validity of the scale and three dimensions (Motivation, Expectations and Identification) were identified. The level of belonging of university students to the university they attend was examined with the scale with the validity and reliability tested and suggestions are presented in accordance with the obtained results.

Key words: The Belonging to the University Scale, University Students, Expectations, Motivation, Identification.

1. Introduction

University students are faced with a "distressed" but "necessary" life, in addition to the problems of adapting to a new environment, making new friends, making decisions for themselves and meeting their requirements. One of the environmental (culture, building, class population, etc.) and personal (assertiveness, intelligence, ability, etc.) factors that supports achievement of planned educational goals and happiness of the student who spends a large part of his life at school is the need to belong.

Every human being is born with the need to belong. Belonging expresses itself in the form of being together, sharing, solidarity, serving, friendships, establishing friendships, building families, participating in groups and associations; in short, it is the social aspect of the person. Every human has these requirements [1]. Adler [2] stated that in the case of not meeting the belonging requirement, people have problems in communicating with their environment and difficulties in accepting themselves with feelings of inferiority and inadequacy. Glasser [3] suggested that the feelings of love and belonging play an essential role in satisfying other requirements as they are the most basic requirements. Keenan [4] has emphasized that people's feeling that they belong to a place and have social status is a more powerful factor of motivation than the satisfaction of physiological needs. Maslow mentioned the state of belonging in the third stage of the needs hierarchy theory. According to Maslow, individuals who grow up in an environment where they do not meet their essential requirements, such as security, loving-being loved, and belonging to a group, will have difficulty in finding opportunities to achieve status or the belonging requirement [5].

If the belonging and respect needs of the individual aren't met after his physiological and safety requirements have been met, resentment and anger will arise and these types of emotions may trigger

violent behavior. In addition, individuals may feel different to others and consequently ethnic pathology may arise [6]. Also, when belonging needs aren't satisfied, it may lead to the emotions of failure, social isolation, alienation and loneliness [7]. Additionally, many negative behavioral, psychological and social consequences such as mental illness, a tendency toward crime and social isolation have been described in relation to the lack of the sense of belonging [8]. Aypay et al. [9] according to the report of Christe and Dunham, higher education is not only a process in which the students earn academic and professional qualifications, but it is a process through which students gain and develop non-academic and non-professional significant skills such as social communication skills and social life skills. In this regard, the university must prepare all areas of the educational environment in order to obtain returns from their efforts to meet the student's belonging and other basic needs.

The purpose of the study is to develop a valid, reliable and useful "Belonging to the University Scale" for determining the satisfaction level of the belonging requirements of university students at the higher education institutions they attend.

In recent years, problems related to the creation of a desired school climate have arisen in both our country and in the world. Many problems like violence, drug use, absenteeism, and failure in schools have directed the state to solve the problems with large-scale projects. However, there is difficulty in finding permanent solutions.

Creation of a school culture and actions and motivation of all units in schools together with students to achieve the determined educational goals is dependent on several factors. One of the main topics of the development process of this multi factorial process is the students' personal development and happiness. Therefore, fulfillment of the psychological needs of students by the school is important. According to Ma's [10] report, Routh has stated that the attention of the school to the socioeconomic and academic improvement of students and students' awareness that their teachers are attentive, courteous, helpful and compassionate strengthens their sense of belonging to the school and supports their sense of academic responsibility.

Dana et al [11] according to the report of Crandal, students who feel their belonging requirements are met develop a sense of value and self-confidence. In fact, Pittman and Richmond [12] analyzed the relationship between the feeling of belonging to the university, the quality of friendships and psychological adjustment of freshman college students in the process of transition to college. The research findings showed that the feeling of belonging to the university and the quality of peer relations are the most important factors in the adaptation process to university. Positive behavior, high motivation, self-esteem, self-efficacy and competence are seen in students who have their belonging requirements fulfilled [13]. Similarly, Ma's [10] report, Kum-Walks have attributed the recently escalating violence in schools to the inability to meet the belonging to school need requirements of the students. Again, Walter et al. [14] according to the report of Beck indicated that discipline problems in students usually occur because of the lack of a sense of belonging; and ensuring the participation of the students in social relationships and social activities may be useful to meet belonging requirements of the students. Walter et al. [14] emphasized that the failure to meet the belonging needs of the students may also cause shyness as well as unwanted behaviors. Gilligan [15] associated the violence in schools and academic performance with the lack of fulfillment of the belonging to school requirement.–In another study related to academic performance, Roeser and Midgley [16] and Osterman [17] found a significant relationship between academic achievement and belonging. Also, Roeser and Midgley [16] suggested that the communication between teachers and students is associated with this relationship. In another study conducted on the relationship between academic performance and belonging, Lambert's [18], report Freman et al has demonstrated that there is a direct relationship between belonging to the university and class, being noticed, feeling accepted and academic motivation Similarly, Finn [19] suggested that dropping out will increase in schools where belonging needs are not met. He also stated that the lack of a sense of belonging will lead to alienation and academic failure [10]. According to Furrer and Skinner [20], Dreikurs and Cassel have shown that students feel loneliness, anxiety, frustration and sadness in the educational environment if their belonging needs are not met. However, they manifest high levels of happiness, excitement, and interest in learning activities, if their belonging needs are met.

