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A Scale Development Study to Determine the Self Efficacy Beliefs of University Students for English

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The aim of this study was to develop a self-efficacy belief for English scale for university students. For this purpose, a trial form of 73 items in Likert-type was prepared ant it was applied to a total of 365 university students in the fall semester of the 2016-2017 academic year. Explanatory factor analysis was conducted to prove the construct validity of the developed scale. For the factor analysis of the data, it was shown that the data set was suitable for factor analysis as the KMO value was 0,97 and the Barlett test significance value was 0,000. The analyses showed that the scale items were grouped under 5 factors, namely writing, speaking, reading, ability to learn English and listening, a total of 60 items. The value of Cronbach alpha calculated for reliability study was found as 0.98. In the confirmatory factor analysis study, it was found that the values of the "Self-Efficacy Belief for English Scale" were acceptable ($\chi 2$ / df =5.23; RMSEA =.10; CFI =.83; SRMR = .085). When the values of the other goodness of fit of the scale were examined, the values were obtained as GFI =.55, AGFI =.52; NNFI =.83 Findings related to the studies of validity and reliability show that the scale has a valid and reliable form.

Keywords: belief, English, reliability, self-efficacy, university student, validity

INTRODUCTION

Self-efficacy is one of the most important factors used in explaining the affective domain of learning and it is considered to have significant value with improvements in student-centered learning (Tuncer & Tanaş, 2011). Self-efficacy refers to a motivation process in which activities are planned, the required skills are reviewed and the gains across the challenges are taken into account. Learners with high self-efficacy belief are more successful and gain personal growth. Moreover, they do not give up when they face a challenge and experience failure (Yıldız, 2014).

Self-efficacy is an important concept in terms of education. Bandura (1996) stated that learners' beliefs in their capabilities affect performance tremendously. Self-efficacy provides a basis for personal motivation, success and welfare. When the learners believe themselves in the activities they make, they try more (Pajares, 2002). Learners with high self-efficacy cope with difficulties they encounter, have higher motivation for learning, are more willing to learning, and therefore become more successful (Arslan, 2012). Moreover, self-efficacy is a key factor that affects learners' interest, persistence, student effort in learning, the goals they set and use of self-regulated strategies in performing a task (Lane, Lane, & Kyprianou, 2004).

Self-efficacy also affects foreign language learners' performance. Foreign language learning process is greatly influenced by previous experiences as language learners (Horwitz, 1987). It is suggested that

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learners' beliefs about language learning would likely affect how they use their learning strategies and learn a foreign language (Mills, Pajares & Herron 2006; Rahimi & Abedini, 2009). Therefore, self-efficacy should be examined in foreign language learning process.

Literature Review

As a result of developments in science, art and technical field, language has become the most important tool used by people to communicate with each other. Moreover, as a consequence of globalization, people need to be able to communicate behind the borders, not just within the borders of their own country. Therefore, communication becomes the most important tool in the interaction of people. In our global world, English language is used in international relations and communication (Anyadabulu, 2006). Therefore, the number of individuals who want to learn English language is increasing day by day.

There are many factors affecting the learning of a new language process. It is seen that in a foreign language learning process some students have higher levels of motivation and participation than others. In addition, although some learners take part in the same learning environment, they have lower level of interest (Ersanlı, 2015). Therefore, it can be said that individual differences are important in the success of foreign language learning (Raoofi, Tan & Chan, 2012). Moreover, individual differences are the key factors in academic achievement and motivation (Ehrman, Leaver & Oxford, 2003). As a result, it is important to investigate individual differences affecting foreign language success (Doordinejad & Afshar, 2014). One of the affective factors affecting student achievement is the students' beliefs on their own potentials, namely self-efficacy beliefs (Tılfarlıoğlu & Cinkaya, 2009; Üncü, 2012). Self-efficacy belief is said to have a great influence on student achievement significantly in foreign language learning process (Ehrman et al., 2003, Rahemi, 2007, Rahmi & Abedini, 2009).

