

*Full Length Research Paper*

# Development of the nonverbal communication skills of school administrators scale (NCSSAS): Validity, reliability and implementation study

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The main purpose of this study is to develop a scale intended for identifying the school administrators' nonverbal communication skills, and establish the relationship between the nonverbal communication skills of school administrators and job performance of teachers. The study was conducted in three stages. The first stage involved the creation of a pool of items based on a literature review, and the performance of an initial pilot test for item analysis. In the initial pilot test, the scale was applied to 109 primary school teachers. In the second pilot test, the validity and reliability of the scale was tested by being applied to 220 teachers. According to the exploratory factor analysis results, the scale consisted of 29 items and seven sub dimensions. The contribution made to the variance by sub dimensions was 71.93. Factor loadings varied between 0.57 and 0.87. The confirmatory factor analysis ( $\chi^2/df$ , 1.365; RMSEA, 0.041; CFI, 0.965; IFI, 0.966; GFI, 0.869; AGFI, 0.858; RMR, 0.058) was conducted on the structure resulting from the performance of the exploratory and the validity of the structure was established. The Cronbach Alpha value of the scale was established as 0.897. The third stage of the study saw the performance of a study conducted on 289 teachers with a view to presenting the relationship between the nonverbal communication skills of school administrators and the job performance of teachers. According to the results, there is a positively significant relationship between the nonverbal communication skills of school administrators and the job performance of teachers ( $r=0.41$ ,  $p<0.01$ ).

**Key words:** School administrators, nonverbal communication skills, teacher job performance.

## INTRODUCTION

Employed in a network of communication, one of the most fundamental qualities that an educational administrator should possess is the communication skills. Communication is defined as a process in which people convey their thoughts, feelings and attitudes to the

intended recipients through written or non-verbal symbols. Non-verbal communication skills are as important as verbal communication skills in interpersonal relationships.

Ramadanty and Martinus (2016) suggest that the

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interpersonal communication and non-verbal communication skills of administrators have a significant bearing on the professional motivation of the employees. It is reported that, in a face to face interpersonal communication process, 35% of the message intended to be delivered to the interlocutor is got across verbally while the remaining 65% is delivered through non-verbal means (Birdwhistell, 1970).

According to Mehrabian and Ferris (1967), the total effect of a message during the communication process is made up of verbal (just words) (approximately 7%), vocalic (tone of voice, voice inflexion and other sounds) (38%) and non-verbal elements (55%).

Hickson et al. (2004) on the other hand, suggest that verbal codes determine 35% of the communication process while the remaining 65% is determined by non verbal codes. It appears that non-verbal elements take the lion's share in conveying a message in the interpersonal communication process.

In the literature, Mehrabain (1971) employs the concept of "immediacy" instead of the concept of non-verbal communication. "Immediacy" is the perception of physical and psychological proximity between persons in communication. Non-verbal immediacy includes gesticulation (hands, arms head), eye contact and body language, and increases emotional intimacy among people (Andersen, 1979; Mehrabian, 1971).

Burgoon et al. (1996) define non-verbal communication as non-verbal dialogue. The communication conducted via bodily gestures represents non-verbal communication. Non-verbal communication is defined by hair styles and attire, eye contact and facial expressions, bodily gestures and posture, physical contact and gesticulation (Finset and Piccoli, 2010).

According to Güneş (2011), non-verbal communication represents the expression, information or behavior that does not contain the spoken word. Non-verbal communication covers all the aspects of communication except for words. In addition to gestures and body language, non-verbal communication also includes voice level, tone of voice, pauses and accentuation (Wood, 2009).

While the elements of non-verbal communication are defined as kinesics, paralanguage, physical appearance, Touch, Artifacts, Proxemics, Chronemics, Silence; the elements of body language are defined as facial expressions, gestures, posture and eye contact (Burgoon et al., 2009; Calero, 2005; Knapp et al., 2014; Richmond and McCroskey, 2004; Tayfun, 2011; Verderber et al., 2010; Wood, 2011).

The medium that is applied most in getting across a message in non-verbal communication is that of body language. An important means of non-verbal communication, kinesics is the total of bodily movements, gestures, facial expressions and posture that are used in expressing one's thoughts and feelings to their

interlocutor (Tayfun, 2011).