Anderman [21] has done extensive research on the effect of the school on the psychological status of adolescents and indicated that belonging is also an important factor among various factors affecting the

configuration of personality. By means of this research, we will be able to determine the belonging levels of students and will be able to develop a strategic treatment approach in problematic cases. In studies on the achievement of goals set by the Higher Education Council and student satisfaction with acceptance, the ability to identify general levels of feeling of belonging to a school among general descriptive factors, will allow access to significant data during project development. Additionally, generally situations which prevent belonging to school requirements being fulfilled can be detected and then efforts to resolve the problems can be made within the framework of preventive counseling and guidance services. Response of higher educational institutions to the expectations of the students at a minimum level is very important in terms of institutional continuity and competition with other similar institutions. Therefore, creation of policies for belonging needs together with other factors among student expectations is a modern management practice in higher education institutions. But data collection tools are needed in order to determine the belonging needs and accordingly to steer all the components of the higher education system in this direction. However, a measuring tool to determine the needs of the students in this area was not been found in the relevant literature.

2. Method

2.1. Study Population

University students studying at the campus of Ordu University comprise the population of the investigation.

2.2. Sample

In this study, the final form of the scale was applied to three sample groups and the retest technique was used in the development process. A literature review for the scale was conducted and potential items related to the subject were obtained. In the research, the sample group used in the development of scale was called "sample-1", the sample group used in the test retest was called "sample-2" and the sample group analyzed in terms of a variety of variables and to which the final form of the scale was applied was called "sample-3".

Sample 1: Trial Form of the Scale

In the first phase of the study, the trial version of the scale was applied to 283 randomly selected students from Ordu University in October 2012. The socio-demographic characteristics of the sample group which has an important place in statistical processes performed on the trial form of the scale is given in the following table.

Table 1. *Socio-Demographic Characteristics of "Sample-1"*

Gender	Number	%
Female	193	68.2
Male	90	31.8
Economic situation		
Low	10	3.5
Medium	203	71.7
High	63	22.3
Very high	7	2.5
Academic Department Attended		
Vocational High School Health High School	33	11.7
Faculty of Fine Arts	50	17.7
Faculty of Arts and Sciences	144	50.9
Faculty of Agriculture	56	19.8
Classes		

	Number	%
1	85	30.0
2	70	24.7
3	59	20.8
4	69	24.4

Sample 2: Test Re-Test of the Scale

For the second stage of the study, the internal consistency of the test was investigated by applying the test-retest form to 659 students at Ordu University in November, 2012. The characteristics of the sample group taken into consideration for form credibility are given in Table 2.

Table 2. *Socio-Demographic Characteristics of "Sample-2"*

Gender	Number	%
Female	425	64.5
Male	234	35.5
Economic situation		
Low	32	4.9
Medium	431	65.4
High	180	27.3
Very high	16	2.4
Academic Department Attended		
Health High School	265	40.2
Faculty of Fine Arts	21	3.2
Faculty of Arts and Sciences	222	33.7
Faculty of Agriculture	128	19.4
Faculty of Dentistry	23	3.5
Classes		
1	224	34.0
2	188	28.5
3	146	22.2
4	101	25.3

Sample 3: Final form of the scale

For the third stage of the study**,** an evaluation was made in terms of different variables and the Belonging to the University Scale was applied to 1265 university students from Ordu University in November 2012. The socio-demographic characteristics of the sample group to which the final version of the form was applied are given in the following table.

Table 3. *Socio-Demographic Characteristics of "Sample-3"*

Gender	Number	%
Female	636	50.2
Male	629	49.8
Economic situation		
Low	99	7.8
Moderate	803	63.4
High	326	25.8
Very high	38	3.0
Academic Department Attended		
Vocational High School	115	9.1
Health High School	40	3.1
Faculty of Medicine	26	2.0
Faculty of Fine Arts	21	1.7
State Conservatory	12	1.0
Faculty of Arts and Sciences	749	59.2
Faculty of Agriculture	302	23.9

Classes		
1	368	29.1
2	366	28.9
3	276	21.9
4	255	20.1

2.3. Data Collection Tools Used in the Development of the Scale of Belonging to University

The literature survey for the scale was conducted and the potential items related to the subject were determined. An "Expert Opinion Data Collection Form" was created in order to evaluate items on the crude scale in terms of content, spelling and grammar.

The "Belonging to the University Scale" was created as the data collection tool for the research.

The Belonging to the University Scale (BUS)

The Belonging to the university scale (BUS) is a measurement tool which aims to determine the satisfaction level of the belonging requirement of university students in the higher education institutions they attend. In the study, a 5-point Likert-type scale was created. While creating the scale, the necessary steps in the preparation process of the Likert-type scale were followed [22]. The scale consists of 14 items and 3 sub-dimensions. These sub-dimensions are defined as "Identification", "Motivation" and "Expectations".

Data Collection

In this study, written permission was obtained from Ordu University Rectorate. The data were collected by the researcher who administered the scale to students in university classrooms. The instructions about the data collection tool were read to the sample groups who participated, the necessary information was given, verbal consent was obtained and voluntary participation ensured. In the first application for test-retest, the students were told they can use a nickname provided that they used the same nickname in the second test so some students used these nicknames instead of their names. The data collection instrument used in the study was applied to the sample group in the academic year of 2012-2013. There were no restrictions on duration when completing the scale. Students filled in the questionnaire anonymously. The duration to complete the scale was between 5-10 minutes.

2.4. Analysis and Interpretation of the Data

In the statistical analysis for the development of the inventory, the SPSS 15 and LISREL-8.15 programs were used.

The content validity and construct validity techniques were used for validity analysis.

Content validity

For this purpose, the belonging to school scales in the literature and their theoretical structures were examined, and then the belonging to the university expressions used in the scale were prepared.

