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THE ACADEMIC BEHAVIORAL CONFIDENCE SCALE: THE ADAPTATION STUDY WITH TURKISH UNDERGRADUATES

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***Abstract*—The purpose of the present study was to adapt the Academic Behavioral Confidence Scale (ABC) developed by Sander and Sanders [1] to Turkish and to figure out the validity and reliability of the scale. The sample was composed of 577 undergraduates from Marmara University, Yildiz Technical University and Istanbul Commerce University in Istanbul. Exploratory and confirmatory factor analysis indicated a three-factor solution (academic study planning, verbalizing and assignment/project organization) with 16 items although the original scale had a four-factor structure (grades, studying, verbalizing and attendance) with 17 items. Potential reasons for these consequences like cultural differences were explained. Regarding the criterion validity of the scale, it was tested via the Revised Two-Factor Study Process Questionnaire. The results revealed that there was a positive and statistically significant correlation between each subscale and deep approach to learning unlike its correlation with surface approach to learning. The internal consistency coefficients of the factors and the total score ranged from 0.76 to 0.88. Test-retest results showed that there was no significant difference between pre-test and post-test scores of each subscale, and the composite score. Thus, it was claimed that both academicians and counselors could utilize Turkish version of the ABC Scale to examine undergraduates' confidence in their academic conducts, leading to the formation of more efficacious learning environments for them.**

***Keywords*—Academic Behavioral Confidence Scale, adaptation, undergraduates**

I. INTRODUCTION

University is a unique academic environment where a student has unlimited access to knowledge and research. It is a colorful educational setting for undergraduates to be part of various projects and organizations as well as diverse social clubs in which they improve their amical networks. Yet, their learning processes are more complicated than those in previous levels of education [2, 3]. As perpetual changes in the formation and practice of information continue due to advances in technology and increases in interdisciplinary understanding, learning at this level becomes more person-centered [4, 5]. Thus, individual differences in learning, idiosyncratic tendencies an undergraduate student displays throughout his education, play a pivotal role in his academic achievement [6].

One of the characteristic features the student shows in his training is his academic confidence. This term is defined as "being how students differ in the extent to which they have a strong belief firm trust or sure expectation of what university has to offer" [7, p.4]. According to Sanders and Sander [7], academic confidence is a sub-term of academic self-efficacy. Self-efficacy contains one's beliefs about his capacity to obtain successful outcomes in a particular context. It is pertinent to ideas of how an individual feels proficient about himself [8, 9]. When it is applied to academic settings, it is described as academic self-efficacy. It refers to one's self-evaluations of whether he is able to perform in a good way in an academic task or not.

For Sander and Sanders [10], the concepts of academic self-efficacy and academic confidence share a similar aspect in terms of their fundamental resources of information. Both of them depend on four sources, depicted by Bandura in his self-efficacy theory: "vicarious experience, enactive attainments, verbal persuasion and physiological state" [8, pp.126-127]. As reported by Bandura, vicarious experiences trigger one's feelings of 'I can do it!' when he witnesses that a person akin to him accomplishes in a specific setting despite obstacles, shortages etc. It leads to role-modeling. Enactive attainments make an individual go through his successful conduct. It increases his belief about himself. Verbal persuasion involves other people's reasonable judgments about his potential attainment like 'You can do it!'. And the last component – physiological state –

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causes him to read his bodily responses to the academic event. It allows him to realize whether he copes with this circumstance or not.

However, academic confidence differs from academic self-efficacy in accordance with the degree of its domain specificity. Academic confidence encompasses broader knowledge of academic competency rather than academic self-efficacy referring to the capacity of replying to a peculiar academic duty properly in a certain academic domain. Academic confidence discriminates distinctive behaviors relevant to learning in all academic majors, making a more extensive evaluation of one self [10, 11, 12]. In addition, social comparison is highlighted more in academic confidence than academic self-efficacy which prioritizes enactive attainments [10].

Therefore, academic behavioral confidence contains students' self-evaluations about whether they have the ability to fulfill responsibilities the university education requires from them or not [7, 10]. It reflects the widespread mental view of their verbal, intellectual, communicative and organizational skills necessary for their survival in academic settings. It is crucial for them to deal with challenging academic situations in which they have difficulties in solving various problems related to their educational processes. In sum, it is essential for undergraduates to be able to attain many achievements making them rise to prominence in their majors.

In order to examine the degree of undergraduates' academic confidence, Sanders and Sander [7] generated the Academic Behavioral Confidence Scale (the ABC scale). Especially, the ABC scale was designed to figure out the level of a student's confidence in his efforts to acquire knowledge in respect to the undergraduate curriculum he is part of. It measures his general beliefs of his study deeds crucial for the completion of his higher education. For students, such a measurement provides a great opportunity to express themselves in terms of which areas they need academic support and which skills they would like to enhance so as to be successful at their academic fields. For lecturers, the ABC scale is served as an efficient instrument to grasp their students' scholastic deficiencies. In this way, they have the chance to advise their undergraduates via efficacious coaching in their academic pathway [1]. Hence the ABC scale can be seen as a screening tool for the students at hazard academically [13].