Self-efficacy is an important concept that stands out in Bandura's Social Cognitive Theory. Self-efficacy is the belief in an individual's ability to show a given performance at the desired level (Bandura, 1996). According to Senemoğlu (2000), self-efficacy is the self-judgment of the individuals about their ability to cope with different situations and to succeed in a particular activity. Self-efficacy in this context is the belief in what individuals can do using their skills in a particular situation (Maddux, 2002). Therefore, self-efficacy belief is the most important determinant of individual behaviors.

Bandura (1996) notes that self-efficacy belief affects the basic and important elements such as academic motivation, efforts of individuals, resistance and emotional reactions. Sharp (2002) states that self-efficacy belief is a fundamental criterion that determines the individual's personal success, motivation and personal accomplishment. Self-efficacy beliefs directly influence the efforts and resistance of individuals towards difficulties (Pajares (2002) and influence individuals' achievements (Gahunga, 2010). In addition, self-efficacy beliefs have important influence on students' academic achievement. In other words, self-efficacy belief affects the performance and academic success of students (Zimmerman, 2000). Moreover, in the studies explaining the psychological dimension of the learners, it is generally stated that self-efficacy positively influences learning.

Bandura (1996) states that students with low self-efficacy beliefs are less likely to learn, while those with high self-efficacy beliefs have high learning efforts. Moreover, students with higher self-efficacy belief level have a positive attitude towards learning and control their own learning processes (Deci and Ryan, 1985; Weimer, 1986). In this context, students with high self-efficacy beliefs try to overcome the difficult tasks. Self-efficacy belief increases the learning motivation of students. Students with low level of self-efficacy beliefs are less willing to learn and do not make any effort when they face difficulties. Self-efficacy beliefs in foreign language teaching are not related to the

quantity of what is known about this language. It is about the quality of activities that can be done with the language, such as reading, writing, speaking and listening. The perception of how competent the person is about these skills is related to self-efficacy belief (Büyükduman, 2006). According to Chenfeld (1978), there are four basic skills in foreign language teaching. These skills are listening, speaking, reading and writing. It is impossible for these skills to be separated. By participating in the language learning process, students can gain these skills. People can share their experiences by talking. In addition, newspapers and magazines cannot be used without reading. Writing skills are necessary to prepare a social project in a similar way. It is also impossible to follow an arithmetic problem without listening skills. Therefore, all skills are involved in language learning process (Yanar, 2008). Within this context, it can be concluded that self-efficacy belief in a foreign language consists of all the skills.

In literature, there have been some studies on foreign language self-efficacy beliefs of students. Cheng (2001) examined the relationship between foreign language learning self-efficacy, competence belief, and foreign language anxiety. Hsieh (2004) examined the relationship between qualifications of foreign language learners, self-efficacy, general language learning beliefs and achievements in foreign language courses. Büyükduman (2006) examined whether there is a relationship between English teacher candidates' perceptions of English self-efficacy and teacher self-efficacy perceptions. Chen (2007) investigated the relationship between self-efficacy perceptions and English performance of English learners. Yanar (2008) examined the relationship between high school students' foreign language self-efficacy beliefs and attitudes towards English. Ho (2016) examined the relationship between university students' writing anxiety and self-efficacy beliefs in foreign language classes.

