The adaptation of Academic Major Satisfaction Scale to Turkish: The validity and reliability study

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The adaptation of Academic Major Satisfaction Scale to Turkish: The validity and reliability study[1]

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Abstract

Academic Major Satisfaction Scale (AMSS) was developed by Nauta (2007) with the aim of measuring the academic major satisfaction of students. The aim of this study is to examine the validity and reliability of the Turkish form of Academic Major Satisfaction Scale. The sample of the study consists of 321 college students studying at different departments of a state university at Western Black Sea part of Turkey. The construct validity of the scale, item analysis, test-retest and Cronbach Alpha internal consistency reliability coefficients were calculated in the study. The obtained data were analyzed by SPSS 20 and LISREL 8.7. Results and Conclusions: The studies were administered to 33 college students with one-week interval with the aim of determining linguistic equivalence, and the correlation between these studies were calculated as .76. In the study being administered to 267 college students for the construct validity of the scale, exploratory and confirmatory factor analysis was conducted in order to determine the factor structure of AMSS. The results of the factor analysis revealed that the scale has one-dimensional structure as in the original form. Cronbach Alpha internal consistency coefficient for AMSS was found .83 and the coefficient ω designed for congeneric measurements was calculated and found to .835. Test-retest reliability coefficient was found .94. It was seen that the one-dimensional model fit well in the confirmatory factor analysis (x^2=17.34, sd=7, p=.015, RMSEA=.075, CFI=.99, IFI=.99, GFI=.98, SRMR=.021). Item factor loadings varied between .35 and .87. It was seen that the corrected item-total correlation of the scale varied between .26 and .78. The test-retest reliability coefficient obtained with four-week interval was found .94 for the whole scale. These results show that the Turkish form of Academic Major Satisfaction Scale can be used as a valid and reliable measurement tool.

Keywords: Academic major satisfaction scale, validity, reliability

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Introduction

The common goal of all training being received during the life is to make individuals successful both in social and business life. A successful individual has achieved satisfaction in his/her social and business life, and his/her level of satisfaction is high. Individuals' happiness in their social life affects their business life, and the satisfaction in their business life also affects their social life. While satisfaction in business life is affected by many factors, it begins basically with choice of such a profession for which an individual believes to be very successful and to feel happy for professing it. Choice of profession has a great importance both individually and socially. According to Super, someone put "I" concept or self-perception which he/she has developed so far into practice. Choice of profession and career development is a complex and multifaceted process including all dimensions of an individual's life (Hall, 1996). Although individuals meet many career development tasks during their life, satisfiying career choice is one of the developmental problems (Super1953; cit: Nauta, 2007).

It is very important to do favorite jobs for individuals. So college students should firstly decide what kind of a life they want to lead in 10 years not in the front 1 or 2 years, and then they should make choices. However, students focus on only entering a university and no matter which major. So, this situation brings up not to be happy at current job. It is observed that the individuals who are not happy with his/her selections are more passive in business life and that their desires to improve themselves for career are lower.

It was found that the relationship between the pre-service teachers' desire to improve themselves and their satisfaction from the profession choice is moderate and positive in the study administered by Eren (2012).

Academic major satisfaction also has a high potential as a representative for later business life satisfaction (Astin,1965; cit:Nauta,2007). Although satisfaction for profession choice has a power representing individuals' success and happiness in social and business life, not many studies about major satisfaction have been found in literature. Besides, the deficiency for a measurement tool for major satisfaction stands out. With this aim, Academic Major Satisfaction Scale (AMSS) developed by Nauta (2007) was adapted to Turkish, and its validity and reliability was examined.

Method

Study Group

The sample of the study is 354 college students studying at various departments of Abant İzzet Baysal University in 2012-2013 academic year. The study was carried out in three different groups. The first group consisted of 33 students and linguistic equivalence was applied with this group. The second group consisted 267 students and factor analysis, item analysis and internal consistency studies were applied by the data obtained from this group. The third group consisted 54 students and test-retest reliability studies were done by the data obtained from this group.