The first version of the ABC scale is composed of 24 items on a 5-point scale with six factors named as Studying, Understanding, Verbalizing, Clarifying, Attendance and Grades [7]. Although it has high internal consistency coefficients, Sander and Sanders [1] point that the scale leads to questions about whether the concept of academic confidence has manifold dimensions or not. In their study in 2003, psychology undergraduates displayed higher level of confidence on some items of the ABC scale than medical undergraduates did. They claim that there is a problem in the factor solution of the ABC scale with 24 items. Then, in 2009, they carried out a revision factor study over the ABC scale. The new version of the scale involves 17 items on a 5-point scale with a four-factor solution described as Grades, Verbalizing, Studying and Attendance. Both exploratory and confirmatory analysis indicates satisfactory results regarding the factor solution of the scale [1]. Their scree plot analysis manifests a four-factor structure. The fit statistics including CFI (Comparative Fit Index), TLI (Tucker-Lewis Coefficient), RMSEA (Root Mean Square Error of Approximation) and X^2 (Chi-Square) show sufficient results: 0.92, 0.89, 0.06, 0.28, 0.89 respectively (p<0.001). Cronbach's alpha values for Grades, Verbalizing, Studying and Attendance are 0.78, 0.78, 0.72 and 0.74 respectively.

Researches utilizing the ABC scale demonstrate that it leads to qualified results by providing beneficial opportunities for experimenters to comprehend academic confidence of undergraduates. For example, Putwain and Sander [14] tested variations in academic behavioral confidence of freshmen students during one academic year and they tried to understand whether these diversities were related to students' achievement goal inclinations. Results revealed that a freshmen student's achievement goal tendency indicated a stable pattern while his academic confidence levels ranged from low to high degrees. This outcome leads to the idea that academic confidence is open to change as the student becomes experienced in his university education. Moreover, Nicholson, Putwain, Connors and Hornby-Atkinson [11] conducted a study aiming to find out the predictive power of students' anticipations and academic behavioral confidence levels on their grades at the end of the semester. Results presented that students who have reasonable outlooks toward self-study and high degree of academic behavioral confidence engendered better marks than the other ones with unsound opinions toward self-study and low levels of academic behavioral confidence.

Consequently, the ABC scale is very essential for educators, counselors and educational policy makers in order to improve the quality of higher education from the perspective of university students. The scale allows us to implement a student-centered approach in effective teaching. It makes learning processes simpler by taking into account levels of students' academic confidence in all domains. It facilitates early academic interventions for undergraduates at risk. Therefore, the purpose of the present study was to adapt the ABC scale developed by Sander and Sanders [1] to Turkish and to figure out the validity and reliability of the scale.

II. METHODS

A. Design

The study was formed via descriptive cross-sectional survey research design whose aim was to collect a wide range of information from a broad population at a specific time, leading to portraying the state of current circumstances, aspects of certain situations and so on. The research involved different participants examined at disparate times [15].

B. Participants

The sample was engendered through convenience sampling method referring to select adjacent individuals who are feasible and who can be repliers at the study time. This method involves a continuous data gathering until the desired magnitude of

sample is attained [15]. Firstly, 62 undergraduates (16 females, 46 males) in the year of freshmen (*n*=15), sophomore (*n*=15), junior (*n*=16) and senior (*n*=16) in the different departments including Mechatronics, Electrical-Electronical and Jewelry Engineering in Istanbul Commerce University took part in the language equivalence study. After that, 515 Turkish undergraduate students from Marmara University and Yildiz Technical University (*n*=244) and Istanbul Commerce University (*n*=271) in Istanbul participated in the validity study. This sample was comprised of 309 female (60%) and 206 male (40%) undergraduates. The age of students ranged from 18 to 24. There were 145 freshmen (28.2%), 106 sophomore (20.6%), 147 junior (28.5%) and 117 senior (22.7%) students in the sample of validity study. In addition, 50 undergraduates of the sample (20 females, 30 males) were randomly chosen to be included in the test-retest study, conducted within the interval of two weeks. This sample was composed of students in the year of freshmen (*n*=27), sophomore (*n*=9), junior (*n*=6) and senior (*n*=8) in the department of Banking and Finance, Law, Economics, Management and International Trade.

C. Materials

There were two measurement tools used in the study: the Academic Behavioral Confidence Scale and the Revised Two-Factor Study Process Questionnaire.

1) The Academic Behavioral Confidence Scale (the ABC scale): The 17-item ABC Scale developed by Sander and Sanders [1] was utilized in the present research for Turkish adaptation to the undergraduates so as to conduct linguistic equivalence, validity and reliability studies. It was composed of four factors named as Grades, Verbalizing, Studying and Attendance on a 5-point scale ranging from not at all confident to very confident. Grades subscale was regarded as a tangible assessment of academic confidence based on an authentic score of achievement. The other three subscales were considered as an examination of potential confident conduct improving the attainment. In addition, Attendance and Studying subscales were the dimensions shaped under the supervision of the undergraduates unlike Grades and Verbalizing subscales demanding a reciprocal relationship between the student and the teacher. The internal consistency coefficients for each subscale were 0.78, 0.78, 0.72 and 0.74 respectively.