Being an important part of non-verbal communication, Paralanguage represents the way in which voice is used in the communication process. Paralanguage is a form of verbal communication that excludes words; rather, it relies on such vocal properties as intonation, rhythm, loudness, change of vocal tone and murmur (Wood, 2011).

Another aspect of non-verbal communication is physical appearance. Personal hygiene and upkeep, attire, accessories and makeup make significant contributions to one's physical appearance. The choice of such accessories as jewelry, shoes, ties, handbags, briefcases etc. and the harmony thereof are significant in terms of creating a positive physical appearance (Debasish and Das, 2009).

Being an aspect of non-verbal communication, touch represents communication through physical contact. Pointing out that tactile contact may vary from one culture to another, Heslin and Alper (1983) states that there are five different types of tactile contact: professional and functional tactile contact (as in the case of doctor or dentist touching his/her patient), social and polite tactile contact (such as hand shake), friendly contact (welcoming, bidding good bye etc.), love and affectionate contact, and tactile contact of sexual nature.

Manipulable objects and their environmental properties (artifacts) include symbols, images and colors. In communication, messages are conveyed through the objects within the environment and through the environment itself. There are a number of environmental signs that have a bearing on non-verbal communication such as temperature, noise, furniture layout, building design, pictures, flowers etc. Moreover, the backpacks, briefcases, mobile phones carried by people may also influence the nature of communication (Guerrero and Farinelli, 2009).

Use of distance and location (Proxemics) represents the use of space in interpersonal communication. The physical distance between people determines the degree of communication in interpersonal relationships. According to Cüceloğlu (2006), people do not use the space they find themselves in in a haphazard way, but rather they use it in parallel with the feelings they harbor towards one another, i.e. the distance between them increases or decreases when talking to each other. Hall (1990) has specified four different distance zones in proxemics: intimate distance (0-35 cm), personal distance (40 to 80 cm), social distance (80 cm to 2 m) and public distance (2 m and above). Despite the fact that the distance and the reactions resulting therefrom vary based on cultural norms and they type of relationship existing between the parties, the boundaries to be set is nevertheless known to be significant in determining the interpersonal communication (Tayfun, 2011).

Being an important aspect of non-verbal communication, chronemics is an area of study concerning the use of time (Steinberg, 2007). According to West and Turner (2010), chronemics helps us realize how we perceive time in human relationships and dialogues. According to Tutar and Yılmaz (2010), time is power and respect. That is to say, you are as powerful and respected as the amount of time allocated to you.

“Silence” as a significant aspect of non-verbal communication, represents being quiet and mute. Bruneau (1973) suggests that there are three forms of silence: psycholinguistic silence, interactional silence and socio-cultural silence. Being quiet or mute may result from a variety of reason, none of which is coincidental. Each form of silence has a unique meaning that may lead to various different interpretations and consequences. The form of communication that determines the true meaning of such forms of silence is the nature of relationship existing between the individuals and their body language.

### Non-verbal communication scales

The first studies intended for creating a non-verbal communication scale to be used in the educational field are attributed to the works of Andersen et al. (1979). The researches opted for the concept of “immediacy” instead of the concept of non-verbal communication.

Andersen et al. (1979) suggest that non-verbal communication can be measured by three different types of observation, the first of which being subjective Gestalt perceptions. In this type of observation, non-verbal communication is defined and people are provided with relevant information and asked to answer general questions.

The second type of observation involves the measurement of perceived non-verbal communication behaviors through a control list. The control list consists of items that are conceptualized as “immediacy”. The third type of observation involves the measurement of individual non-verbal communication behaviors, conceptualized as “immediate”, by coding and objectively counting them. In this fashion, Andersen et al. (1979) have developed the following three scales:

- (1) Perceived behavioral indicants of immediacy scale (BII)
- (2) The Generalized immediacy scale (GI), and
- (3) The trained raters perceptions of immediacy scale (RI).

