



DEVELOPMENT AND VALIDITY-RELIABILITY STUDY OF COMMUNICATION SKILLS SCALE FOR STUDENT TEACHERS: SUGGESTION OF AN ALTERNATIVE MODEL*

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ABSTRACT

Individuals can express themselves well and understand the others better only by having communication skills. In the future, there will be a need for student teachers who have good communication skills and who can communicate well, as their profession requires. In this developing world, perceptions, behaviours and relations of individuals have constantly been changing. In the light of all these reasons, what type of communication skills that today's student teachers have should be determined and new and contemporary measurement instruments should be developed for this purpose. From this point of view, the major aim of this study was to develop a reliable and valid communication skills scale (CSS) that will help to determine the extent of student teachers' communication skills. A total of 1204 student teachers studying in various departments of a state-run Turkish university participated in the study.

The validity and reliability of the scale items prepared by the researchers were investigated; as a result of the analysis, it was found that the communication scale items centered on the factors of "competence", "discouragement", "body language" and "dignification"; there were 36 items in total. The reliability of total scale was found high, so it can be considered that the scale items are homogenous. In addition, an alternative model that was supported by the data was found by applying second-level confirmatory factor analysis (CFA). According to the results, the first-level CFA was found to be a better model than the second-level CFA. As a result, when the items related to these factors were considered, it was said that the valid and reliable scale provides a comprehensive measure for assessing all of the dimensions of communication, including its emotional, cognitive and behavioral aspects.

Key Words: Communication skills, student teacher, competence, discouragement, scale development.

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ÖĞRETMEN ADAYLARI İÇİN İLETİŞİM BECERİLERİ ÖLÇĞİNİN GELİŞTİRİLMİ VE GEÇERLİK-GÜVENİRLİK ÇALIŞMASI: ALTERNATİF BİR MODEL ÖNERİSİ

ÖZET

Bireyin kendini iyi ifade edebilmesi ve karşısındakini daha iyi anlayabilmesi iletişim becerilerine sahip olmasıyla mümkündür. Gelecekte meslekleri gereği etkili iletişim kurabilen ve iyi iletişim becerilerine sahip öğretmen adaylarına ihtiyaç vardır. Gelişen dünyada insan algıları, davranışları ve ilişkileri sürekli ve hızla değişmektedir. Tüm bu nedenlerin ışığında günümüz öğretmen adaylarının hangi tür iletişim becerilerine sahip olduğu belirlenmeli ve bunun için yeni ve güncel ölçme aracı geliştirilmelidir. Buradan hareketle, bu çalışmanın ana amacı öğretmen adaylarının hangi boyutlarda iletişim becerilerine sahip olduğunu ortaya çıkaran geçerli ve güvenilir bir iletişim becerileri ölçeği geliştirmektir. Araştırmaya bir devlet üniversitesinin farklı bölümlerinde okuyan toplam 1204 öğretmen adayı katılmıştır.

Araştırmacılar tarafından hazırlanan ölçek maddelerinin geçerlik ve güvenilirlik çalışmaları sırasıyla yapılmıştır. Tüm analizler sonucunda iletişim becerileri ölçek maddelerinin "yeterlik", "engel", "beden dili" ve "değer verme" faktörlerinde toplandığı ve toplamda 36 madde olduğu tespit edilmiştir. Tüm ölçeğin güvenilirliğine bakıldığında yüksek olduğu ortaya çıkmış ve bu nedenle ölçek maddelerinin homojen olduğu söylenebilir. Ayrıca ölçeğe ikinci düzey doğrulayıcı faktör analizi (DFA) yapılarak alternatif modeller arasından en çok hangisinin veri tarafından desteklendiği ortaya çıkarılmıştır. Elde edilen sonuçlara göre birinci düzey DFA modelinin ikinci düzey DFA modeline göre daha iyi bir model olduğu tespit edilmiştir. Sonuç olarak iletişim becerileri ölçeğinin maddeleri incelendiğinde iletişimin duyuşsal, bilişsel ve davranışsal alanları kapsayan ve bu alanlardaki bütün boyutları ölçmeye yönelik geniş kapsamlı geçerli ve güvenilir bir ölçek olduğu söylenebilir.

Anahtar Kelimeler: İletişim becerileri, öğretmen adayı, yeterlik, engel, ölçek geliştirme

1. Introduction

One of the most important features that distinguishes humans from other living creatures is their ability to communicate, and thereby to establish a culture. The term "communication", which was first used by Aristotle and Plato in the 6th and 5th centuries BCE, was traditionally defined as a speaker's art and ability to be credible and to impress his or her audience in a desired manner through speech (Lazar, 2001). However, this term has acquired different meanings, and it can now be defined in a variety of ways. The term may also be interpreted as any transmission of feelings, ideas, events, concepts or information to others (Demiray, 2011; Jacobsen, 2009; Kilic, 2002). Simply stated, communication comprises any form of verbal or non-verbal interaction between people; during such act of engaging and listening, new meanings may be developed and shared (Luhmann; 2006; Mabovula, 2010; Segal, 2011; Seiler & Beall, 2005; Yalcin & Sengul, 2007).

Achieving communication is only possible through five essential elements: source, message, channel and feedback (Schermerhorn, 1996). In order for the source to transmit a

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message effectively, he or she should have a high capacity for communication (Ergin & Birol, 2005; Hosgorur, 2007; Wubbels & Levy, 1993).

An individual who has well-developed communication skills is generally more effective in dealing with daily issues, problem-solving, and finding solutions to interpersonal communication conflicts; numerous studies have found that professionals with strong communication skills, as well as those who enrolled in communication education programs, tend to be more successful (Frymier & Houser, 2009; Lane & Rollnick, 2007; Smitherman, 1981; Tarhan, 2000). Because teaching centers primarily on human interaction, the teaching profession stands out as one in which effective communication is essential (Zabel & Zabel, 1996). As Ergin and Birol (2005) points out, there is a high correlation between classroom communication and the teaching-learning process; and it is the teacher who initiates this process. The content of a lesson, which includes the ideas, feelings and abilities that the teacher wants to share with students, relates to the "message" element of communication; the tools and instruments relate to the "channel"; and the reflections relate to the "feedback" that occurs during communication (Roach, 1999). Accomplishment of this process depends upon the effective interrelation of these components and the successful use of transferring methods (Hosgorur, 2007). In the classroom, this process takes place in three ways: through verbal and non-verbal means and through writing.

Considering the teacher's primary role in classroom communication, some researchers contend that communication skills are among the most important competencies for teacher (Buyukkaragoz, Musta, Yilmaz & Pilten, 1998; Ng, Nicholas & Williams, 2010; Polk, 2006).