It has been reported that one of the methods for content validity is to refer to an expert opinion [23, 24]. In this research, the "Expert Opinion Data Collection Form" was created in order to evaluate the items on the prepared raw scale in terms of content and spelling rules. The form prepared for content validity of the scale was delivered to nine academics in various universities working in this field. The academics were given an "Expert Opinion Data Collection Form" in which the aim of the study, the content and expectations for their assessment were included along with the items. The academics were informed about the purpose of research and their opinions about the raw scale were requested. By examining the evaluation forms for the scale in accordance with expert opinion, the items were revised.

Construct validity

For the construct validity of the scale, Principal Component Analysis (PCA) which is a factor analysis technique was used. This technique is a multivariate statistical method which enables size reduction and interpretation by explaining variance-covariance structure of a set of data consisting of variables with the help of a linear combination of these variables [25]. The appropriateness of the factor structure obtained through PCA analysis was tested with the Structural Equation Model.

2.5. Investigation of Conformity for Data Factor Analysis

At this stage, to determine the correlation between the variables, the correlation matrix was calculated. Additionally, in order to test the fit of the data for factor analysis, the consistency of the items was measured by using the Bartlett Sphericity Test. The Kaiser-Meyer-Olkin (KMO) coefficient was evaluated in order to test the adequacy of the sample size [26-28].

Determination of the Number of Factors

To determine the number of factors, the identification according to Eigenvalues method was used and the values of one and greater than one are considered as factors [29]. Karagoz and Kosterelioglu [30] later reported that, the total number of factors was determined according to determination techniques with the help of Accumulation Graphics (Screen Plot) which was developed by Lewis-Beck. The power of the factor was tested according to the proportion of factor variance, with a rate between 40% and 60% taken as the decisive value [31]. Independence, openness to interpretation and axis of rotation (rotation) were applied to the factors obtained with the Rotating Factor Matrix [28]. The data was used to name and interpret the factors after the determination of factor numbers. The Factor Model Matrix showing the factor loading was obtained by means of the SPSS program [27].

In the research, the size of the Belonging to the University Scale was determined according to the rotation, scatter diagram variance, eigenvalues and factor loads. The varimax method was used for the rotation process [31].

Naming of factors

It has been reported that naming the factors found in factor analysis is not an easy task. For example, unrelated variables may be collected in one factor; in such case the variables with the greatest factor load can be taken as a basis for naming [30]. The factors were determined by examining the literature information and expert opinion.

Accordingly the factors were named;

1.   Identification Dimension   ,

2.   Motivation Dimension,

3.   Expectations Dimension

Confirmatory Factor Analysis

In this study, the fit of the model obtained with Exploratory Factor Analysis was examined with the Confirmatory Factor Analysis method [32].

2.6. Reliability Analysis and Interpretation of Data to Improve the Belonging to the University Scale

To check the internal consistency the Belonging to the University Scale, items, total item correlations and Cronbach α reliability coefficient were used. Additionally, the Cronbach α reliability coefficient was examined for reliability in terms of internal consistency of the final form of the scale. The test-retest method was used to estimate the test reliability.

3. Results and Discussion

3.1. Results and Discussion Related to Validity

The sample size of the study was 283, a subset of data obtained from 350 students of Ordu University. To determine whether the data obtained before factor analysis for the construct validity of the raw scale is suitable for factor analysis, the Kaiser-Meyer-Olkin (KMO) coefficient was calculated. The multivariate normal distribution of the data was tested with the Bartlett meaningfulness level. The KMO and Barlett sphericity test results of the trial form of the Belonging to the University Scale are given in Table 4.

Table 4. KMO and Barlett Test Values of the Trial form of Belonging to the University Scale (the 23rd item)

Kaiser-Meyer-Olkin (KMO)		0.833
Bartlett Significance Test	Chi-square	1163.469
	sd	91
	p	<0

According to Ustuner [33], Pullant has a suggestion the KMO value should be at least 0.60 to be suitable for factor analysis. In the Bartlett test, if the significance value is less than 0.05, the multivariate data is said to have a normal distribution and the analysis can continue [34]. In the study, as seen in the table, the rates were 0.833 for the KMO value and p = .000 for the Bartlett level. This situation indicates that the trial form data of the scale is suitable for factor analysis.

3.2. Construct Validity

For construct validity, exploratory factor analysis and confirmatory factor analysis were performed to test the obtained structure.

Exploratory Factor Analysis

Factor analysis was conducted, items with output values smaller than 0.2 were removed from the evaluation and factor analysis was repeated. According to this, covariance distribution of the scale is given in Table 5.

Table 5: Values of Common Factor Variance Distribution

Items on the scale	Start**	Output*
s3. I can easily state all kinds of thoughts at university	1.000	0.727
s4. I regret that I chose this university	1.000	0.601
s5. I can fulfill various wishes at the university	1.000	0.508
s6. I am proud to be a student of this university	1.000	0.501
s9. This university is unfair	1.000	0.510
s11. I feel that I am hindered at this university	1.000	0.658
s12. Social activities at the university meet my expectations	1.000	0.557
s13. I am anxious when it is time to go to the university	1.000	0.518
s14. Free time passes well at the university	1.000	0.592
s15. I don't think they understand me at the university	1.000	0.567
s17. I express myself easily at the university	1.000	0.623
s18. My problems at the university are solved by the authorities	1.000	0.543
s20. My thoughts are valued in the university	1.000	0.505
s23. I feel I am valuable at the university	1.000	0.524

** Eigen Value Start, * Output Ratings

In the research, it was identified that the common variance values change between 0.501 and 0.727 and the majority of the variance related to the scale is explained.

Furthermore, in the development of the scale, the cross correlation coefficients in the Anti-image Covariance Matrix must be above 0.5 [35]. Anti-image Covariance Matrix values of the scale are above 0.5 as seen in Table 6.