2) ***The Revised Two-Factor Study Process Questionnaire (the R-SPQ-2F):*** The R-SPQ-2F formed by Biggs, Kember and Leung [16] and adapted to Turkish by Yilmaz and Orhan [17] was applied in the study. The scale's aim was to examine undergraduates' study tendencies which could be categorized as deep or surface approach toward learning. Deep approach dimension reflected students' inclinations of the fact that they would prefer to understand the learning material at hand better rather than to get high marks in the exams. Surface approach dimension, on the other hand, meant their predispositions of the fact that they long for investigating the hints of what the teachers would use in the assessments, and organizing their performance according to these clues [16].

The adapted version of R-SPQ-2F was studied by Yilmaz and Orhan [17] with 400 Turkish undergraduates from Yildiz Technical University. Their research indicated that the scale was made up of 20 items on a 5-point scale with two factors – Deep Approach and Surface Approach. Yet, it did not include the motivation and strategy subscales of the initial scale due to the items' distributions obtained in the exploratory factor analysis and affirmed in the confirmatory factor analysis with the goodness-of-fit indexes (X^2/sd=2.19, GFI=0.91, AGFI=0.89, CFI=0.87, RMR=0.08, SRMR=0.06, RMSEA=0.06). The internal consistency coefficients for Deep and Surface Approach were 0.79 and 0.73 respectively. The values of the item total correlations were between 0.20 and 0.60. And there were significant differences between means of the upper 27% and lower 27% groups for every dimension and item.

D. Procedure

The original 17-item ABC Scale was translated to Turkish by the four experts who had been educated in English curriculum in the field of counseling and educational psychology, and who have been working in the Faculty of Education in Marmara University, Yildiz Technical University, Hacettepe University and Anatolian University. Two of them worked on the translations of the scale and engendered its final form. Then, it was back-translated into English by five experts at English language who had been educated in the field of linguistics and science of translation in Bogazici University. Three of them studied on creating the most appropriate back-translation of the form by gathering all translations. After that, they determined the fact that the Turkish translation of the scale was consistent with the original scale. In addition, the Turkish translation was analyzed by an expert at Turkish language and literature in terms of grammar structures and phraseology, leading to the final version of the form.

Subsequently, English and Turkish versions of the ABC Scale were applied to 62 undergraduates (18 to 24 aged) who have been educated in English curriculum in either the year of sophomore or senior in the different departments including Mechatronics, Electrical-Electronical and Jewelry Engineering in Istanbul Commerce University so as to examine the language equivalence of the versions. The study was conducted with the interval of two weeks.

After the verification of language equivalence, Turkish version of the ABC Scale was put into use to 515 undergraduates in disparate departments from Marmara University, Yildiz Technical University and Istanbul Commerce University for the validity analysis. Moreover, the students were asked to reply to the adapted version of R-SPQ-2F in order to figure out the criterion validity of the scale. For the reliability analysis, 50 undergraduates of the sample in the validity study were randomly selected to conduct test-retest study.

E. Method of Analysis

In order to find out the validity of the Turkish version of the ABC Scale, exploratory and confirmatory factor analyses were

made via SPSS 22 and LISREL 8.80. In exploratory factor analysis, an oblique rotation was used due to the fact that the factors would be pertinent to each other, which was stated by Sander and Sanders [1]. In confirmatory factor analysis, the goodness-of-fit indexes utilized were X^2/df (chi square / degree of freedom), GFI (Goodness of Fit Index), AGFI (Adjusted Goodness of Fıt Index), CFI (Comparative Fit Index), SRMR (Standardized Root Mean Square Residuals), RMSEA (Root Mean Square Error of Approximation) and ECVI (Expected Cross Validation Index). The criterion validity was examined through Pearson correlation analysis. The reliability analysis was carried out through paired sampled t-test, Cronbach's alpha, split half reliability, and corrected item total correlation, differences of item and factor means of the upper 27% and lower 27% groups, Pearson correlation analysis.

III. RESULTS

There are four parts of the results mentioned below: Findings of language equivalence study, exploratory factor analysis, confirmatory factor analysis, and reliability analysis.

A. Results of language equivalence study:

Table 1 summarizes the results of language equivalence study. As it is indicated, there was no significant difference among the items in the Turkish and the English version of the ABC Scale (p>0.05).