Scales are generally used to determine the self-efficacy beliefs of students. When the literature is reviewed, it is seen that there are some scales used to measure the English self-efficacy of students. The self-efficacy beliefs of students for English speaking (Yang, 1999; Asakereh & Dehghannezhad, 2015), English writing (Erhan & Saban, 2011), English listening (Chen, 2007; Rahimi & Abedini, 2009; Todaka, 2016; Ho, 2016) and English reading (Li & Wang, 2010) are measured by scales. Moreover, in some scales (Zheng, Young, Brewer & Wagner, 2009; Tilfarlioglu & Cinkara, 2009; Yanar & Bümen 2012) the four skills are investigated. However, it is seen that most of the studies are conducted on high school students and the scales are seen not to cover all the aspects of the skills. Therefore, this study aimed to develop a valid and reliable scale to measure self-efficacy beliefs of university students for English. The scale developed in this context is intended to measure the university students' self-efficacy beliefs related to English and thus to contribute to the effectiveness of the teaching and learning environments in improving the self-efficacy beliefs of the students and in increasing their effectiveness and efficiency in foreign language teaching.

METHOD

Participants of the Study

The participants of the study consisted of 365 students studying at Bilecik Seyh Edebali University, Turkey in the fall semester of 2016-2017 academic year. To determine the participants, among the purposeful sampling methods, convenience sampling method was used. This method gives speed and practicality to the research (Yıldırım & Şimşek, 2006). The participants consisted of 183 male and 182 female students. Moreover, the students were studying at five different faculties as Health Vocational High School (60 students), Foreign Language department (65), Engineering Faculty (32), Central Vocational High School (110) and Osmaneli Vocational High School (65). In addition, 95 of the students were studying at first grade, 205 of the students were studying at second grade and 60 of them were studying at preparation class.

Procedure

In the scale development process, firstly the literature was reviewed and the related studies (Yang, 1999; Chen, 2007; Tilfarlıoğlu & Cinkaya, 2009; Rahimi & Abedini, 2009; Li & Wang, 2010; Erkan & Saban, 2011; Wang et al., 2012; Yanar & Bümen, 2012; Zheng et al.,2012; Wang et al.,2013; Rahemi, 2013; Asakereh & Dehghannezhad, 2015; Ho, 2016) were examined in order to develop a reliable scale. In this way, a general framework for self-efficacy belief for English language was established. Moreover, two open-ended questions were asked to two English lecturers working at Bilecik Seyh Edebali University, Turkey and an expert studying at Afyon Kocatepe University, Turkey. Meanwhile three open-ended questions about self-efficacy concept were asked to students studying at Bilecik Seyh Edebali University Optimal Preparation Class. With the obtained data, it was aimed to generate an item pool and develop statements related to English self-efficacy belief. The generated statements were intended to cover self-efficacy beliefs of university students for English. In initial stage, 73 statements consisting of five dimensions as reading, writing, listening, speaking and ability to learn English were developed to measure the self-efficacy beliefs of the students for English. 62 of the statements were about cognitive field while 11 were related to affective field. All the statement roots were positive. The extensive review of literature guided the researchers to use Likert formant in the scale. Likert scaling is a commonly used tool measuring beliefs, options and attitudes (DeVellis, 2016). Therefore the present scale comprised 5-point Likert format, each statement is rated on five sequential points as "never suits me =1, slightly suits me=2, somewhat suits me=3, quit**e** suits me=4 and completely suits me=5".

After preparing the item pool, the face and content validity was qualitatively performed with the involvement of four experts in the field of curriculum and instruction and who have experience in education. The experts expressed their opinions about any ambiguity, vagueness or dual meaning related to statements. Based on the advice from experts, necessary revisions were performed.

Data analysis

In order to test the reliability and validity of self-efficacy belief for English scale, it was applied to 365 university students, who were the participants of the study. The Kaiser-Meyer Olkin (KMO) coefficient was applied to determine whether the sampling size was appropriate for factorization or not. The KMO coefficient varies from 0 to 1 and the acceptable minimum limit of the KMO sampling capability is 0.50. Barlett Test of Sphericity was applied to determine whether there is sufficient correlation between variables. For this test, the significance value smaller than .05 shows that there is a sufficient level of correlation between variables (Durmuş, Yurtkoru & Çinko, 2011).