In exploratory factor analysis, the high correlation between variables is researched. As the correlation between the variables decreases, the confidence in the result of the factor analysis reduces. The variables which have very strong correlations will usually be in the same factor. As a result of this, the relationship

of these variables will be strong within the factor they are in [27]. The correlation matrix of the study is presented in Table 7. When the table is analyzed, it was found that the correlation between the variables were high as the Pearson Correlation coefficients were determinative (Indicative Rate) = 0.015> 0.00001.

Table 6. *Anti -Image Matrix Values of Belonging to the University Scale*

		s3	s4	s5	s6	s9	s11	s12	s13	s14	s15	s17	s18	s20	s23
Anti-image Covariance	s3	**.652**	.036	-.028	.042	-.117	-.005	.088	.026	.002	.049	-.260	-.050	-.045	-.021
	s4	.036	**.613**	.011	-.147	-.023	-.124	-.073	-.182	-.053	-.067	-.001	.045	-.074	.022
	s5	-.028	.011	**.646**	-.078	-.051	.016	-.118	.018	-.068	.016	-.087	.005	-.076	-.098
	s6	.042	-.147	-.078	**.654**	-.050	.006	-.039	-.033	-.050	.025	-.039	-.138	.035	-.054
	s9	-.117	-.023	-.051	-.050	**.737**	-.098	-.017	-.076	.025	-.005	.130	-.099	-.134	.005
	s11	-.005	-.124	.016	.006	-.098	**.562**	.020	-.077	.076	-.258	-.054	.046	.047	-.103
	s12	.088	-.073	-.118	-.039	-.017	.020	**.708**	.049	-.159	.052	-.020	-.070	-.071	.009
	s13	.026	-.182	.018	-.033	-.076	-.077	.049	**.732**	.003	-.047	-.073	.027	.017	-.041
	s14	.002	-.053	-.068	-.050	.025	.076	-.159	.003	**.603**	-.028	-.038	-.056	.079	-.202
	s15	.049	-.067	.016	.025	-.005	-.258	.052	-.047	-.028	**.613**	-.014	-.085	-.084	.017
	s17	-.260	-.001	-.087	-.039	.130	-.054	-.020	-.073	-.038	-.014	**.523**	-.095	-.089	-.002
	s18	-.050	.045	.005	-.138	-.099	.046	-.070	.027	-.056	-.085	-.095	**.563**	-.093	-.071
	s20	-.045	-.074	-.076	.035	-.134	.047	-.071	.017	.079	-.084	-.089	-.093	**.612**	-.097
	s23	-.021	.022	-.098	-.054	.005	-.103	.009	-.041	-.202	.017	-.002	-.071	-.097	**.557**
Anti-imageCorrelation	s3	**.731(a)**	.057	-.043	.064	-.168	-.009	.130	.037	.004	.077	-.445	-.083	-.072	-.035
	s4	.057	**.831(a)**	.017	-.233	-.035	-.211	-.110	-.271	-.087	-.110	-.002	.076	-.121	.037
	s5	-.043	.017	**.907(a)**	-.121	-.073	.027	-.175	.026	-.109	.025	-.149	.008	-.121	-.164
	s6	.064	-.233	-.121	**.885(a)**	-.072	.009	-.058	-.047	-.080	.040	-.067	-.227	.056	-.089
	s9	-.168	-.035	-.073	-.072	**.810(a)**	-.152	-.023	-.104	.038	-.008	.210	-.153	-.200	.008
	s11	-.009	-.211	.027	.009	-.152	**.739(a)**	.032	-.120	.131	-.439	-.099	.081	.081	-.185
	s12	.130	-.110	-.175	-.058	-.023	.032	**.838(a)**	.068	-.244	.078	-.033	-.111	-.108	.014
	s13	.037	-.271	.026	-.047	-.104	-.120	.068	**.849(a)**	.005	-.070	-.118	.041	.025	-.065
	s14	.004	-.087	-.109	-.080	.038	.131	-.244	.005	**.815(a)**	-.046	-.068	-.096	.129	-.349
	s15	.077	-.110	.025	.040	-.008	-.439	.078	-.070	-.046	**.781(a)**	-.025	-.145	-.137	.029
	s17	-.445	-.002	-.149	-.067	.210	-.099	-.033	-.118	-.068	-.025	**.802(a)**	-.175	-.158	-.004
	s18	-.083	.076	.008	-.227	-.153	.081	-.111	.041	-.096	-.145	-.175	**.881(a)**	-.159	-.127
	s20	-.072	-.121	-.121	.056	-.200	.081	-.108	.025	.129	-.137	-.158	-.159	**.867(a)**	-.166
	s23	-.035	.037	-.164	-.089	.008	-.185	.014	-.065	-.349	.029	-.004	-.127	-.166	**.867(a)**