Thus, in terms of professional competence of student teachers, field knowledge, pedagogical knowledge and pedagogical content knowledge are considered to be the basic criteria; and transferring these competences is possible only through communication, which Wang (2005) classifies as one of five categories of professional competence. In studies concerning the vocational capacity of student teachers, in particular, communication skills have a significant place among the required teaching qualifications; this emphasis is widely reflected in national and international standards for qualifications for teaching professionals (e.g., Missouri Teacher Standards [MTS], 2011; Yüksek Öğretim Kurumu [YÖK], 1998). However, building effective communication skills takes time; and this process shows parallelism with individual student teachers' level of communicative competence within their school and social environment. As a result, developing competence in communication skills should constitute an important element of teacher training.

In order to support student teachers in this process, it is necessary to determine the communication skill level of student teachers; and therefore, the development of standardized scales to measure these skills is essential. Although Schirmer et al. (2005) claim that measuring communication skills is complex, and that these skills should be evaluated on the basis of performance, Reed and Bergeman (1992) and Goodboy, Martin and Bolkan (2009) view communication skills as measurable, because transmitting a message requires behavioral, visual and symbolic explanations that can be quantified with appropriate measurement tools.

However, although scales have been developed to measure the communication skills of individuals working in a variety of occupations and students studying high schools, as well as to evaluate interpersonal relations (Burlison & Samter, 1990; Cetinkanat, 1997; Dhindsa, 2005; Hazneci, 2012; Korkut, 1996; McLaughlin, Erickson & Ellison, 2009; Wubbels & Levy, 1993), there are very few examples of scales designed to measure the communication skills of student teachers (Karagoz & Kosterelioglu, 2008; Wubbels & Levy, 1993) and a CSS confirmed via confirmatory factor analysis has not seen up to the present. Additionally, it is also seen that the degree of communication skills differs according to the nature and personality traits of the individuals being assessed; furthermore, perceptions, behaviors and relationships are constantly

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changing. With respect to these ongoing changes, it is essential that new scales be developed. In addition, while factor analysis of existing scales has been conducted to establish their structural validity, confirmatory factor analysis has generally not been carried out; yet it is recognized that confirmatory factor analysis is essential in determining whether a previously identified and restricted factor model is confirmed in order to validate the internal structure of a measurement tool (Brown, 2006; Floyd & Wideman, 1995; Kline, 2005; Simsek, 2007; Tabachnick & Fidell, 2001). In order to address these issues, this study was designed to develop a reliable and valid communication skills scale that can help to determine student teachers' level of communication skills. The purpose of the study was to answer the question: "what is the level of reliability and validity of a communication skills scale for student teachers?"

2. Methodology

The methods section of this article presents information about the participants and the process of developing the communication skills scale.

2.1. Participants of the Study

The participants were selected according to approach of purposeful sampling. In order to determine whether the measurement tool was sensitive to the features to be measured, maximum variation sampling was used. The sample consisted of 1204 student teachers from different departments in the Education Faculty of Dokuz Eylül University; of these, 58% (N=698) were female, and 42% (N=506) were male. The numerical and percentage distributions of the participants according to their departments is shown in Figure 1.

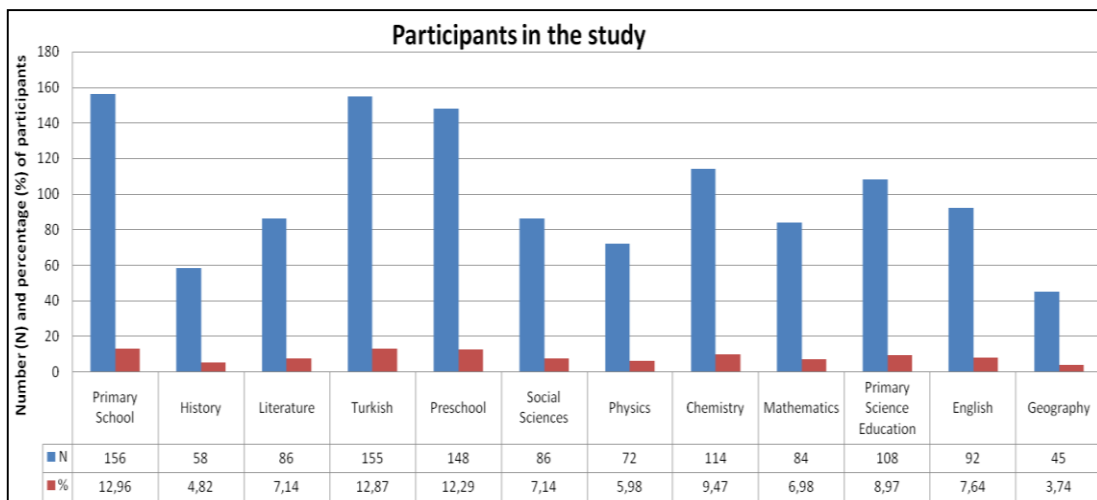


Figure 1. Participants in the Study

2.2. The Communication Skills Scale (CSS) Development Process

To develop the CSS, the related literature was carefully reviewed, and the scale was developed stage by stage in consideration of existing scales (Dhindsa & Abdul-Latif, 2012; Leong & Qiu, 2013; Tavsancil, 2005; Wiemann, 1977). The stages included item pooling, consulting with experts, a pre-test, and establishing structural validity and reliability. In order to distinguish the level of agreement of the participations more precisely and to ensure more reliable results, a 5-point scale was used, with options for each scale item ranging from "totally agree" to "agree", "partly agree", "disagree" and "totally disagree". Agreement level for the positive items was rated as 5, 4, 3, 2, 1, in order, while negative items were scored in reverse.

2.2.a. Item Pooling Stage

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In creating a suitable pool of questionnaire items, the researchers reviewed the literature related to the development of communication skills scales (Dhindsa & Abdul-Latif, 2012; Karagoz & Kosterelioglu, 2008; Kececi & Tasocak, 2009; Wubbels & Levy, 1993). Taking these studies into account, a total of 100 items (60 positive and 40 negative) were developed.

2.2.b. Expert Opinion Stage

The pool of scale items was analyzed by two instructors of Turkish who were experienced in scale development, as well as two professors who were experts in the field of teacher training. Based on their expert feedback, 10 of the items were removed, because they were not viewed as relevant within the scope of communication skills. In addition to the content validity, the face validity of the items was also analyzed by the same group of experts; accordingly, it was determined that the scale did, in fact, measure the characteristics which it aimed to measure in terms of its title, explanations and items.

2.2.c. Pretest Stage

Following these revisions, the remaining 90 items were administered to a total of 25 student teachers: 14 students studying in the department of Turkish teaching and 11 students from chemistry teaching, in order to determine the intelligibility of the scale items. As a result of this pilot study, it was determined that the response time varied between 20 and 25 minutes and that the items were comprehensible.

2.2.d. Implementation Stage

In order to obtain meaningful and reliable results, the scale was applied with the participants (whose distribution is outlined in Figure 1) in the spring semester of the 2012-2013 academic year in one sitting, accounting for the fact that the number of participants should be much greater than the number of scale items.