The validity assessment of the scale was performed by examining the structural validity. For the structural validity, the factorial structure of the scale was determined by using the Explanatory Factor Analysis (EFA) and Confirmatory Factor Analyses (CFA). EFA is an analysis used to determine the items that measure the same structure. Factor loads are the first criterion to be taken as a basis for factor analysis. Items with a factor load below .30 need to be removed from the analysis. Generally, items with a factor load of .40 or higher are selected (Büyüköztürk, 2010). Another criterion to be taken as a basis for factor analysis is that an item should have value under one factor. Therefore, it is necessary to remove the items having value under more than one factor (Büyüköztürk, 2010).

On the other hand, CFA was applied. CFA allows the researchers to impose a structure or model on the data. It is used to determine how items are associated with each other, to test how well the model fits, whether the factors are correlated or uncorrelated. Many fit indices are used in order to determine the adequacy of the model tested in CFA (Joreskog & Sorbom, 1993). In this study, the Chi-Square

Goodness Test, Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA) were examined for CFA.

FINDINGS

In this section, the findings on reliability and validity tests conducted to develop English self-efficacy belief scale are presented.

Exploratory Factor analysis

For the exploratory factor analysis, firstly Kaiser-Meyer-Olkin (KMO) and Bartlett's Sphericity tests were applied to determine the suitability of the obtained data. The results are given in Table 1 below:

Table 1
KMO and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.979
Bartlett's Test of Sphericity	Approx. Chi-Square	26726.321
	Df	1770
	Sig.	.000

As seen in Table 1, KMO value for factor analysis of 73 items was calculated as .97. KMO value close to 1 indicates the suitability of the data for factor analysis. Moreover, it is seen that the results of the "Chi-square" test statistic obtained from the Bartlett's test were significant, $\chi 2 = 26726.321$, df = 1770, $p < 0.05$. As a result, the obtained values fit the basic hypotheses at a good level and it was decided that the factor analysis could be conducted.

After this step, exploratory factor analysis was conducted. As a result of the analysis, the 73 items of the scale were reduced to 60 items. The factor analysis revealed a five factor structure. The items with the Eigen value greater than 1.00 were included in the scale. According to the explanatory total variance analysis, the first factor explains the 17.871% of the total variance, the second factor explains the 17.853% of the total variance, the third factor explains the 15.348% of the total variance, the fourth factor explains the 13.918%of the total variance and the fifth factor explains the 8.317%of the total variance. Moreover, the five factor structure explains the 73.357% of the total variance.

After these processes, the last form of the English language self-efficacy belief scale was given as 60 items. The rotated components matrix, which was converted with Varimax method, and which was obtained as a result of the exploratory factor analysis, is given in table 2. The Varimax method is one of the vertical rotating methods and it was preferred in the analysis to ensure that the factor variances would have high value with a few variables.

Table 2
Factor Loadings of Self Efficacy Beliefs for English Scale

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
20	.706				
21	.694				
19	.691				
17	.677				
25	.670				
16	.662				
26	.656				
23	.642				
29	.641				
30	.632				
24	.627				
28	.516				
14	.512				
22	.470				
27	.455				
48		.802			
65		.802			
64		.799			
50		.705			
49		.678			
46		.674			
60		.666			
55		.636			
58		.633			
59		.631			
54		.605			
56		.585			
51		.564			
62		.533			
53		.527			
3			.722		
1			.695		
2			.680		
5			.652		
4			.633		
11			.626		
13			.611		
7			.605		
9			.599		
6			.574		
8			.563		
12			.538		
15			.489		
69				.825	
67				.812	
66				.715	
70				.661	
57				.651	
68				.626	
33				.621	
45				.593	
71				.553	
72				.549	
63				.415	
40					.706
39					.670
41					.654
35					.569
34					.480
37					.475

As seen in Table 2, first factor consists of 15 items associated to writing in English, second factor consists of 15 items associated to speaking in English, third factor consists of 13 items, associated to reading in English, fourth factor consists of 11 items associated to ability to learn English and fifth factor consists of 6 items associated to listening in English.