TABLE I. RESULTS OF PAIRED SAMPLED *T*-TEST IN LANGUAGE EQUIVALENCE STUDY

Paired Items		N	$\overline{X}$	Sd	SEM	*t* Test		
						t	Df	p
Item 1	**Turkish**	62	4.05	1.11	0.14	-1.00	61	0.32
	English	62	4.08	1.07	0.14			
Item 2	**Turkish**	62	3.77	1.05	0.13	-0.25	61	0.80
	English	62	3.81	1.04	0.13			
Item 3	**Turkish**	62	3.16	1.22	0.15	-1.68	61	0.10
	English	62	3.43	1.24	0.16			
Item 4	**Turkish**	62	3.95	1.00	0.13	0.67	61	0.51
	English	62	3.84	1.13	0.14			
Item 5	**Turkish**	62	4.03	1.16	0.15	-1.35	61	0.18
	English	62	4.08	1.12	0.14			
Item 6	**Turkish**	62	4.24	1.03	0.13	-1.69	61	0.10
	English	62	4.32	0.99	0.12			
Item 7	**Turkish**	62	4.03	0.83	0.10	-0.92	61	0.36
	English	62	4.16	1.06	0.13			
Item 8	**Turkish**	62	4.13	1.02	0.13	-0.72	61	0.47
	English	62	4.18	0.92	0.12			
Item 9	**Turkish**	62	3.66	1.10	0.14	0.99	61	0.33
	English	62	3.52	1.17	0.15			
Item10	**Turkish**	62	4.22	1.06	0.13	-0.18	61	0.85
	English	62	4.24	0.86	0.11			
Item11	**Turkish**	62	4.02	0.84	0.11	-1.93	61	0.06
	English	62	4.10	0.76	0.10			
Item12	**Turkish**	62	4.06	1.10	0.14	-1.69	61	0.10
	English	62	4.14	1.00	0.13			
Item13	**Turkish**	62	3.90	0.97	0.12	-1.00	61	0.32
	English	62	3.98	0.98	0.12			
Item14	**Turkish**	62	3.24	1.20	0.15	-1.31	61	0.20
	English	62	3.35	1.07	0.14			
Item15	**Turkish**	62	3.58	1.06	0.13	-0.58	61	0.56
	English	62	3.66	1.20	0.15			
Item16	**Turkish**	62	4.22	1.08	0.14	-1.52	61	0.13
	English	62	4.31	0.97	0.12			
Item17	**Turkish**	62	3.89	1.02	0.13	1.43	61	0.16
	English	62	3.69	1.14	0.14			

B. Exploratory factor analysis:

At first, Turkish ABC Scale items were tested in terms of factorability. Kaiser-Mayer-Olkin (KMO) value was 0.91, indicating a sufficient value for the sample size. It was above the approved value of 0.50 [18]. Barlett's test of sphericity was significant ($\chi^2(136)=3302.21$, $p<0.001$). All of the communalities were above the recommended value of 0.10 [18]. Based on these outcomes, exploratory factor analysis was applied to 17 items.

Depending on principal component analysis, the initial Eigen values indicated a three-factor solution explaining 54 % of the total variance. Due to the factors relating to each other, an oblique rotation was used to understand which items belonged to which factors.

Table 2 showed the distribution of the items with their factor loadings in pattern matrix. As it is stated, the factor loading of Item 1 is above the approved value of 0.32 [18] like the other items but it contributes to two factors, leading to a complicated factor solution. Because of this concern, Item 1 was eliminated from the analysis.

TABLE II. THE DISTRIBUTION OF ITEMS WITH THEIR FACTOR LOADINGS IN PATTERN MATRIX

Items	Factors		
	1	2	3
Item 2	0.74		
Item 15	0.67		
Item 14	0.62		
Item 12	0.60		
Item 7	0.60		
Item 6	0.58		
Item 13	0.51		
Item 1	**0.33**	**0.32**	
Item 3		0.79	
Item 5		0.71	

Items	Factors		
	1	2	3
Item 9		0.63	
Item 8		0.56	
Item 10			-0.88
Item 11			-0.83
Item 16			-0.68
Item 4			-0.67
Item 17			-0.45

After the removal of Item 1, a principal component analysis of remaining 16 items utilizing an oblique rotation was made, with three factors explaining 55% of total variance. The ultimate factor solution is cited in Table 3 with the factor loadings of the items in the pattern matrix.

TABLE III. THE ULTIMATE FACTOR SOLUTION

Items	Factors		
	1	2	3
Item 2	0.71		
Item 15	0.67		
Item 14	0.63		
Item 12	0.62		
Item 6	0.60		
Item 7	0.59		
Item 13	0.51		
Item 3		0.80	
Item 5		0.70	
Item 9		0.65	
Item 8		0.57	
Item 10			-0.88
Item 11			-0.83
Item 4			-0.67
Item 16			-0.66
Item 17			-0.43

The two factors were described with the labels involving Academic Study Planning (Item 2, 6, 7, 12, 13, 14 and 15) and Assignment / Project Organization (Item 4, 10, 11, 16, and 17) which are quite different from the ones suggested by Sander and Sanders [1]. Only one factor was depicted in the same way – Verbalizing (Item 3, 5, 8, 9) - which is also included in the original scale.