Table 7. *Correlation Matrix Values of the Belonging to the University Scale*

		s3	s4	s5	s6	s9	s11	s12	s13	s14	s15	s17	s18	s20	s23
Correlation	**s3**	1.000	.057	.260	.136	.226	.116	.048	.088	.151	.083	.536	.324	.314	.246
	s4	.057	1.000	.200	.388	.256	.430	.226	.438	.234	.377	.223	.211	.292	.270
	s5	.260	.200	1.000	.363	.230	.111	.379	.121	.394	.121	.400	.370	.380	.441
	s6	.136	.388	.363	1.000	.250	.189	.309	.236	.362	.183	.311	.437	.271	.386
	s9	.226	.256	.230	.250	1.000	.290	.148	.236	.118	.241	.136	.322	.364	.243
	s11	.116	.430	.111	.189	.290	1.000	.028	.377	.056	.564	.230	.156	.210	.281
	s12	.048	.226	.379	.309	.148	.028	1.000	.052	.423	.050	.225	.332	.280	.299
	s13	.088	.438	.121	.236	.236	.377	.052	1.000	.122	.317	.229	.148	.186	.230
	s14	.151	.234	.394	.362	.118	.056	.423	.122	1.000	.121	.307	.380	.213	.512
	s15	.083	.377	.121	.183	.241	.564	.050	.317	.121	1.000	.224	.262	.293	.235
	s17	.536	.223	.400	.311	.136	.230	.225	.229	.307	.224	1.000	.454	.419	.371
	s18	.324	.211	.370	.437	.322	.156	.332	.148	.380	.262	.454	1.000	.451	.445
	s20	.314	.292	.380	.271	.364	.210	.280	.186	.213	.293	.419	.451	1.000	.403
	s23	.246	.270	.441	.386	.243	.281	.299	.230	.512	.235	.371	.445	.403	1.000
Sig. (1-tailed)	**s3**		.170	.000	.011	.000	.026	.209	.070	.006	.083	.000	.000	.000	.000
	s4	.170		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	s5	.000	.000		.000	.000	.031	.000	.021	.000	.021	.000	.000	.000	.000
	s6	.011	.000	.000		.000	.001	.000	.000	.000	.001	.000	.000	.000	.000
	s9	.000	.000	.000	.000		.000	.006	.000	.023	.000	.011	.000	.000	.000
	s11	.026	.000	.031	.001	.000		.322	.000	.175	.000	.000	.004	.000	.000
	s12	.209	.000	.000	.000	.006	.322		.190	.000	.202	.000	.000	.000	.000
	s13	.070	.000	.021	.000	.000	.000	.190		.020	.000	.000	.006	.001	.000
	s14	.006	.000	.000	.000	.023	.175	.000	.020		.021	.000	.000	.000	.000
	s15	.083	.000	.021	.001	.000	.000	.202	.000	.021		.000	.000	.000	.000
	s17	.000	.000	.000	.000	.011	.000	.000	.000	.000	.000		.000	.000	.000
	s18	.000	.000	.000	.000	.000	.004	.000	.006	.000	.000	.000		.000	.000
	s20	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000	.000	.000		.000
	s23	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	

In this study, the eigenvalues of the factor analysis for the 14 items remaining from the 23 initial items on the scale and the values related to the variances which the dimensions explain are given in Table 8.

Table 8. *Eigenvalues of the Belonging to the University Scale and Values related to Total Variances described by Factors*

Component	Initial eigenvalues Load			Values Load			Values after rotation		
	Total	Variance %	Accumulation %	Total	Variance %	Accumulation %	Total	Variance %	Accumulation %
1	4.570	32.642	32.642	4.570	32.642	32.642	2.780	19.855	19.855
2	1.793	12.810	45.451	1.793	12.810	45.451	2.559	18.276	38.131
3	1.272	9.083	54.534	1.272	9.083	54.534	2.297	16.404	54.534
4	0.909	6.491	61.026						
5	0.793	5.667	66.693						
6	0.704	5.026	71.718						
7	0.680	4.860	76.578						
8	0.603	4.307	80.885						
9	0.593	4.239	85.124						
10	0.530	3.789	88.913						
11	0.469	3.350	92.263						
12	0.395	2.823	95.086						
13	0.371	2.653	97.740						
14	0.316	2.260	100.000						

In social sciences, the variance ratios ranging between 40% and 60% are considered ideal [34]. In the research, the explanation rate of total variance of the three dimensions of the scale was found to be as high as 54.534%.

The eigenvalue ratio used to decide the factor number and the calculation of variance explained by factors is generally 1 and more than 1 [34]. Considering the eigenvalues of the Belonging to the University Scale, three factors above 1 were observed.

For the size selection, the number of dimensions can be decided by looking at the screen plot (accumulation graph). The accumulation chart is given in Figure 1.
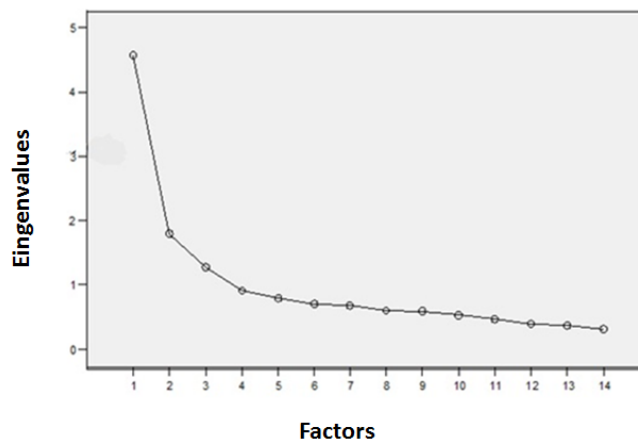

Figure 1: The Accumulation Graph of the Belonging to the University Scale

When the chart is examined, three factors above one are seen.

Gathering the question items into one factor of the developing scale after factor analysis and the values of factor loads before rotation are generally an indication of the strength of the factor structure [35]. As shown in Table 9, the 0.40 and above 0.40 factor loadings of the Belonging to the University Scale are related to each other and gathered in a single factor.