Confirmatory Factor Analysis

In order to test the structure validity of the scale and accuracy of sub-dimensions obtained by the Exploratory Factor Analysis, Confirmatory Factor Analysis (CFA) was

applied using LISREL program. CFA is a version of factor analysis which tests the specific hypotheses about structure and relations between the latent variables that underlie the data (Field, 2009).

The obtained fit indexes were evaluated according to the fit indexes stated in literature. Firstly, fit indices were examined to evaluate the overall fit. Chi Square ($\chi 2$), RMSEA, NFI, NNFI, CFI, GFI, and AGFI are the most commonly used statistical analysis in model data fit structure. The error and fit index in items are presented in Table 3.

Table 3
Error and Fit Index for Self Efficacy Belief for English Scale

Fit Index	The Values of the Scale	Good Fit Index Values	Acceptable Fit
$\chi 2$ /df	5.23	$0 \leq \chi 2$ /df ≤ 5	$2 < \chi 2$ /df ≤ 5
RMSEA	.10	$0 \leq$ RMSEA $\leq .05$	$.05 <$ RMSEA $\leq .08$
Comperative Fit Index (CFI)	.83	$.95. \leq$ CFI $\leq .97$	$.0 \leq$ CFI $< .1.00$
Standartized RMR	.085	$.05 \leq$ SRMR $\leq .08$	$.0 <$ SRMR ≤ 1.00
Goodness of Fit Index (GFI)	.55	$.90 \leq$ GFI ≤ 1.00	$.0 \leq$ GFI < 1.00
Adjusted Goodness of Fit Index (AGFI)	.52	$.90 \leq$ AGFI ≤ 1.00	$.0 \leq$ AGFI <1.00
NNFI	.83	$.80 \leq$ NNFI $\leq .95$	$.0 \leq$ NNFI <1.00

Source: Hooper, Coughlan and Mullen, 2008; Kline, 2011; Tabachnick and Fidell, 2013.

As seen in Table, chi-square goodness-of-fit ($\chi 2$) is statistically significant. However, Çokluk, Şekercioğlu and Büyüköztürk (2016) state that x^2 rarely used as a sole index of the model fit. On the other hand, ($\chi 2$/df) is regarded as an adjunct discrepancy fit index. Therefore, $\chi 2$/df is used to make an evaluation. As seen clearly in the Figure, x^2=8904,53 and df=1700. x^2/df is 5.23. In literature, it has been stated that if the ratio is between 2 to 5, it indicates an acceptable fit (Tabachnick and Fidell, 2007). Moreover Wheaton, Muthen, Alwin and Summers (1977) indicated that this ratio can be as high as 5. As seen, there is no clear consensus regarding the acceptable ratio for this statistic. On the other hand Jöreskog and Sörbom (1993) and Prudon (2015) state that when the large samples are used, $\chi 2$ locates many problems and therefore $\chi 2$/df may suggest a poor fit. In this study, the sample size was large enough. In addition, MacCallum (2003) emphasizes that models can never be perfect and they unavoidably contain minor error. Based on these information, in this study $\chi 2$/df ratio is accepted.

In the study, RMSEA was found as .10. When this value is closer to 0, it shows a better fit of the model. Moreover, RMSEA in the range of 0.05 to 0.10 was considered an indication of fair fit (MacCallum, Browne and Sugawara, 1996). On the other hand, results indicated that GFI =.55, AGFI = .52, NNFI = .83 and CFI=.83. All these indices are scaled from 0 (no fit) to 1 (perfect fit). Moreover, the values close to .95 are regarded as a good fit (Kline, 2011). Therefore, the results of CFA model of the Self Efficacy Belief for English Scale consisting of five factors provided a good model fit. Figure 1 below presents the factor distribution and the interaction among the subscales.