C. Confirmatory factor analysis:

Initially, confirmatory factor analysis (CFA) was conducted to evaluate whether the four-factor model of the original scale including the implicit variables – Grades, Verbalizing, Studying and Attendance – with 17 items would be figured out with the data obtained from Turkish undergraduates. Variables were tested at the continuous degree. The goodness-of-fit indexes used were X^2/df (chi square / degree of freedom), GFI (Goodness of Fit Index), AGFI (Adjusted Goodness of Fıt Index), CFI (Comparative Fit Index), SRMR (Standardized Root Mean Square Residuals), RMSEA (Root Mean Square Error of Approximation) and ECVI (Expected Cross Validation Index). Table 4 outlines the results of these indexes. As it is indicated via the fit statistics, the Turkish model does not have sufficient values of fit statistics ($\chi^2(113)=606.15$, $p<0.001$; CFI=0.94; RMSEA=0.09; ECVI=1.13). In addition, it is not in line with the original model of the ABC Scale. Thus, this result supports the findings of exploratory factor analysis.

TABLE IV. THE GOODNESS OF FIT INDEXES FOR THE FOUR FACTOR ABC MODEL

Fit Indexes	Original Scale	Turkish Scale	Good Fit[a]	Acceptable Fit[a]
X^2/df	2.44	5.36	$0 \leq \ldots \leq 2$	$2 \leq \ldots \leq 5$
GFI	-	0.88	$0.95 \leq \ldots \leq 1$	$0.85 \leq \ldots \leq 0.95$
AGFI	-	0.84	$0.95 \leq \ldots \leq 1$	$0.85 \leq \ldots \leq 0.95$
CFI	0.92	0.94	$0.95 \leq \ldots \leq 1$	$0.80 \leq \ldots \leq 0.95$
SRMR	-	0.07	$0 \leq \ldots \leq 0.05$	$0.05 \leq \ldots \leq 0.08$
RMSEA	0.06	0.09	$0 \leq \ldots \leq 0.05$	$0.05 \leq \ldots \leq 0.08$
ECVI	0.89	1.13	For the model compared, the value should be smaller	For the model compared, the value should be smaller

a. The values of good fit and acceptable fit depicted by [19, 20] *were used.*

Based on the outcomes of exploratory factor analysis, the three-factor model-1 of Turkish ABC Scale encompassing the implicit variables – Assignment / Project Organization, Verbalizing and Academic Study Planning – with 16 items was examined. Variables were assessed at the continuous level. The goodness-of-fit indexes used were X^2/df, GFI, AGFI, CFI, SRMR, and RMSEA. ECVI was not utilized due to the model having the number of items different from the original model. Table 5 shows the outputs of the fit indexes. As it is demonstrated, the indexes of CFI and RMSEA are at the acceptable limit values.

TABLE V. THE GOODNESS OF FIT INDEXES FOR THREE FACTOR MODEL-1 OF THE TURKİSH ABC SCALE

Fit Indexes	Model-1 of the Turkish ABC Scale	Good Fit[a]	Acceptable Fit[a]
X^2/df	4.51	$0 \leq \ldots \leq 2$	$2 \leq \ldots \leq 5$
GFI	0.90	$0.95 \leq \ldots \leq 1$	$0.85 \leq \ldots \leq 0.95$
AGFI	0.87	$0.95 \leq \ldots \leq 1$	$0.85 \leq \ldots \leq 0.95$
CFI	0.95	$0.95 \leq \ldots \leq 1$	$0.80 \leq \ldots \leq 0.95$
SRMR	0.06	$0 \leq \ldots \leq 0.05$	$0.05 \leq \ldots \leq 0.08$
RMSEA	0.08	$0 \leq \ldots \leq 0.05$	$0.05 \leq \ldots \leq 0.08$

a. The values of good fit and acceptable fit depicted by [19, 20] *were used.*

Based on the modification indices, there were remarkable correlations between item 6 and 12 (r=0.40), and between item 11 and 10 (r=0.21). Both of them were under the implicit variable of Academic Study Planning. Hence, a modification between them was conducted. Table 6 outlines the results of indexes after this amelioration. As it is demonstrated, there is a recovery in the fit statistics. Their values are above the acceptable fit and close to the good fit.

TABLE VI. THE GOODNESS OF FIT INDEXES FOR THE THREE FACTOR MODEL-2 OF THE TURKISH ABC SCALE

Fit Indexes	Model-1 of the Turkish ABC Scale	Model-2 of the Turkish ABC Scale	Good Fit[a]	Acceptable Fit[a]
X^2/df	4.51	3.26	$0 \leq \ldots \leq 2$	$2 \leq \ldots \leq 5$
GFI	0.90	0.93	$0.95 \leq \ldots \leq 1$	$0.85 \leq \ldots \leq 0.95$
AGFI	0.87	0.90	$0.95 \leq \ldots \leq 1$	$0.85 \leq \ldots \leq 0.95$
CFI	0.95	0.97	$0.95 \leq \ldots \leq 1$	$0.80 \leq \ldots \leq 0.95$
SRMR	0.06	0.05	$0 \leq \ldots \leq 0.05$	$0.05 \leq \ldots \leq 0.08$
RMSEA	0.08	0.07	$0 \leq \ldots \leq 0.05$	$0.05 \leq \ldots \leq 0.08$

a. The values of good fit and acceptable fit depicted by [19, 20] *were used.*

The outcomes of confirmatory factor analysis of Model-2 are presented in Figure 1.