Table 9. Factor Load Values of items on the Belonging to the University Scale before Rotation

Items on the Scale	Factors		
	First factor	**Second factor**	**Third factor**
s23. I feel I am valuable at the university	**0.699**		
s18. My problems at the university are solved by the authorities	**0.692**		
s20. My thoughts are valued in the university	**0.654**		
s17. I express myself easily at the university	**0.651**		**0.412**
s6. I am proud to be a student of this university	**0.622**		
s5. I can fulfill various wishes at the university	**0.620**		
s14. Free time passes well at the university	**0.569**		
s4. I regret that I chose this university	**0.565**	**0.431**	
s9. This university is unfair	**0.494**		
s12. Social activities at the university meet my expectations	**0.482**		
s11. I feel that I am hindered at the university	**0.477**	**0.655**	
s15. I don't think they understand me at the university	**0.488**	**0.572**	
s13. I am anxious when it is time to go to the university	**0.445**	**0.507**	
s3. I can easily state all kinds of thoughts at the university	**0.444**		**0.701**

Akdag explained the evaluation of the item loading factor values as follows;

"There is a common view that the value of factor load of the item should have a minimum of 0:30. Items under this weight limit are eliminated. The value of the load should be 0.32, 0.40, and 0.45. Regardless of the signaling, 0.60 and higher load value is defined as high with load value between 0:30 and 0:59 defined as moderate size. As the sample size increases, the load value to be taken into consideration reduces.
For example;

• The sample size must be at least 350 for the loading value of 0.30 ,

• The sample size must be at least 200 for the loading value of 0.40,

• The sample size must be at least 120 for the loading value of 0.50 ,

• The sample size must be at least 85 for the loading value of 0.60 ,

• The sample size must be at least 60 for the loading value of 0.70 ,

[34].

As shown in Table 9, since the loading value for the sample size of 283 is 0.40 and above, values were included in the review.

In the distribution of load factors obtained as a result of the varimax rotation, the questions included in more than one factor or with a value less than 0.10 between the factors loadings should be removed [35]. According to exploratory factor analysis, after removing some items from the scale, the factor in which each item is located and the load of the item in the factor are given in Table 10.

Table 10. *Factor Load Values of items on the Belonging to the University Scale after Rotation*

Items on the Scale	Factor Loads		
	First dimension	Second dimension	Third dimension
s14. Free time passes well at the university	0.761		
s12. Social activities at the university meet my expectations	0.746		
s6. I am proud to be a student of this university	0.615		
s5. I can fulfill various wishes at the university	0.599		
s23. I feel I am valuable at the university	0.591		
s11. I feel that I am hindered at the university		0.798	
s15. I don't think they understand me at the university		0.735	
s4. I regret that I chose this university		0.696	
s13. I am anxious when it is time to go to the university		0.672	
s9. This university is unfair		0.502	
s3. I can easily state all kinds of thoughts at the university			0.852
s17. I express myself easily at the university			0.728
s20. My thoughts are valued in the university			0.563
s18. My problems at the university are solved by the authorities			0.521

There must be at least three or four items in each sub-factor [34]. When Table 10 is examined, there are at least four items in each sub-factor of the developed scale.

The dimensions obtained by considering the meanings that the items carry and benefiting from recycled factor loads are expectations, motivation and identification, respectively. The resulting dimensions and related conditions are given in Table 11.

Table 11. Dimensions of the Belonging to the University Scale and the Values of Related Items

Scale Size	Related Items	Minimum and Maximum Points Obtainable from the Dimensions
Expectations	14, 12, 6, 5, 23	5-25
Motivation	11, 15, 4, 13, 9	5-25
Identification	3, 17, 20, 18	4-20

Minimum and Maximum Points Obtainable from the Dimensions

The targets to be measured by the items forming the sub-dimensions of the scale are as follows;

1. Expectation Size; these are expressions which measure the student's perceptions about how their experience corresponds with their pre-college expectations related to university and expectations related to the educational process.

2. Motivation Size; these include statements relating to the student's motivation about reaching targets in the academic and social fields in university and university-based relationships

3. Identification Size; these are expressions measuring the relationship of the student with the university and the student's intellectual and emotional perceptual tendency related to the university.

Confirmatory Factor Analysis

In order to test whether the three-factor model obtained by exploratory factor analysis satisfies the fit of the data or not, confirmatory factor analysis was performed. LISREL software was utilized for this purpose. The covariance matrix was prepared by transferring the data set obtained from 283 people used for exploratory factor analysis into the program.

In order to improve the three-factor model of the Belonging to the University Scale, the modification proposals were investigated. The definition of the relationship between the error variances of items 3 and 17 in factor C and items 11 and 15 in factor B was proposed. When the item contents are analyzed, it was seen that both of them were expressed in a similar way and the suggested modification was performed. After the modification, a decline in the value of chi-square was observed [The chi-square difference respectively in one degree of freedom for two modifications was = 35.89 (P = 0.0) and 21:02 (P = 0.0)]. The ultimate goodness-of-fit values of the models obtained after modification (Table 12), standardized factor loadings, variances (R2), t values (Table 13) and path diagram (Figure 2) are presented below.
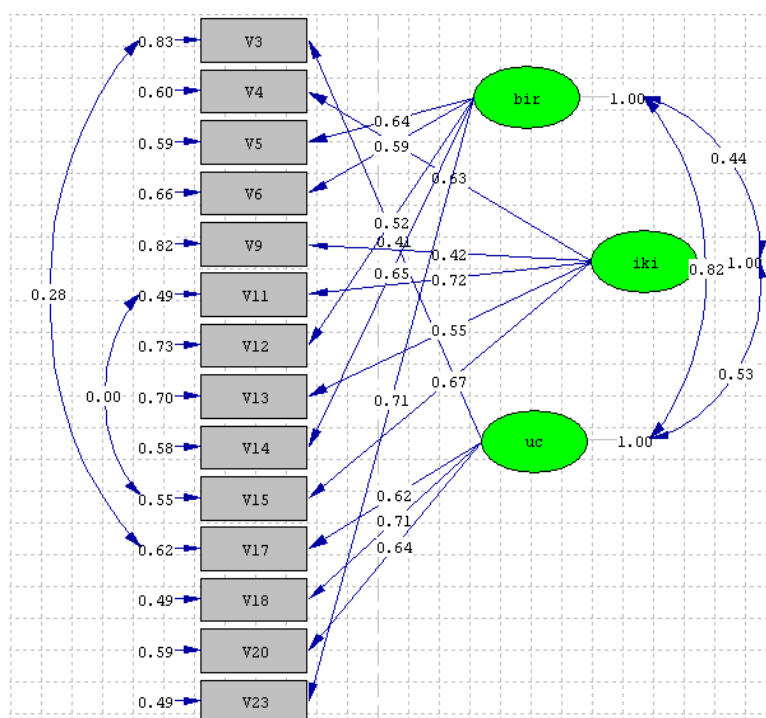