2.2.e. Data Analysis Stage

In order to analyze the data collected from the participants, the structural validity and reliability of the scale were examined. As the first step, the researchers tested whether the scale items were suitable for measuring the targeted characteristics without confusing them with other characteristics, as well as whether they were statistically meaningful in relation to all other scale scores. Factor analysis was applied in order to determine the structural validity of the scale. For this purpose, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were applied separately for each of the items that remained after the item analysis. EFA was conducted on a random split-half sample (N=602) of the data to examine the factor structure of the CSS. CFA was conducted in the holdout sample (N=602). Following the structural validity analysis, the internal consistency (homogeneity) of the scale items was measured by calculating the Cronbach's alpha coefficient (α). For the item analysis, EFA, and reliability analysis, the SPSS 15.00 statistical software package was used, while the LISREL 8.71 software program was used to calculate the CFA.

Next, in order to determine the qualifying questionnaire items, two separate item analysis methods were used based on item-total correlation and the mean difference between the sub and top groups. Item-total correlation suggests the relationship between the scores that each item received and the total value obtained from the whole scale (Buyukozturk, 2007). According to the related research, scale items with an item-total correlation higher than 0.40 distinguish participants very well; items with an item-total correlation between 0.30 and 0.40 distinguish individuals well; and items with an item-total correlation between 0.20 and 0.30 can be included if necessary or revised. However, items with an item-total correlation lower than 0.20 should not be included in a

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scale (Buyukozturk, 2007; Ebel, 1979, as cited in McDonald, 2002; Everitt, 2002). In this case, when the correlation coefficient between the score of each item and the total score of all items was calculated, the correlation coefficients of 30 items were found to be lower than 0.30; therefore, they were removed from the scale with the consensus of the researchers (see Table 1).

3. Findings

In the following sections, the item analysis that was applied to establish the structural validity of the communication skills scale, the EFA and CFA, and information about the reliability of the scale are presented.

3.1. Item Analysis Stage

In this process, any hidden variables may be discovered, and the strength or weakness of the relationships between the scale items can be determined (Pedhazur & Schmelkin, 1991; Sencan, 2005). In this respect, item analysis provides information concerning structural validity in scale development.

Table 1. Item-total Score Correlations(r) of 90 Items in the CSS and Their Significance Values (p)

Item	r	p	Item	r	p	Item	r	p
1	0.363	0.000**	31	0.264	0.000**	61	0.367	0.000**
2	-0.157	0.000**	32	0.493	0.000**	62	0.102	0.010*
3	-0.082	0.031*	33	0.457	0.000**	63	0.279	0.000**
4	0.459	0.000**	34	0.319	0.000**	64	0.320	0.000**
5	0.298	0.000**	35	0.419	0.000**	65	0.490	0.000**
6	0.222	0.000**	36	0.211	0.000**	66	0.463	0.000**
7	0.511	0.000**	37	0.312	0.000**	67	0.439	0.000**
8	0.488	0.000**	38	0.405	0.000**	68	0.300	0.000**
9	0.578	0.000**	39	0.373	0.000**	69	-0.093	0.020*
10	0.402	0.000**	40	0.392	0.000**	70	0.142	0.022*
11	0.535	0.000**	41	0.309	0.000**	71	0.204	0.000**
12	0.499	0.000**	42	0.482	0.000**	72	0.141	0.001**
13	-0.225	0.000**	43	0.531	0.000**	73	0.358	0.000**
14	0.471	0.000**	44	0.434	0.000**	74	0.212	0.000**
15	0.392	0.000**	45	0.425	0.000**	75	0.363	0.000**
16	0.085	0.307*	46	0.202	0.000**	76	0.386	0.000**
17	0.523	0.000**	47	0.594	0.000**	77	-0.008	0.517*
18	0.264	0.000**	48	0.495	0.000**	78	0.430	0.000**
19	0.191	0.000**	49	0.079	0.064*	79	-0.378	0.000**
20	0.289	0.000**	50	0.461	0.000**	80	0.367	0.000**
21	0.516	0.000**	51	0.243	0.000**	81	0.230	0.000**
22	0.551	0.000**	52	0.390	0.000**	82	-0.316	0.000**
23	0.467	0.000**	53	0.345	0.000**	83	0.461	0.000**
24	0.437	0.000**	54	0.311	0.000**	84	0.252	0.000**
25	0.490	0.000**	55	0.525	0.000**	85	0.309	0.000**

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26	0.327	0.000**	56	0.173	0.000**	86	0.245	0.000**
27	0.517	0.000**	57	0.458	0.000**	87	0.335	0.000**
28	0.478	0.000**	58	0.390	0.000**	88	0.120	0.113*
29	0.475	0.000**	59	0.420	0.000**	89	0.263	0.000**
30	0.405	0.000**	60	0.447	0.000**	90	0.417	0.000**

*p<.05 **p<.001

As Sencan (2005) points out, more than one method should be used in order to develop a higher level of discrimination during the item analysis process. Therefore, in this case, the significance of the difference between the sub and top group means was examined in order to determine the extent to which the items distinguished the participants in terms of the measured behaviors. In this respect, the sub and top groups were formed according to total scores of the items in the scale, with 27% (N=325) from the top and 27% (N=325) from the bottom line. The score differences of the mean for each item was determined using an independent-samples t-test.

The results of the analysis indicated that four of the items (numbers 16, 49, 77 and 88) were not sufficient ($p<0.05$) to meet the meaningful value. In addition, when the item-total correlation coefficient scores for these items was considered, it was seen that they were rather low. Although some of the items with a correlation coefficient level of less than 0.30 seemed to be meaningful, this could be due to the fact that low correlations can be found to be meaningful in large samples (Buyukozturk, 2007). Items 2, 3, 13, 69, 79, and 82, which were all found to be meaningful, were eliminated from the scale, because their discrimination index was found to be negative. A high and positive item-total correlation indicates that items show similar traits, as well as indicating the consistency of the measurement tool (Buyukozturk, 2007). As a result of the item analysis, a total of 30 items were removed from the scale, and factor analysis was conducted with the remaining 60 items. When the item-total correlations of these 60 items were considered, it was seen that they varied between 0.300 and 0.594.

3.2. Factor Analysis Stage

The main purpose of factor analysis is to accumulate the interrelated variables (items) that occur most frequently, as well as the hidden variables (factors) that occur less frequently; to determine whether the items are described under a given factor or not; and to reveal the type of patterns that the correlations of the structures, or factors, suggest (Sencan, 2005). Factor analysis is divided into two categories: exploratory factor analysis (EFA) and confirmatory factor analysis (CFA).

3.2.a. Exploratory Factor Analysis Stage

The EFA process helps to determine the factors, as well as reducing the relationship between the newly produced factors; and therefore, it assists in obtaining independent factors (Cokluk, Sekercioglu & Buyukozturk, 2010). In this study, the intent was to accumulate numerous items in the communication skills scale under a small number of components; thus the extraction technique of principal component analysis was applied.