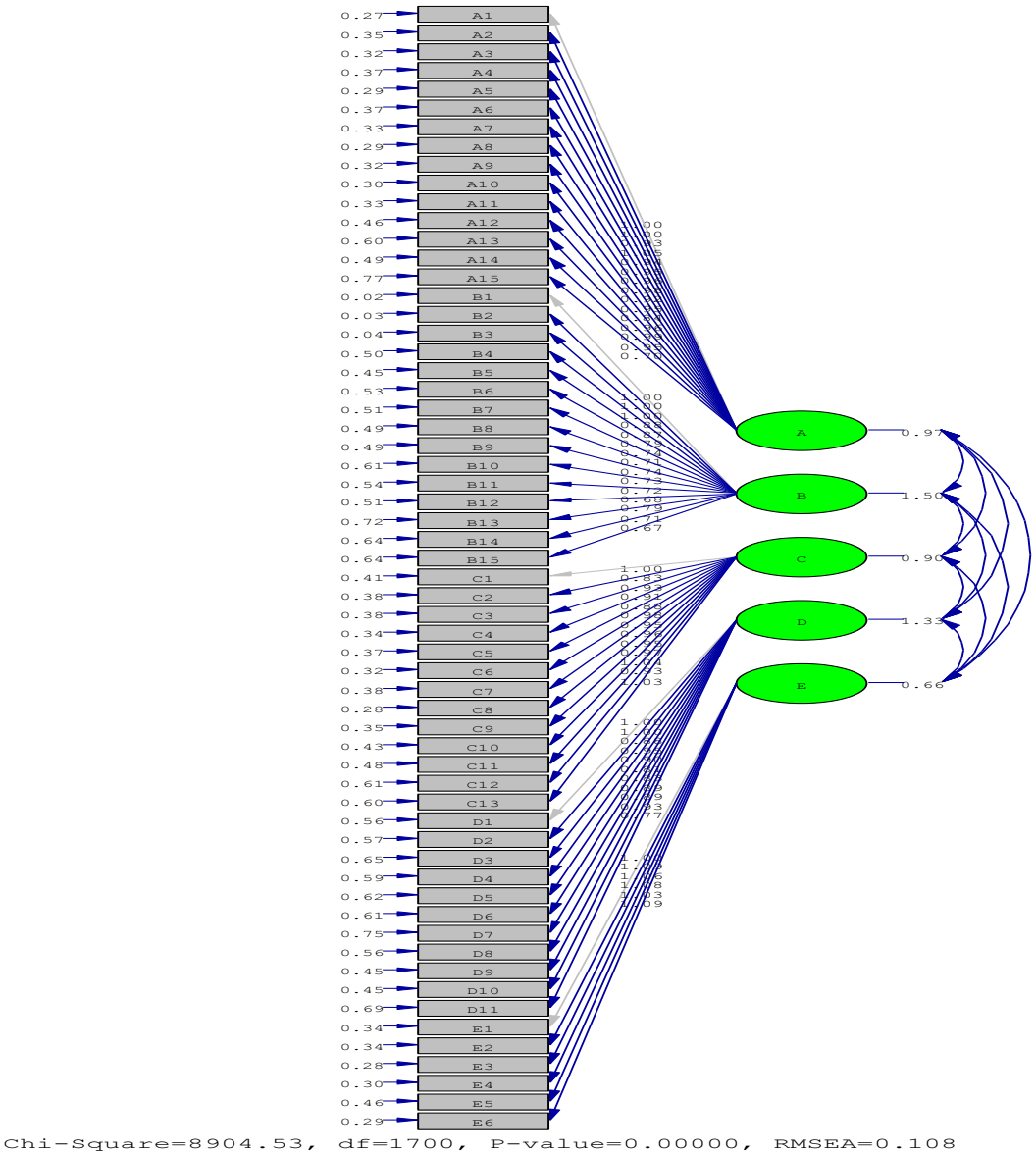

Figure 1
First Order Confirmatory Factor Analysis

In addition, the second order CFA of the Self Efficacy Belief for English Scale was conducted and the results are given in Figure 2.