Figure 2. *Path Diagram Regarding the Three-Factor Structure of the Scale*

None of the standardized parameter values in the path diagram are over 1 [36]. These values indicate that the model has no serious problems [36, 37].

Table 12. *Confirmatory Factor Analysis Results for the Three Factor Model of the Scale*

Goodness of fit values	Excellent	Acceptable	Three-factor model.
p*	> .01 ya da .05	< .01 ya da .05	0.000 (K)
X²/sd	≤ 2	2-5	161.90/72=2.24 (K)
RMSEA	0.00<RMSEA<0.05	0.05<RMSA<0.10	0.067 (K)
RMR	0 ≤ RMR ≤ 0,05	0,05 < RMR ≤ 0,10	0.073 (K)
SRMR	0.00<SRMR<0.05	0.05<SRMR<0.10	0.060 (K)
GIF	0.95<GFI<1.00	0.90<GFI<0.95	0.92 (K)
AGFI	0.90<AGFI<1.00	0.85<AGFI<0.90	0.89
CFI	0.95<CFI<1.00	0.90<CFI<0.95	0.91(K)
NFI	0.95<NFI<1.00	0.90<NFI<0.95	0.86
NNFI	0.97 ≤ NNFI ≤ 1	0.95≤ NNFI ≤ 0,97	0.89

The value p *=000 indicates that there is no difference between the observed and expected covariance matrices and confirms the model [37].

Table 12 was examined according to the fit index of the model obtained as a result of confirmatory factor analysis of the Belonging to the University Scale and RMSEA (Root Mean Square Error of Approximation), AGFI (adjusted goodness of fit index), GFI (goodness of fit index), CFI (comparative

fit index), and RMR (root mean square residual) compliance statistics of the 3-factor model were found to be within the acceptable range [32, 38, 39].

Table 13: *Standardized Factor Loads, R2 and t Values related to the Three Factor Structure of the Scale*

Items	Standardized Factor Loadings	R^2	t
Expectation		**0.39**	
s14. Free time passes well at the university	0.65	0.42	11
s12. Social activities at the university meet my expectations	0.52	0.27	8.43
s5. I can fulfill various wishes at the university	0.64	0.41	10.81
s6. I am proud to be a student of this university	0.59	0.35	9.75
s23. I feel I am valuable at the university	0.71	0.50	12.44
Motivation		**0.37**	
s11. I feel that I am hindered at the university	0.72	0.52	11.98
s15. I don't think they understand me at the university	0.67	0.45	11.13
s13. I am anxious when it is time to go to the university	0.55	0.30	8.76
s4. I regret that I chose this university	0.63	0.40	9.75
s9. This university is unfair	0.42	0.18	6.52
Identification		**0.37**	
s3. I can easily state all kinds of thoughts at the university	0.41	0.17	6.32
s17. I express myself easily at the university	0.62	0.38	10.18
s20. My thoughts are valued in the university	0.64	0.41	10.55
s18. My problems at the university are solved by the authorities	0.71	0.50	12.06

The standardized factor loading for the three-factor structure of the scale is 1.96 at 0.05 t value and the items with this value are considered significant [36].

As a result, it was identified that factor analysis and confirmatory factor analysis values give similar results, although there are relatively small differences between the values observed. When the results were evaluated, the size of the items and the number of items are found to be the same.

3.3. Results and Discussion of Reliability

Within the scope of the research, as the scale is multidimensional, the reliability of the Belonging to the University Scale was examined by calculation of internal consistency coefficient of each sub-dimension and test-retest methods.

Internal Consistency

The Cronbach's α coefficient were calculated for 14 items selected for the final scale of the inventory. Calculations were made for "Sample-1" group consisting of 283 students and for "Sample-3" group consisting of 1265 people. Cronbach's α coefficient are given in Table 14.

Table 14. *Belonging to the University Scale and Cronbach's α Coefficients of the Scale Dimensions*

	CrudeTest n=283			Final test n=1265	
	Items on BUS	Cronbach α		Items on BUS	Cronbach α
Total	5,6,12,14,23	0.834	**Total**	5,6,12,14,23	0.750
	4,9,11,13,15			4,9,11,13,15	
	3,17,18,20			3,17,18,20	
Expectation	5,6,12,14,23	0.755	**Expectation**	5,6,12,14,23	0.722
Motivation	4,9,11,13,15	0.728	**Motivation**	4,9,11,13,15	0.705
Identification	3,17,18,20	0.740	**Identification**	3,17,18,20	0.740

When the table is analyzed, it is seen that the Cronbach's α reliability values obtained for the research are acceptable. The correlation values of each of the 14 items on the scale are given in Table 15.