The major aims of this analysis were to find the maximum variance from the data set and to determine the principal factors of the parts of the theoretical structure (Field, 2005; Holland, 2008; Sencan, 2005). Accordingly, EFA was conducted based on the principal factoring technique over the remaining 60 items after the item analysis process. Prior to carrying out the EFA, the premises that are necessary for establishing the validity of the study were tested. For this purpose, the Keiser-Meyer-Olkin (KMO) value, which is used to test the suitability of a sample size for a data

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structure, was calculated and found to be 0.921; a KMO value greater than 0.90 confirms that the data is suitable for the factor analysis (Leech, Barrett & Morgan, 2005; Sencan, 2005).

Next, normality assumption, which determines whether the data was gathered through a normal distribution with multiple variables, was examined by using a Bartlett Sphericity Test and was found to be meaningful ($\chi^2 = 13633.689$; df: 1770; $p < 0.05$). This result shows that it is possible to develop factors from the correlation matrix provided in this communication skills scale, and therefore, it suggests that factor analysis can be used. Accordingly, EFA was applied to the CSS composed of 60-item; at the end of the application, the variance rate and eigenvalue were examined in order to determine the number of factors, in line with Pedhazur and Schmelkin's (1991) contention that factors whose eigenvalue is 1 or greater than 1 may be considered as determinant. Accordingly, 14 factors with eigenvalues greater than 1 were determined out of the 60-item scale. However, before deciding on the number of factors, another point to be evaluated was the scree plot graph. As figure 2 indicates, a plateau occurs after the fifth point, and the contribution of the component after the fifth point is rather small. On this basis, the number of factors was established as four.

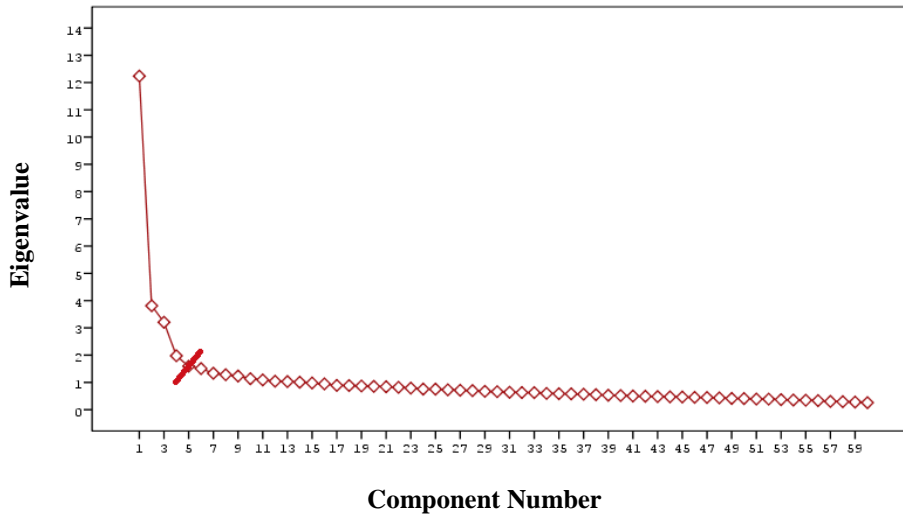


Figure 2. Scree plot Graph

The researchers suggest using rotation technique to provide independency for more than one factor and clarity in interpretation, as well as to gain significance (Brown, 2006; Field, 2005; Tabachnick & Fidell, 2001). For this purpose, a varimax orthogonal rotation technique was used to more clearly determine which items were included in which factors and to maximize the number of factor variances. Two criteria were taken into consideration in this process: (1) that the factor load value of the item should be higher than 0.32, which is the minimum acceptance level; and (2) that the difference between the load values of two or more factors should be greater than 0.10 (Çokluk et al., 2010). As a result of the EFA, no items were found with a load value of less than 0.32, but some of the items were seen to fall under more than one factor. In removing these items from the scale, the items in which the difference between the load values of the overlapping items was at the lowest, and therefore where the overlapping was at the highest level, were first taken into consideration. In order for an item to be regarded as qualified, it is essential that it should not be found in more than one factor (Çokluk et al., 2010). In this case, 12 items (items 90, 48, 68, 64, 21, 42, 85, 50, 83, 67, 65 and 66) that were found to be overlapping were removed respectively in consideration of the difference between the load values. After this process, one additional item (item 58) that was not related to any factor was removed from the scale.

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According to the related research, the magnitude of the factor loads indicates that the scores obtained from sampling are homogenous (Sencan, 2005; Tabachnick & Fidell, 2001). Therefore, a final 11 items (items 1, 4, 7, 15, 23, 26, 30, 41, 44, 59 and 87), which were below the acceptability level, were removed from the scale. All EFA applications were repeated 14 times, and the final scale, consisting of 36 items, was produced. The findings of the CSS composed of 36 items as well as item total test correlation coefficients are given in Table 2. According to this illustration, the first factor consisted of 12 items, with the factor load values of the items varying between 0.507 and 0.741. The variance rate explained by the factor was found to be 14.735. It was found that the items associated with this factor involved communication skills; accordingly, this factor classified as "competence". When the items associated with the second factor were considered, 13 related items were found. The second factor was composed of factor load values ranging from 0.500 to 0.631, and its variance rate was 12.553. The responses related to the second factor mainly involved students' inability to transmit their feelings and thoughts precisely to the receivers, leading to problems during the communication process. Therefore, the second factor was classified as "discouragement". The third factor was composed of 5 items, and its factor load values varied between 0.588 and 0.699. The variance explained by the third factor is 7.520. When the statements related to this factor were considered, it was determined that they were related to behavioral forms in the communication process; therefore, the third factor was classified as "body language". Finally, the fourth factor was composed of 6 items, and its factor load values varied between 0.500 and 0.722; the variance rate of this factor was 7.145. Because this factor included statements about giving importance to mutual feelings and ideas in the communication process, it was classified as "dignification". The total variance value of all four factors in the scale was found to be 41.953.

Table 2. Factor Analysis Results of the CSS and Item Total Correlations

Factor Name	Scale Items	Item Total Test Correlation (r)	Factor loadings (λ)				R ²
			1	2	3	4	
Competence	I18	When I make a presentation in front of community, I feel confident	0.488	0.700			0.46
	I19	When I make a speech, I trust myself	0.578	0.741			0.60
	I10	I believe that I can understand what people say clearly and correctly	0.402	0.521			0.23
	I11	I can express my feelings and thoughts clearly in front of community	0.535	0.739			0.57
	I12	I can talk easily to my teachers as well as my friends	0.499	0.657			0.43
	I17	When I talk, I pay attention to stress and in tonation rules	0.523	0.507			0.32
	I22	I believe that I speak in a certain order and logic	0.551	0.533			0.31
	I28	When I talk to someone, I convince them	0.478	0.553			0.29
	I29	I think I use rich vocabulary during oral communication	0.475	0.620			0.35
	I40	Person to whom I talk want to collaborate with me.	0.392	0.590			0.24
	I43	I believe that I am good at meeting the expectation of the people I talk	0.531	0.541			0.35
	I47	I speak fluently during communication	0.594	0.562			0.40
Discouragement	I14	I cannot behave naturally during speech	0.471		0.533		0.28
	I24	I cannot choose words carefully during speech	0.437		0.585		0.36
	I25	I cannot focus on topic in the time of speech	0.490		0.631		0.40
	I27	I fail at communication of my thoughts and feelings to people	0.517		0.599		0.44
	I32	It is hard for me to express my thoughts	0.493		0.560		0.44
	I33	While talking I use in unnecessary words	0.457		0.516		0.32
	I45	Listeners can hardly hear me when I talk	0.425		0.500		0.25
	I53	I jump from topic to topic without communication	0.345		0.575		0.17
	I54	Listeners having different ideas makes me uncomfortable	0.311		0.506		0.11