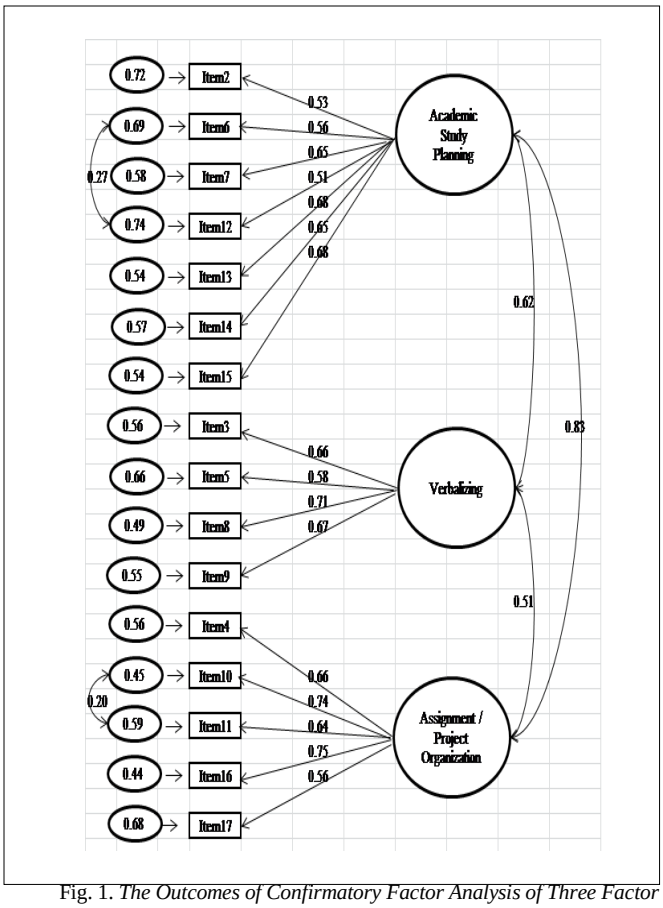

Fig. 1. *The Outcomes of Confirmatory Factor Analysis of Three Factor Model-2 of the Turkish ABC Scale*

As it is shown in Figure 1, factor loadings range from 0.44 to 0.74. All values are statistically significant. And there is a positive correlation among implicit variables, reflecting its appropriateness to theoretical framework of the original scale.

Consequently, the authors state that the 16-item Turkish ABC Scale differs from the original scale in terms of the model it suggests because Turkish undergraduates have distinctive learning behaviors shaping their academic confidence; affected by the culture they have been raised. The subsequent analyses were applied in accordance with the three-factor structure of 16-item Turkish ABC Scale.

D. The criterion validity analysis:

To obtain the criterion validity of the 16-item Turkish ABC Scale with Turkish undergraduates, the Turkish R-SPQ-2F scale was applied. Table 7 outlines the correlations between the subscales of the 16-item Turkish ABC Scale and the adapted version of the R-SPQ-2F. As it is depicted in Table 7, there are significantly positive correlations between each subscale and deep approach to learning while the subscales have negative correlations with surface approach to learning.

TABLE VII. CORRELATIONS BETWEEN THE SUBSCALES OF THE TURKISH ABC SCALE AND R-SPQ-2F

		The 16-Item Turkish ABC Scale		
		Academic Study Planning	***Verbalizing***	***Assignment/ Project Organization***
R-SPQ-2F	***Deep Approach***	0.41[b]	0.34[b]	0.35[b]
	Surface Approach	-0.24[b]	-0.22[b]	-0.28[b]

b. *p<0.001*

E. Reliability analysis:

In order to examine how stable the results of the 16-item Turkish Scale are, the test-retest study was formed. 50 undergraduates from the departments of Banking and Finance, Law, Economics, Management and International Trade in the year of freshmen, sophomore, junior and senior participated in this study with the interval of two weeks. Table 8 summarizes the results of paired sampled t-test of each subscale and their composite score. As it is shown, there is not a meaningfully significant difference between pre-test and post-test scores of each dimension, and total score.