Table 15. *Total correlation values of Dimensions and Items*

Dimensions	Items	Total Correlation Values
Expectations	12	0.471
	14	0.584
	23	0.562
	5	0.537
	6	0.475
Motivation	11	0.592
	13	0.475
	15	0.525
	4	0.527
	9	0.341
Identification	17	0.620
	18	0.521
	20	0.497
	3	0.494

According to Akdag, the items with correlation coefficients less than 20 are deducted. These coefficients are also the discrimination indices for the items [34].

When Table 15 is examined, there is no value below 0.20.

Test-Retest

Within the scope of the test-retest of reliability of the Belonging to the University Scale, after the final form of the scale was created, it was applied to 659 students forming a sample group separate from the "Sample-1" and "Sample-3" groups twice at two week intervals in November 2012. The correlation coefficients for the subscales in both applications of the final form are interpreted as a test-retest reliability value for the final inventory.

The test-retest reliability correlation values related to the subscales of the Belonging to the University Scale are given in Table 16.

Table 16: *Correlation Reliability Values Related to the Belonging to the University Scale and Dimensions*

Sub-dimensions	test-retest n=659
First group (3,4,7,9,14)	0.87
Second group (2,5,6,8,10)	0.84
Third group (1,11,12,13)	0.83
General	0.88

When the values in the table are examined, it is observed that the correlation values for the subscales of the Belonging to the University Scale range between 0.83 and 0.87. These values show that the scale gives similar results and each dimension is highly reliable when it is applied to the same sample group at regular intervals.

When the pretest - posttest research design is applied for dependent groups, the results must be tested with the independent group's t-test. In the "Paired Samples Test" table, the p-value is checked. If it is <0.05, it means there is a significant difference between two measurements [40]. This process must be performed for the immutability of the total average score of pretest and posttest in each sub-dimension [41]. The scale values for the t-test are given in Tables 17, 18 and 19.

According to Table 17, the N number is 659 in both groups and so, it shows that there is no lost value and the same people have been reached during both applications. In the application of the Belonging to the University Scale, a minimum of 14 and maximum of 70 points can be obtained. Evaluation points from 5-41 indicate the subject does not feel they belong to the university, while those with points from 42-70 feel they belong to the university.

Table 17: *Descriptor Values belonging to the Size Totals*

Dimensions	N	Min	Max	$\overline{X}$	SS
Expectation	659	5	25	13.52	3.853
Motivation	659	5	25	15.86	3.815
Identification	659	4	20	12.20	3.267
Total	659	18	69	41.58	8.801
Expectation	659	5	25	13.54	3.895
Motivation	659	5	25	15.96	3.960
Identification	659	4	20	12.22	3.256
Total	659	18	69	41.73	9.004

* The averages of the lowest and highest value scores given by the students for the applied scale.

Table 18. *Mean and Standard Deviation Values in the Dependent Samples*

	Dimensions	$\overline{X}$	N	SS
1 Match	Expectation First Application	13.52	659	3.853
	Expectation Second Application	13.54	659	3.895
2 Match	**Motivation First Application**	15.86	659	3.815
	Motivation	15.96	659	3.960
3 Match	**Identification First Application**	12.20	659	3.267
	Identification	12.22	659	3.256
4 Match	**Total First Application**	41.58	659	8.801
	Total	41.73	659	9.004

The average of the first application and the second application must be very close to each other [41]. When Table 18 is examined, between the two applications a difference was found in Expectation Size of 0.02, in Motivation Size of 0.1, in Identification Size of 0.02 and in total of 0.15.

When the table is examined, it was determined that there was no significant difference between the averages of the total scores obtained from the first application and second application for each dimension ($p > 0.05$). This situation is indicative of the constancy between the pretest and posttest.

Table 19. *T-test Values in the Dependent Samples*

Sub Dimensions		$\overline{X}$	SS	t	Sd	P Value
Expectation	First –Second Application	-0.027	2.001	-0.350	658	0.726
Motivation	First –Second Application	-0.096	2.076	-1.182	658	0.238
Identification	First –Second Application	-0.024	1.837	-0.339	658	0.735
Total	First –Second Application	-0.147	4.146	-0.911	658	0.362

Usefulness of the Belonging to the University Scale

According to Turgut [42], some measures such as being economic, suitability in terms of administration time and ease of scoring and interpretation are criteria for a useful measuring tool. The Belonging to the University Scale is a scale consisting of 14 items. As the implementation period lasts approximately 5-10 minutes, it is very useful in terms of time.

4. Conclusions and Recommendations

In conclusion, the "Belonging to the University Scale" (BUS) is reliable, valid and useful. The inclusion of factors such as increasing absenteeism from lessons among university students, increasing tendency toward violence, use of drugs, depression, stress, school success and graduation problems under the heading of an unfulfilled need to belong means this topic requires detailed research and study. The need for universities to find quality students to fill required quotas is pressing and the loss of these students forms a significant problem. In the present day due to intense competition between universities, the losses to universities in terms of budgets and image make it harder to compensate. In this light, the BUS will play an important role in data collection and strategy formation during these studies.

BUS may be adapted for use at other educational stages apart from universities (preschool, primary school, middle school and high school). In high schools, especially, the adapted BUS may play an effective role in data collection for evaluation of the belonging factor in the resolution of problems such as violence, use of drugs, absenteeism and depression observed recently throughout the world. Additionally, the feeling of belonging needs to be fulfilled in all areas of life, and it may be a guide for the development of scales for family and working life.

The BUS may be used by psychological counseling and guidance services operating under the medico-social services in universities and in individual and group counseling by other psychological counseling services.

The BUS structure may be adapted and if necessary revised in the future in light of the dynamic university process, differentiation of education methods and differences in the effect of psycho-social changes on the individual.

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