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doi



	155	I am worrying about choosing correct word	0.525	0.577	0.37	
	157	Sometimes people cannot understand me because I swallowed the last words when I speak	0.458	0.554	0.23	
	160	I am afraid of being ridiculed when you say my thoughts	0.447	0.508	0.22	
	161	I am afraid of encountering negative thoughts	0.367	0.529	0.20	
Body Language	134	While listening to someone, I use fillers	0.319	0.662	0.39	
	135	While listening to someone I keep the eye contact	0.419	0.645	0.44	
	137	I show my approval by nodding	0.312	0.699	0.44	
	138	I use body language during speech	0.405	0.588	0.36	
	139	While I am speaking I want listeners to show me listen to me	0.373	0.624	0.37	
		152	I prefer monologues rather than dialogues.	0.390	0.512	0.29
Dignification	173	I am open to criticism while speaking	0.358	0.589	0.21	
	175	I want people to respect my ideas	0.363	0.605	0.24	
	176	I expect people to be sincerely while talking	0.386	0.722	0.31	
	178	I think I am a good listener because I perceive what is said accurately and completely	0.430	0.596	0.40	
	180	I think I understand the situation she/he is in while she/he is speaking	0.367	0.500	0.24	
		Explained Variance Rate (%)		14.735	12.553	7.520
	Explained Total Variance (%)		41.953			

As a variance rate between 40% and 60% is considered to be sufficient (Buyukozturk, 2007; Scherer, Wiebe, Luther & Adams, 1988, as cited in: Tavsancıl, 2005), it can be stated that the contribution of all four factors to the total variance was adequate in this case.

3.2.b. Confirmatory Factor Analysis Stage

Confirmatory factor analysis is used to test whether or not a factor model that has already been described and classified based on theory can be confirmed. (Brown, 2006; Floyd & Wideman, 1995; Kline, 2005; Simsek, 2007; Tabachnick & Fidell, 2001). The primary criteria that were taken into consideration in this analysis were as follows: (1) the t value of each item should be meaningful; (2) the error variance level should be low; and (3) the explained variance should be high (Simsek, 2007; Tabachnick & Fidell, 2001). According to the results of the CFA, the t values of all items were greater than 2.56, which was determined for a significance value of 0.01 and found to be significant. This indicates how well each item represents its own variance, and that it can therefore be included in the scale. Furthermore, the error variances of each item were also examined and found to be low. If the error variance is greater than 0.9 and close to the value of 1.0, it is suggested that an item be excluded from a scale (Cokluk et al., 2010). The results of the first CFA are shown in Figure 3.