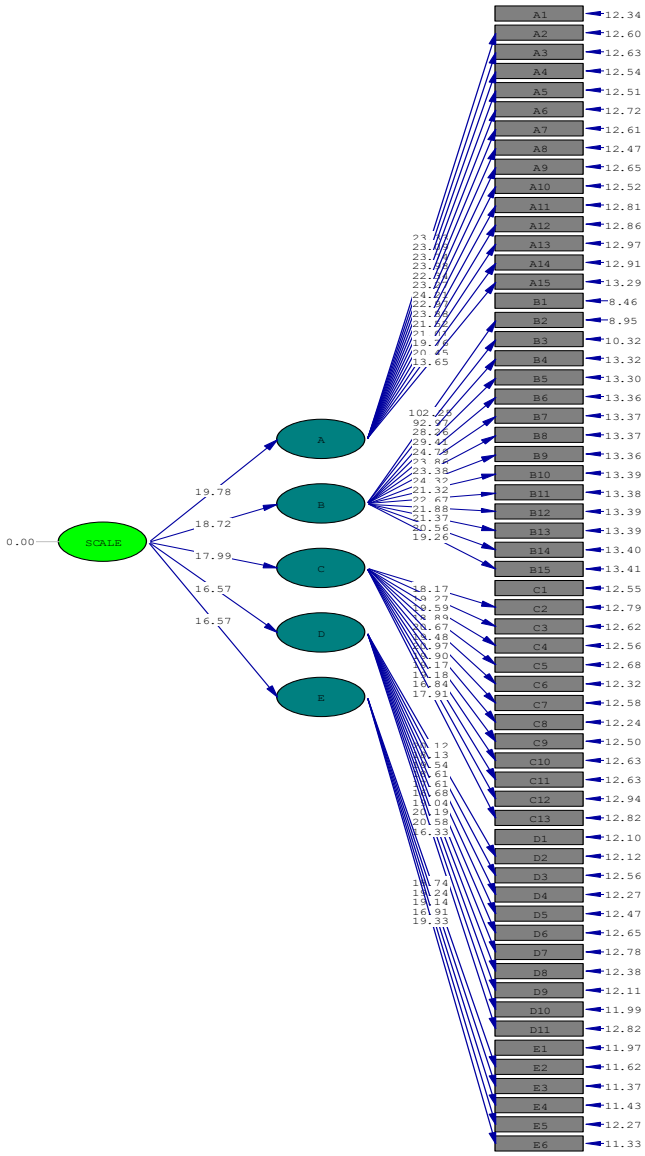

Figure 2
Second Order CFA Results

As seen in Figure 2, the *t* values of the second order CFA related to the Self Efficacy Belief for English Scale are shown on the arrows. The parameter estimations were found significant at .01. According to Çokluk, Şekercioğlu and Büyüköztürk (2016) t value higher than 2.56 is significant at .01. The results showed that the values were within acceptable fit indexes.

Reliability Analysis

The reliability of the scale was measured by interpreting the obtained value of Cronbach's Alpha to assess the internal consistency of the scale. The results are given in Table 4.

Table 4
Reliability Statistics of Self Efficacy Belief Scale for English

Factors	*Cronbach Alpha*
Writing	.97
Speaking	.97
Reading	.96
Ability to Learn English	.95
Listening	.92
Total	.98

As seen, Cronbach's Alpha value for the factors of the scale varies between .92 and .96. Moreover, Cronbach's Alpha value for overall scale was found to be .98. An Alpha value higher than .70 is an expected condition for internal consistency (Rawwas & Isakson, 2000). Therefore, for the scale Cronbach's alpha indicated good internal reliability (α= .98).