Procedure

The adaptation of Academic Major Satisfaction Scale to Turkish started with contacting Margaret M. Nauta developer of the scale in its original language and obtaining permission for adaptation of the scale. After obtaining the necessary permits, the translation process from English to Turkish was initiated. The most important process is the translation from source language to target one during the adaptation process of a scale from its own nation to another one (Geisinger, 1994). For this aim, the translation was done by three lecturers having translation knowledge and linguistic competence. By the researchers' examining, one single Turkish form was generated from three Turkish forms obtained at the end of the translation. This form was given on again to the experts attending in the former translation for re-translation to English. After obtaining the opinion showing that two forms of the scale were resemble enough, the last version of the scale was created.

After the translation process, the linguistic equivalence of the obtained form with the form in the source language was examined. Linguistic equivalence study was conducted with on 33 juniors studying at English Language Teaching department by the method of bi-lingual pattern (Deniz, 2007). After a high level positive correlation was observed between the source and target language of the scale, construct validity study was initiated. The data collected for construct validity was investigated on the basis of data pre-processing methods (Oğuzlar, 2003). As the data pre-processing methods, the missing values in the matrixes belonging to the data were examined with frequency tables, and any missing value more than 3% was seen in none of these tables. Besides, the noising values in the data set were determined and they were rearranged.

The construct validity was conducted with the methods of exploratory factor analysis and confirmatory factor analysis. It is required that some hypothetical criteria are to be pursued in factor

analysis studies. For this aim, normal distribution, linearity, removal of outliers, determination of missing values were examined for AFA as hypothetical criteria while the proficiency levels of goodness of fit indices as well as all the hypothetical criteria for AFA were examined (Schumacker & Lomax, 2004; Coakes, 2005; Field, 2005; Leech et al 2005; Kline, 2005; Hair et al, 2006; Tabacnick & Fidel, 2008; Green & Salkind, 2008, Cit: Doğan & Totan, 2010). After it was observed that the data obtained in the adaptation of AMSS has necessary adequacy for construct validity, reliability study was initiated. Reliability level of the scale was examined with Cronbach Alpha, ω, internal consistency and test-retest techniques. Item analysis examining was determined with item-total correlation and significance levels of differences between the group mean of top / bottom 27% group (Büyüköztürk, 2007). All the statistical analysis in the adaptation of Academic Major Satisfaction Scale was applied with SPSS 20 and LISREL 8.7.

Findings

Linguistic Equivalence

The items of scale translated must represent the aim of the original language at the highest level in the language into which it was translated (Deniz, 2007). What extent the Turkish form of Academic Major Satisfaction Scale reflects the items in English was examined with linguistic validity method. Applying the method of bi-lingual group pattern in linguistic validity, the study was administered to 33 juniors studying at English Language Teaching Department at Sakarya University. As the result of the correlation analysis for linguistic validity, a high level positive correlation (r= .76, p < ,001) between the Turkish form (= 22,76, ss= 4,86) and original form (=22,64 ss= 4,45) of Academic Major Satisfaction Scale was seen.

In the linguistic validity of the Turkish and English forms of AMSS, the relations between the items in the source language and the items in the target language were examined with rho coefficient of Spearman in each item level. Sperman's rho is a statistical technique that is used only when continuous variable data do not show a normal dispersion or data are sequential or rational (Brace, Kemp & Snelgar, 2003). Sperman's rho technique was used during the examining of the items in the linguistic validity study in which the scale items were ranked in five-point Likert type. The relation levels of the items belonging to two forms were represented in the Table 1.

Table 1

The relation levels between the items both in Turkish and English form

Items	rho
Item 1	.64**
Item 2	.40*
Item 3	.56**
Item 4	.74**
Item 5	.68**
Item 6	.56**
*p <,05; **p <,001*	

It was found that all the relations between the Turkish and English forms of the scale had significant relations at .01 and .05 significance level. It was determined that all the relations belonging to all the items were moderate. Based on these relationships in the radial direction between all the items, it can be stated that the items of the scale both in the source and in the target language are similar to each other; in other words, the Turkish translation of the English form demonstrate competency.