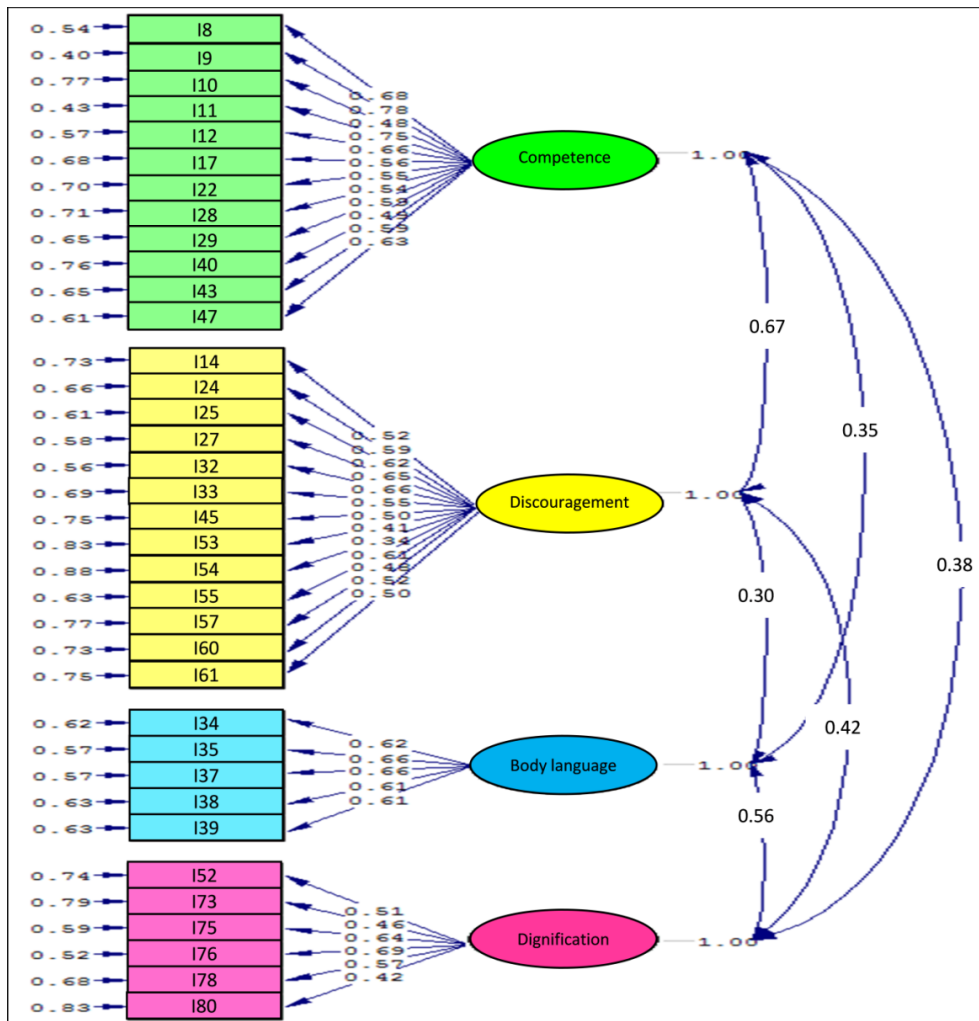


Figure 3. CFA Model Output of the CSS before Modification

The second stage in assessing the CFA model is examination of fit indices (Cokluk et al., 2010; Simsek, 2007). First, the chi-square (χ^2) value was calculated to determine the suitability of the CFA (Schermelleh-Engel & Moosbrugger, 2003, as cited in Yilmaz & Celik, 2009). However, since the χ^2 value is sensitive to sample size, and samples of greater than 200 make the conformity of the model difficult and thus lead to misinterpretations, the ratio of the degrees of freedom (df) to χ^2 is considered as an important criterion (Bollen, 1989; MacCallum, Brown & Sugawara, 1996; as cited in Cokluk and et.al., 2010; Schermelleh-Engel & Moosbrugger, 2003, as cited in Yilmaz & Celik, 2009; Tabachnick & Fidell, 2001). According to the results of the first CFA, the χ^2 value was 2078.10, with degrees of freedom of 588. The ratio of the χ^2 value to the degrees of freedom was calculated as $2078.10/588 = 3.534$. For a good model, this criterion should have a value between 2 and 3 in large samples, while it should be less than 5 for an acceptable model (Bollen, 1989; Kline, 2005; Schermelleh-Engel & Moosbrugger, 2003, as cited in Yilmaz & Celik, 2009). Because the value of χ^2 is sensitive to the size of the sample, alternative adaptation measures were implemented in order to confirm and test the model as a whole.

At the end of the CFA, goodness of fit indices of CFI, NFI, NNFI, AGFI, GFI, IFI and those of RMSEA and RMR were also investigated. As a result, it was established that except for the values of GFI and AGFI in Table 3, the goodness of fit indices were greater than 0.90, and that

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the values of RMSEA and RMR were less than 0.08. That the goodness of fit indices of AGFI, GFI, CFI, NFI, NNFI and IFI were greater than 0.90 suggests a good adaptation, while a perfect adaptation may be suggested for values greater than 0.95 (Schermelleh-Engel & Moosbrugger, 2003, as cited in Yilmaz & Celik, 2009; Tabachnick & Fidell, 2001; Thompson, 2004). In the present analysis, because the AGFI and GFI values were affected by the size of the sample, they were found to be less than 0.90. However, as the research suggests, values greater than 0.85 may be considered acceptable (Schermelleh-Engel & Moosbrugger, 2003, as cited in Yilmaz & Celik, 2009; Shevlin & Miles, 1998). As a result of the first CFA, seeing that items 60 and 61 (decline in value of 202.8) and items 75 and 76 (decline in value of 91.1) lead to a great decline in the χ^2 value of the model, a modification process was applied, and relationships were established among the items. During the modification process, it was determined that the items were placed under the same factor in terms of theoretical structure and that they did not corrupt the theoretical structure (see Figure 4). According to the CFA results obtained after the modification process, the χ^2 value decreased to 1711.2. The degrees of freedom were 586, and the ratio of χ^2 to degrees of freedom was calculated as $1711.12 / 586 = 2.920$; therefore, the adaptation of the data with the model was found to be improved. In addition, as can be seen in Table 3, the AGFI value reached an acceptable value of 0.85 after the modification process.

When the results are considered as a whole, it can be concluded that particularly after the modification process, the items showed a better adaptation to the four-factor structure, and the adaptation goodness values of the scale model were in accordance with the data. Table 3 illustrates the CFA results developed after the modifications.

Table 3. Goodness of Fit Indices of CFA before and after Modification

Model	χ^2	df	χ^2/df	RMSEA	RMR	CFI	NFI	NNFI	AGFI	GFI	IFI
Before Modification	2078.10	588	3.534	0.061	0.056	0.95	0.92	0.94	0.84	0.86	0.95
After Modification	1711.12	586	2.920	0.053	0.049	0.96	0.94	0.96	0.86	0.88	0.96

Considering the importance of the theoretical structure analysis, the second-level model was thought to be more significant. In this study, the latent variable referred to as "communication skills" formed a high-level variable, while the factors labeled as "competence, discouragement, body language and dignification" that were obtained from the EFA results accounted for first-level potential variables. At this point, the second level CFA was applied in order to determine how well the factors explained the latent variable of communication skills and to determine which model showed better adaptation. Table 4 shows the results of the second-level CFA.

Table 4. Goodness of Fit Indices of the Second-level CFA

Model	χ^2	df	χ^2/df	RMSEA	RMR	CFI	NFI	NNFI	AGFI	GFI	IFI
Second Level CFA	1787.81	588	3.040	0.055	0.053	0.96	0.93	0.95	0.86	0.87	0.96

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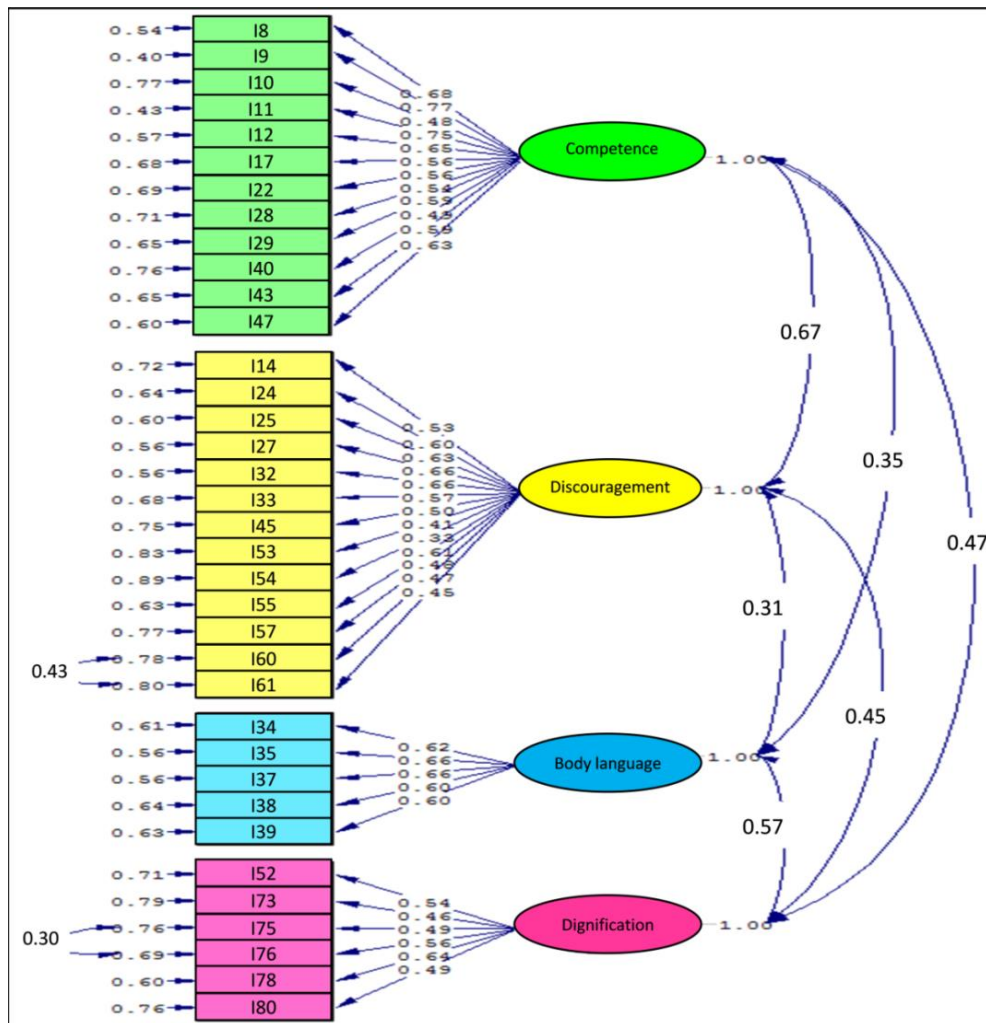