TABLE VIII. THE RESULTS OF PAIRED SAMPLED *T*-TEST OF THE 16-ITEM TURKISH ABC SCALE

The 16-Item Turkish ABC Scale		N	$\overline{X}$	Sd	SEM	***t* Test**		
						T	**df**	**p**
Academic Study Planning	**Pre-test**	50	25.76	5.46	0.77	-1.70	49	0.09
	Post-test	50	26.24	4.90	0.69			
Verbalizing	**Pre-test**	50	15.74	3.08	0.43	-1.87	49	0.07
	Post-test	50	16.42	2.70	0.38			
Assignment/ Project Org.	**Pre-test**	50	20.30	3.19	0.45	0.19	49	0.85
	Post-test	50	20.24	3.18	0.45			
Total Score	**Pre-test**	50	61.80	9.35	1.32	-1.60	49	0.12
	Post-test	50	62.90	8.19	1.16			

Moreover, internal consistency coefficients and split-half reliabilities of each subscale and composite score were calculated. Table 9 presents Cronbach's alpha values of Academic Study Planning, Verbalizing, Assignment / Project Organization and Total Score. In Table 9, all values are above 0.70 which is the acceptable value for the reliability [21, 22]. The results display that the scale is highly reliable.

TABLE IX. CRONBACH'S ALPHA AND SPLIT HALF RELIABILITY COEFFICIENTS OF EACH SUBSCALE AND TOTAL SCORE OF THE 16-ITEM TURKISH ABC SCALE

Factor	**C. Alpha**	**S. Brown**	**Guttman**
Academic Study Planning	0.81	0.79	0.78
Verbalizing	0.76	0.73	0.73
Assignment/ Project Org.	0.81	0.76	0.73
Total Score	0.88	0.82	0.82

In addition to the internal consistency of the scale, the item-total correlation was analyzed. The results demonstrated that the corrected item total correlations range from 0.37 to 0.65, which are all above 0.30, the acceptable value for the fact that items tell the discrepancy among the individuals [21].

Moreover, the differences of item means of the upper 27% and lower 27% groups of 515 participants were examined. Table 10 displays these results briefly. In Table 10, it can be seen that there are significant discrepancies between the means of the upper 27% and lower 27% groups in all items.

TABLE X. DIFFERENCES OF ITEM MEANS OF THE UPPER 27% AND LOWER 27% GROUPS

Item No	**Group Types**	N	$\overline{X}$	Sd	SEM	***t* Test**		
						t	**df**	**P**
Item 2	Lower 27%	139	3.27	1.14	0.10	-11.35	276	0.00
	Upper 27%	139	4.57	0.71	0.06			
Item 3	Lower 27%	139	2.91	1.24	0.10	-10.47	276	0.00
	Upper 27%	139	4.25	0.85	0.07			
Item 4	Lower 27%	139	3.20	1.18	0.10	-15.15	276	0.00
	Upper 27%	139	4.84	0.48	0.04			
Item 5	Lower 27%	139	3.79	1.29	0.11	-9.83	276	0.00
	Upper 27%	139	4.90	0.30	0.02			
Item 6	Lower 27%	139	3.08	1.41	0.12	-13.91	276	0.00
	Upper 27%	139	4.82	0.44	0.04			
Item 7	Lower 27%	139	3.39	1.11	0.09	-14.86	276	0.00
	Upper 27%	139	4.87	0.38	0.03			
Item 8	Lower 27%	139	2.91	1.26	0.11	-15.87	276	0.00
	Upper 27%	139	4.71	0.45	0.04			
Item 9	Lower 27%	139	3.06	1.25	0.11	-12.38	276	0.00
	Upper 27%	139	4.55	0.65	0.05			
Item 10	Lower 27%	139	3.34	1.18	0.10	-15.66	276	0.00

Item No	Group Types	N	$\overline{X}$	Sd	SEM	*t* Test		
						t	**df**	**P**
	Upper 27%	139	4.93	0.25	0.02			
Item 11	Lower 27%	139	3.25	1.14	0.10	-15.20	276	0.00
	Upper 27%	139	4.83	0.43	0.04			
Item 12	Lower 27%	139	3.20	1.45	0.12	-12.64	276	0.00
	Upper 27%	139	4.84	0.48	0.04			
Item 13	Lower 27%	139	3.21	0.95	0.08	-17.12	276	0.00
	Upper 27%	139	4.75	0.47	0.04			
Item 14	Lower 27%	139	2.42	1.08	0.09	-19.50	276	0.00
	Upper 27%	139	4.52	0.67	0.06			
Item 15	Lower 27%	139	2.70	1.06	0.09	-17.97	276	0.00
	Upper 27%	139	4.58	0.63	0.05			
Item 16	Lower 27%	139	3.42	1.15	0.10	-15.24	276	0.00
	Upper 27%	139	4.93	0.25	0.02			
Item 17	Lower 27%	139	2.83	1.13	0.09	-16.55	276	0.00
	Upper 27%	139	4.62	0.60	0.05			

Besides this, the differences of means of the upper 27% and lower 27% groups in the subscales were scrutinized. Table 11 presents these outputs. As it is displayed, there are pivotal disparities of means of the upper 27% and lower 27% groups in Academic Study Planning, Verbalizing and Assignment / Project Organization, pointing out all dimensions are able to distinguish the ones having various degrees of academic confidence.