In addition, item total correlation analysis was conducted for the reliability of the scale. In scale development studies, item total correlation values should be greater than .25 In writing factor, item total correlation values are found to vary between .60 and .86. Moreover, the Cronbach Alpha values when item deleted vary between .96 and .97. Item total correlation values for speaking factor vary between .81 and .90. Moreover, the Cronbach Alpha value when item deleted is .97. Item total correlation values for reading factor vary between .75 and .84. The Cronbach Alpha value when item deleted vary between .95 and .96. Item total correlation values for ability to learn English factor vary between .68 and .83. The Cronbach Alpha value when item deleted vary between .94 and .95. Lastly, item total correlation values for listening factor vary between .73 and .82. The Cronbach Alpha value when item deleted vary between .91 and .92.

Intercorrelations of the Self Efficacy Belief for English Scale

Pearson's coefficient of correlation was conducted to find the correlations between the factors of the scale. The obtained results are given in Table 5. As seen in table, Pearson's coefficient of correlation demonstrated higher levels of significant positive correlations of all dimensions of self-efficacy belief for English scale. The relationship between the ratio of 0.70-1.00 shows a high relationship (Büyüköztürk, 2010). Table 5 indicates that the model with best fit demonstrated inter-correlation between factors and self-efficacy belief for English scale

Table 5
Inter correlations for the Scale Factors

Measure	W	S	R	ALE	L	TESE
W	1	.86**	.87**	.76**	.82**	.94**
S	.86**	1	.80**	.81**	.78**	.94**
R	.87*	.80**	1	.80**	.79**	.93**
ALE	.76**	.81**	.80**	1	.74**	.86**
L	.82**	.78**	.79**	.93**	1	.87**
TESE	.94**	.94**	.93**	.89**	.87**	1

Note: W= Writing; S= Speaking; R= Reading; ALE=Ability to Learn English; L=Listening; TESE= Total Self Efficacy Belief for English

CONCLUSION

The aim of this study was to develop a Self-Efficacy Belief Scale for English for university students. For this purpose, after a broad review of the relevant literature, an item pool was prepared. By doing so a general framework for self-efficacy belief in English skill was established. Moreover, two open-ended questions were asked to two English lecturers working at Bilecik Seyh Edebali University, Turkey and an expert studying at Afyon Kocatepe University, Turkey. Meanwhile three open-ended

questions about self-efficacy concept were asked to students studying at Bilecik Seyh Edebali University Optimal Preparation Class. Therefore, an initial form consisting of 73 items were prepared. After preparing the item pool, the face and content validity was qualitatively performed with the involvement of four experts in the field of curriculum and instruction.

In order to test the reliability and validity of English self-efficacy belief scale, it was applied to 365 university students. The Kaiser-Meyer Olkin (KMO) coefficient was applied to determine whether the sampling size was appropriate for factorization or not. This value was calculated as .97 in the study. The validity assessment of the scale was performed by examining the structural validity. For the structural validity, the factorial structure of the scale was determined by using the Explanatory Factor Analysis (EFA) and Confirmatory Factor Analyses (CFA). As a result of EFA, 13 items were removed from the scale and the items were seen to group under five factors namely writing, speaking, reading, ability to learn English and listening. Moreover, in this study, the Chi-Square Goodness Test, Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA) were examined for CFA. The obtained values indicated good fit of the model.

The reliability of the scale was measured by Cronbach's Alpha. Cronbach's Alpha values for the factors of the scale were found to vary between .92 and .96. Moreover Pearson's coefficient of correlation was conducted to find the correlations between the factors of the scale. Pearson's coefficient of correlation demonstrated higher levels of significant positive correlations of all dimensions of English self-efficacy belief scale.

As a result of this study, a valid and reliable scale was obtained which can be used to reveal the self-efficacy beliefs of university students for English. Therefore, the scale can be studied on and with students who study English as a foreign language. Moreover, the factors in this study can be used separately do reveal the self-efficacy of the students related to sub skills of English.

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