Figure 4. CFA Model Output of the CSS after Modification

The results of the second-level CFA, as with the first-level CFA, indicated that the error variances were low, the t values were significant, and the goodness of fit indices were acceptable (see Figure 5 and Table 4). However, consistency is quite important in assessing adaptation of a model, and therefore, the model with the best goodness of fit indices and consistency levels should be preferred in deciding on which model is best among the alternatives (Jöreskog & Sörbom 1993; Simsek 2007). From this point of view, researchers contend that it is necessary to examine the values of Akaike Information Criterion (AIC), consistent AIC (CAIC) and Expected Cross Validation Index (ECVI) in model comparison (Jöreskog & Sörbom, 1993; Kaplan, 2000; Schumacker & Lomax, 2004). In this respect, the models with lower goodness of fit indices of AIC, CAIC and ECVI are preferred, and therefore, they are considered to be the best models with the best adaptation levels (Jöreskog & Sörbom, 1993; Schumacker & Lomax, 2004). Table 5 demonstrates the goodness of fit indices that were used in the comparison of the first-level CFA and second-level CFA models. According to these results, it was determined that the modified first-level CFA model was better than the second-level CFA model. Furthermore, the χ^2/df rate of the first-level CFA of less than 3 proves that it is a better model. Likewise, Simsek (2007) suggests that

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a first-level CFA should be preferred, as it is less complex in explaining the relationships among theoretical variables and because it is an essential measurement tool.

Table 5. Goodness of Fit Indices of First-level and Second-level CFA

Model	χ^2/df	AIC	CAIC	ECVI
First-level CFA	2.920	1871.12	2313.59	2.73
Second-level CFA	3.040	1943.81	2375.22	2.84

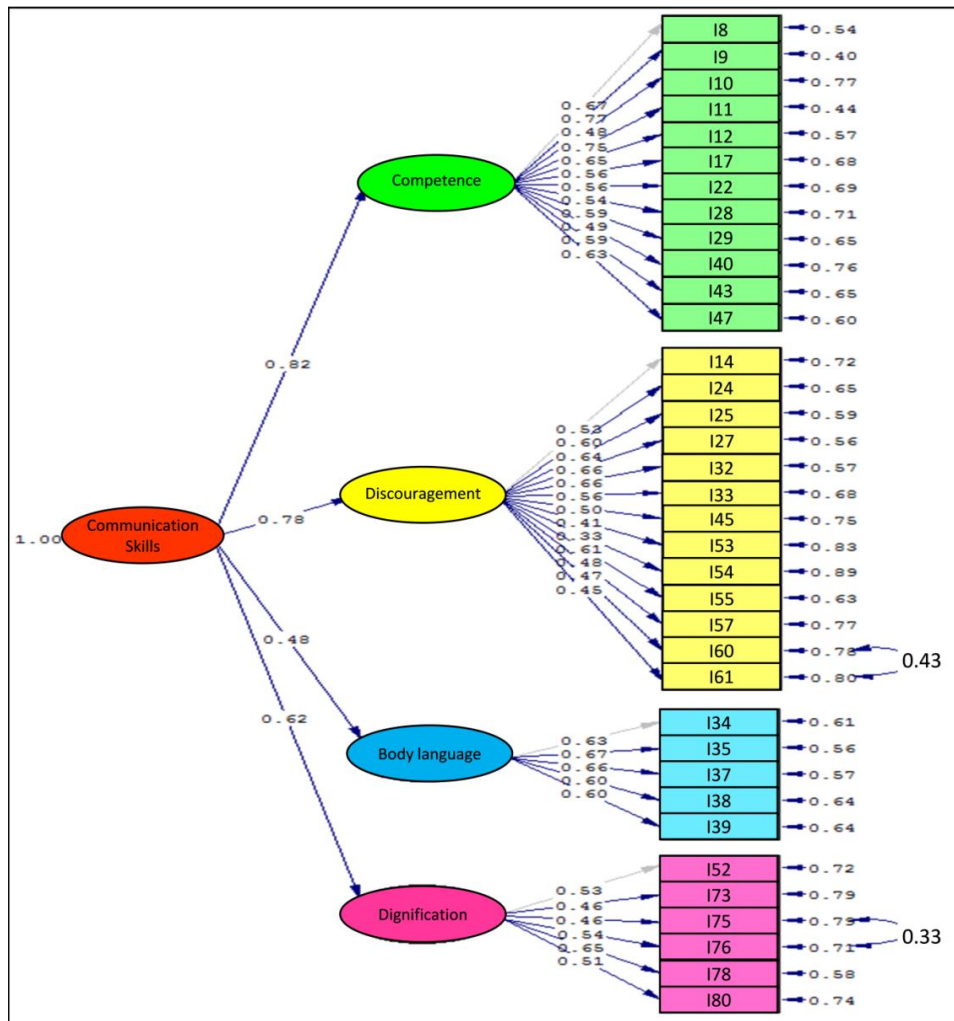


Figure 5. The Second-level CFA Model of the CSS

Table 6 indicates the variance values (R^2) explained by the first-level latent variable of communication skills as obtained from the results of the second-level CFA, as well as the parameter values equal to the relationships between the values. Because the parameter value of the factor "competence" and the variance that it explained was found to be the highest, it explains second level variable of communication skills at best; on the other hand, the factor "body language" is the least explained, because it has the lowest parameter value and variance. In addition,

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according to the results of the first-level CFA adopted for the CSS, explained the variance values (R^2) of items are shown in Table 2.

Table 6. Parameter Values of the Factors and Variances They Explain

Factors	Competence	Discouragement	Body Language	Dignification
Parameter values	0.81	0.78	0.48	0.65
R^2	0.67	0.61	0.23	0.39

3.3. Reliability Stage

According to Balçı (2009) and Wiersma (2000), reliability refers to the ability of the testing tool to measure the targeted feature consistently and free from errors. Sencan (2005) asserts that different reliability types should be considered in assessing the reliability of a testing tool. With this in mind, the Cronbach's alpha reliability coefficient was calculated in addition to the item statistics, consistency and structural validity. As Zinbarg, Revelle, Yovel and Li (2005) and Gliem and Gliem (2003) contend, use of the Cronbach's alpha coefficient is preferred in testing the reliability of Likert-type tools. In this case, the Cronbach's alpha coefficient values of the factors "competence-discouragement-body language-dignification" were calculated at 0.87, 0.83, 0.74 and 0.70 respectively; furthermore, the Cronbach's alpha coefficient of the entire scale was calculated at 0.89. As the scale factors and reliability coefficients were high, the scale can be considered reliable, and the scale items are homogenous. The lowest score that student teachers can achieve on the communication skills scale consisting of total 36 items is 36, while the highest score they can obtain is 180.