TABLE XI. DIFFERENCES OF ITEM MEANS OF THE UPPER 27% AND LOWER 27% GROUPS IN THE SUBSCALES

Subscales	Group Types	N	$\overline{X}$	Sd	SEM	*t* Test		
						t	**df**	**P**
Academic Study Planning	Lower 27%	139	20.47	3.90	0.33	-37.38	276	0.00
	Upper 27%	139	33.39	1.16	0.09			
Verbalizing	Lower 27%	139	11.31	2.59	0.22	-35.65	276	0.00
	Upper 27%	139	19.42	0.68	0.06			
Assignment/ Project Org.	Lower 27%	139	15.20	3.12	0.26	-34.80	276	0.00
	Upper 27%	139	24.52	0.50	0.04			

Furthermore, the Pearson correlation coefficients between each subscale of the 16-item Turkish ABC Scale were tested. Table 12 summarizes these outcomes. In Table 12, it is stated that all subscales are positively correlated with each other, consistent with the theoretical framework of the scale dimensions suggested by Sander and Sanders [1].

TABLE XII. CORRELATION COEFFICIENTS BETWEEN EACH SUBSCALE

Factors	Academic Study Planning	Verbalizing	Assignment/ Project Org.
Academic Study Planning	1.00		
Verbalizing	0.44[b]	1.00	
Assignment/ Project Org.	0.67[b]	0.42[b]	1.00

b. $p<0.001$

IV. DISCUSSION AND CONCLUSION

The objective of the study was to adapt the Academic Behavioral Confidence Scale (the ABC scale) developed by Sander and Sanders [1] to Turkish and investigate the validity and reliability of the scale. Exploratory and confirmatory factor analysis showed a three-factor structure – Academic Study Planning, Verbalizing and Assignment / Project Organization – with 16-items even though the original scale had four factors – Grades, Studying, Verbalizing and Attendance – with 17 items. A potential reason for this situation can be stated as individualistic and collectivistic cultural differences between Turkish and UK undergraduates.

Individualistic societies favor independence and self-dependent attitudes as opposed to collectivistic ones [23]. Especially, according to Kagitcibasi [24], family models in individualistic and collectivistic cultures lead to distinctive self-

enhancement. For her, there are three types of selves shaped by these models: relational, separated and autonomous-related selves. Relational selves emerge in families giving importance to affective and substantial interconnection, common in collectivistic cultures. Separated selves appear in families stressing self-reliance prevalent in individualistic cultures. Autonomous-related selves come out from families giving priority to both autonomy and affective interrelationships at the same time. Such kinds of selves are quite prevailing in collectivistic societies. Thus, when we look at the results, Turkish university students engendered a profile of autonomous-related self. They displayed the highest level of academic confidence in Academic Study Planning ($\overline{X}$ = 27.52, *Sd*=5.37), which can be considered as a measure of the self-iniative skills for studying (time management, planning and so on) that reflect the self-regulation [25] as well as autonomy [24]. They manifested the second highest level of academic confidence in Assignment / Project Organization ($\overline{X}$ =20.62, *Sd*=3.99), the subscale examining the study abilities for the success in fulfilling the academic chores such as course works, projects and so on an undergraduate is asked for [26]. They indicated the lowest level of academic confidence in Verbalizing ($\overline{X}$ =15.87, *Sd*=3.42), testing one of communication skills supporting the undergraduate at job and making him stick out in his colleagues having akin scholarly abilities [26]. These outcomes state the fact that Turkish university students emphasized more on academic study planning than the other subfields of academic confidence. As the collectivist cultures do not advocate one's self-expression unlike the individualistic cultures, Turkish undergraduates focus less on Verbalizing.

Furthermore, the criterion validity of the 16-item ABC scale was tested via R-SPQ-2F scale. The findings demonstrated that Academic Study Planning, Verbalizing and Assignment / Project Organization subscales have positive correlations with deep approach to learning while the same sub-dimensions have negative correlations with surface approach to learning. Such a result can be interpreted as the fact that the undergraduates having high levels of academic confidence have an inclination to long for acquiring essential academic information at a task or duty while the ones having low degrees of academic confidence concentrate more on the clues about the assessment procedures [16].

The outputs of the reliability analysis reflect that the 16-item Turkish ABC scale engenders highly consistent and stable scores over time, checked through paired sampled t-test, Cronbach's alpha, split half reliability, and corrected item total correlation, differences of item and factor means of the upper 27% and lower 27% groups, Pearson correlation analysis.

As a consequence of the study, the 16-item Turkish ABC scale has good values in terms of validity and reliability issues. It can be used in both educational and career counseling areas in order to understand how undergraduates' academic confidence shapes their academic success. It can also be utilized to generate a more efficacious, student-centered learning environment by bearing in mind academic conducts of university students, which are necessary for the survival in academic circumstances. With this scale, it is possible to find out the students who have difficulty in university education.

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