Construct Validity

Exploratory (EFA) and confirmatory factor analysis (CFA) was conducted in order to determine the construct validity of AMSS. Firstly, sampling adequacy and Barlet-Sphericity tests were conducted in order to determine the appropriateness of the data for factor analysis. Kaiser-Meyer-Olkin (KMO) sample concordance coefficient was found to .798 and Barlet-Sphericity test Chi Square value was found to 765,146 ($p<.001$). It stated that KMO value must higher than .60 and Barlet-Sphericity test must be significant for factor analysis (Büyüköztürk, 2007).

Table 2

Factor Analysis of AMSS and t-Test Results Belonging to the Differences Between 27% Top- Bottom Groups

Items	Item-Total Correlation	t (Top 27%-Bottom27%)[2]
Item 1	.619	15,347**
Item 2	.260	5,655**
Item 3	.784	24,981**
Item 4	.745	17,359**
Item 5	.686	14,447**
Item 6	.608	19,610**

[1]n=321, [2]n1, n2=72, **p<.001

The results obtained from the Table 2 shows that the data are appropriate for factor analysis. A unifactoral structure of which eigenvalue is 3.453 and which explains 57.542% of total variance was gained as the result of EFA. The factor loadings related to the items were given in the Table 3.
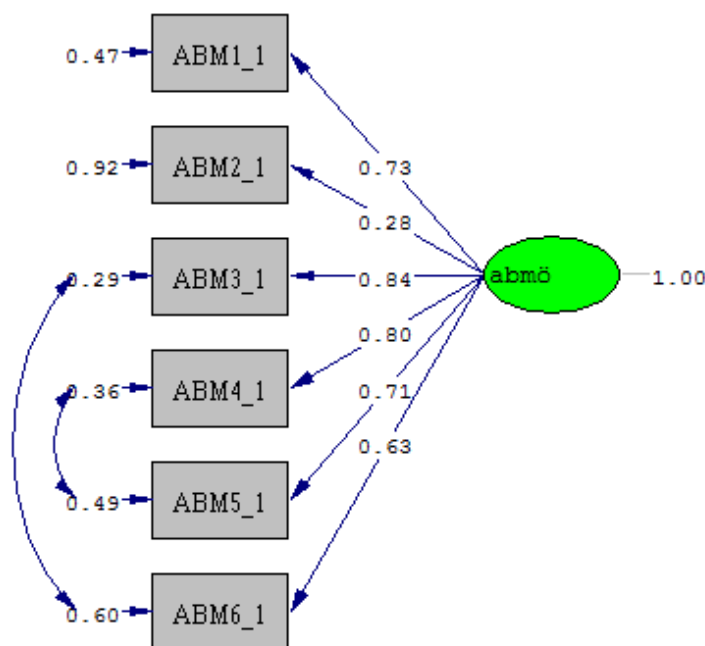
Table 3

The result of Exploratory Factor Analysis

Item Factor Loadings	Item Factor Loadings
Item 1*	.757
Item 2*	.354
Item 3*	.877
Item 4	.871
Item 5	.820
Item 6*	.744
Total explained variance % 57,542 %	
Eigenvalue 3,453	

*These items are coded reverse.

It was calculated that the factor loadings of the scale items were between .35 and .87. Confirmatory factor analysis (CFA) was conducted in order to determine whether the unifactoral structure obtained as the result of explanatory factor analysis was verified in the sample consisting Turkish college students. The coverage ratios for the required levels of the goodness of fit indices for the first-level model related to the scale was primarily tested in the confirmatory factor analysis. Observing that the association of the error covariances of Item 4 and Item 5 which reduced the levels of goodness of fit would provide an important contribution to the model compliance, the items related to the model were analyzed again through being associated. Examined the modification suggestions at the result of the analysis, it was observed that the association of the error covariances of Item 3 and Item 6 would provide an important contribution to the model compliance, and the analysis was repeated. As the result of CFA analysis repeated after the association of the item errors, the ratio of Chi Square value to degree of freedom was found to (17.34/7) 2,47. Taking into account that this ratio must be lower than five (Şimşek, 2008), it was observed that the model met this level. The model obtained as the result of the CFA was presented as following:

Figure 1- The First-Level CFA Model of Academic Major Satisfaction Scale

Chi-Square=17.34, df=7, P-value=0.01534, RMSEA=0.075

It is stated that acceptable fit values for AGFI, GFI, NFI, CFI, IFI must be .90 or higher, and for RMR and RMSEA must be 0.08 or lower in the goodness of fit indices (Marsh et al, 2006; Byrne and Campbell, 1999 Cit.: Doğan & Totan, 2010). In accordance with these criteria, it is concluded that the model shows a good level of fit. The results obtained were presented in the Table 4.

Table.4

CFA Model Goodness of Fit Indices

χ^2	df	χ^2/df	AGFI	GFI	NFI	CFI	IFI	RMR	RMSEA
17.34	7	2.47	0.94	0.98	0.98	0.99	0.99	0.033	0.075

In accordance with this result, it can be stated that the scale demonstrate proficiency in measuring its aim and that the model is verified.

Reliability

The reliability study of Academic Major Satisfaction Scale was examined with Cronbach's Alpha internal consistency coefficient and test-retest methods. The Cronbach's Alpha internal consistency coefficient of the scale was calculated to .83. In the factor analysis used in the resolution of the measurement results, if factor loadings of items are equal such items are called parallel, equivalent and / or uniform items, and also the reliability coefficient α obtained through these items gives the

true reliability. However, if factor loadings of items are not equal such items are referred as congeneric items, and in this case, the reliability coefficient α produces values below real reliability. The coefficient ω developed by McDonald was designed especially for congeneric measurements, it is called "constructor reliability" and obtained by confirmatory factor analysis (McDonald, 1985; Nunnally & Bernstein, 1994; Cited: Yurdugül, 2006). In this study, it was observed that the factor loadings of the scale are not equal; thus the coefficient ω designed for congeneric measurements was calculated and found to .835. Nunnally & Bernstein (1994) stated that for the aim of accepting a scale as reliable, the reliability coefficient of that scale must be higher than 0.7 (Cited: Demir & Yurdugül, 2014). It is observed that this condition is provided and this value is equivalent to the coefficient α, because in all the measurements, ω is equal to α or greater than it.

The test-retest reliability of AMSS was examined by administering to 54 college students with two-week interval. According to the findings obtained, test-retest reliability coefficient of the scale was found to .94. Raines-Eudy (2000) states that if the coefficient values obtained as the result of reliability studies is higher than .50 then it is an acceptable value. These results show that the scale has an acceptable level of reliability.

Discussion and Conclusion

The aim of this study is to adapt Academic Major Satisfaction Scale to Turkish. In accordance with this aim, the translation of the scale from the original form to Turkish was done firstly and then it was examined whether it provided linguistic equivalence with "back translation" method. After these steps, item analysis was made and it was examined whether the representative power of the scale items were appropriate. Taking into account that if necessary, the items between .20 and .30 can be added to test in evaluating item-total correlation (Büyüköztürk, 2011), item 2 was accepted important and it was not removed from the scale although its item total correlation was lower than .30. So the analysis were made over 6 items as in its original form. The reliability of AMSS was calculated with internal consistency and test-retest methods. The results related to reliability show that the scale is acceptable level of reliable. Exploratory (EFA) and confirmatory (DFA) factor analysis was conducted in order to determine the construct validity of AMSS. It was concluded that the scale has a unifactoral structure as in the original form of the scale with EFA. It was examined whether the unifactoral structure of the scale would be verified on Turkish college students with CFA. It was concluded that the unifactoral structure was verified with CFA. Because the scale short and easy to apply, AMSS Turkish Form is expected to meet an important need in the researches to be administered in Turkish society. Consequently, it can be stated that AMSS Turkish Form has a

unifactoral structure and that it is a valid and reliable measurement tool for measuring academic major satisfaction level of Turkish college students.

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