4. Discussions and Results

This study was carried out to develop a CSS for testing the communication skills of student teachers. To establish structural validity, item analysis, EFA and CFA tests were applied to the scale, and it was determined to be valid. In addition, model comparison was also conducted using a second-level CFA; the first-level CFA values were found to be better and more consistent than the second-level CFA model in this case. The scale was also found to be reliable in terms of the scale factors and internal consistency of the entire scale. As a result of the full analysis, it was found that the scale was 4 dimensional; the dimensions were labeled as "competence, discouragement, body language, and dignification".

The "competence" dimension was composed of items related to the individual's feeling of self-confidence in the areas of affect, consciousness, and linguistics. According to Celep (2004), the term "competence" expresses the knowledge and capacity that are necessary to accomplish a task effectively. Success in a teaching field that requires specialized knowledge and skills depends on teachers' competence in communication (Celep, 2004); as Turman and Schrodtt (2006) explain, adequate communication skills are needed to perform the teaching functions of informing, explaining and affecting their students. In this respect, the dimension that reflects competence in language use in the scale of communication skills developed by Cetinkanat (1997), Kececi and Tasocak (2009) and Wiemann (1977) for student teachers is reflected in the related literature. An examination of the items related to this dimension in the scale revealed that it is quite important that the student teacher, who is considered to be a main source of communication, transmit his or her message effectively. From this point of view, a student teacher is expected to be successful in using the structure of the language in transmitting his or her feelings and ideas (Ergin & Birol, 2005). Student teachers who are ineffective in using the language structure during communication often fail to be good communicators; it is very difficult to listen to a student teacher whose speech

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and intentions cannot be understood; and therefore, such a teacher cannot be expected to establish effective communication (Demiray, 2011).

The second factor in this case, which was classified as "discouragement", conforms to the discouragement factor developed by Karagoz and Kosterelioglu (2008). This dimension concerns the obstacles that arise during the communication process, preventing individuals from giving or receiving messages effectively (Ergin & Birol, 2005; Golen & Grasso, 1995). In a similar study about communication problems, Argon and Zafer (2009) suggest that the obstacles experienced during the communication process result from individuals' negative characteristic prejudices. Furthermore, McKay, Davis and Fanning (2009) contend that communication problems arise from the psychological state of individuals, such as fear, anxiety, shyness, and concern for satisfying the people with whom they are communicating. These issues, which can be considered as communication obstructions, are also emphasized by Basaran and Erdem (2009), who argue that anxiety, nervousness and lack of self-confidence may prevent effective expression of ideas; thus, they can be considered as some of the most important obstructions in the communication process. Akkaya (2012), on the other hand, cites failure in focusing on speech, inability to find suitable words and inability to speak in public as important obstructions; similarly, McCroskey and Beatty (1999), attach communication problems to three elements: (1) communication skills, (2) communicative competence and (3) positive affect. Kinay and Özkan (2014) have developed a valid and reliable scale measuring speaking anxiety that hinder effective communication of the preservice teachers and they have stated that this scale consisted of three factors which are psychological condition, physiological symptoms and skill related to anxiety. In this respect, Martin, Valencic and Heisel (2002) emphasize that students with a high level of communication anxiety may speak less, become less motivated and experience lower achievement in the classroom than those with low-level anxiety. When the items related to this factor were examined, they reflected the obstacles that student teachers face in transmitting their feelings or ideas to the receivers. It was also determined that these obstacles were related to the source, and they were composed of items involving individuals' linguistic and affective skills, including failure in expressing ideas, lack of recognition that communication is a mutual process, choosing irrelevant topics and lacking self-confidence (Demiray, 2011).

The items included in the third factor of the scale were related to gestures, mirroring, body position, and hand gestures; body language in short, and therefore, it was classified as "body language". Messages given via body language can form an initiative in communication; Sayers, Bingaman, Graham and Wheeler (1993) assert that a successful speaker should direct his or her speech depending on the body language of an interlocutor, drawing attention to the necessity of reading the body language of the source during communication. The messages that are transmitted through body language indicate whether the source is open or closed to communication; as a result, researchers such as Zabel and Zabel (1996) bring attention to the need to promote using body language in order to promote communication in teaching. Dokmen (2005) likewise emphasizes the role of body language in communication, stating that in addition to receptiveness, individuals may use facial expressions and body posture in sending a message. We have encountered with scale items regarding the body language in the lower dimension of "relationship management in the classroom" in the study of Gökyer and Özer (2014) concerning the development of a scale for the classroom management competencies of preservice teachers. According to this study, preservice teachers stated that they could use gestures and facial expressions and they were sufficient in this respect.

In the fourth factor of the scale, the items were related to emotional concepts such as mutual respect, confidence, and the attempt to understand an interlocutor; thus, this factor was classified as "dignification". The items concerning understanding of others conform to the empathy

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factor of the Teacher Communication Skills Scale (TCSS) developed by Cetinkanat (1997). Establishing emotional communication is possible through mutual respect, trust and tolerance between the sender and the receiver (Caputo, Hazel & McMahon, 1994). There are several studies about the significance of establishing emotional communication in the literature (Lonie, Alemam, Dhing & Mihm, 2005; McKay, Davis & Fanning, 2009; Zhang & Zhu, 2008)

Effective communication skills have an important place in the professional and personal characteristics of a student teacher because learning, in general, is a communication process. Cevher-Kalburan (2014) has expressed that effective communication with social environment of student teacher is major parameter. Kesicioglu and Guven (2014) have stated that preservice teachers who have effective communication skills are with high levels of professional self-efficacy. In order become an effective and productive teacher, both in the classroom and in the surrounding environment, student teachers should possess important communication skills that include the factors of competence, dignification, recognition of communication concerns, and efficient use of body language.

According to the results of this study, competence, discouragement, body language and dignification were found to be important dimensions of efficient communication for today's student teachers. When the items related to these factors were considered, it was found that the scale provides a comprehensive measure for assessing all of the dimensions of communication, including its emotional, cognitive and behavioral aspects. Further studies may provide support of the reliability of the scale, which may also be used as a supportive tool in qualitative studies for better interpretation of the findings. Furthermore, this scale may be applied to determine student teachers' communication skills levels and herewith it may be help them to establish better dialogues during student teacher education practices. In addition, it may be used to pinpoint the dimensions of communication in which student teachers show weakness, guiding research in developing solutions for these problems. Developed CSS can be used by not only student teachers but also student who study at the department of public administration, journalism, communications, international relations, radio and television, public relations. Also, people can use this scale for developing communication skills and determining the level of people's communication skills at the career planning and personal development programs.

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