BII scale has been designed to measure the non-verbal communication behaviors of a teacher as perceived by his/her pupils. Originally, having been designed to include 28 items, 13 items with less than 0.45 loadings following the factor analysis were removed from the scale. Of the removed items, ten of them were considered to be less

central in non-verbal communication. The items in question were about the attire of the educator, amount of student discussion, teacher's position in the classroom and the amount of time spent with students. Two of the other elements were about tactile contact. Researchers reported that the scale was single dimensional. The reliability score of the scale of fifteen items was measured as 0.93.

The GI scale was developed to include 9 items for the purpose of measuring the general and gestalt non-verbal communication behaviors of teachers. The scale initially addressed the definition of immediate behaviors and its related elements. And then required participants to measure the teacher's style of teaching by way of ticking the boxes (such as: cold \_:\_:\_:\_:\_ warm). The factor loadings for all 9 items ranged between 0.73 and 0.93. Reliability of single dimensional scale was measured as 0.97.

The RI scale developed for measuring the non-verbal communication behaviors of teachers based on the opinions of students who have been trained in the field of non-verbal communication consists of 11 items. The factor loading of items ranges between .47 and .87. The reliability of the scale has been calculated as 0.82.

The BII scale developed by Andersen et al. (1979) have been revisited and revised by Richmond et al. (1987). The Nonverbal Immediacy Measure (NIM) has been developed by Richmond et al. (1987) with the aim of measuring the non-verbal communication skills of teachers and students. The reliability of the 14 item scale has been found by most studies to be between .70 and .85. The NIM was later revised by McCroskey et al. (1995). Originally designed to include 14 items, the NIM was later reduced to 10 items with the removal of items concerning tactile contact, sitting and standing. It was reported that the removed items were not reliable determinants of the non-verbal communication skills of a teacher. Moreover, it was claimed that the removal of such items from the reliability analysis would improve the reliability or have no effect on it at all.

On account of the reliability and validity issues associated with the NIM, Richmond et al. (2003) developed the Nonverbal Immediacy Scale (NIS). The items of this scale consists of the scale items that were developed or revised by Andersen et al. (1979), Richmond et al. (1987) and McCroskey et al. (1995). It consists of a total of 26 items -13 negative and 13 positive- aimed at measuring non-verbal communication skills. The responses were received through a 5 point Likert type scale (1=never, 2=seldom, 3=sometimes, 4=often, 5=always). As a result of the reliability and validity studies conducted by Richmond et al. (2003), it was reported that the scale was of a single factor type and the Cronbach Alfa reliability coefficient was .90. This scale is still in use today.

As a result of the literature study, the following have

been identified as the elements of the non-verbal communication: kinesics, paralanguage, physical appearance, touch, artifacts, proxemics, chronemic and silence. According to the literature, it appears that he previously developed scales have not fully reflected all the elements of nonverbal communication -which have multiple aspects- on account of being single dimensional. Some of the items covering such elements either have not been included in the scales at all or excluded from the scales on the grounds that they affected the reliability of the scale. Although being the most up-to-date scale, the NIS developed by Richmond et al. (2003) does not contain items regarding such nonverbal communication elements as Physical Appearance, Artifacts, Chronemics and Silence.

On the other hand, while studies are being conducted on the effect of the nonverbal communication behaviors of teachers on students (Comadena et al., 2007; Martin and Mottet, 2011; McCroskey et al., 2006; Pribyl et al., 2004; Pogue and AhYun, 2006; Witt and Wheelless, 2001); no scales has been developed so far to measure and evaluate the nonverbal communication skills of school administrators. In this respect, we believe that it is important to develop a scale both for school administrators and for including many of the aspects of the nonverbal communication that have thus far been left out. With this aim in mind, the previously developed or revised scales have been examined and efforts made into developing a nonverbal communication skills scale so as to include all the nonverbal communication elements in accordance with the literature.

School is a network of communication and the educational administrators are in constant communication with people. The school administrators spend more than 70% of their time on communication (Lunenburg and Ornstein, 2013). The studies so far conducted prove that the nonverbal communication elements have a significant role in interpersonal communication (Birdwhistell, 1970; Hickson et al., 2004; Mehrabian and Ferris, 1967).

In conclusion, one might argue that, in addition to the verbal communication, nonverbal communication, too, has a crucially important role in the educational life. For this reason, it is imperative to ensure that all the school employees, especially the administrators, acquire nonverbal communication skills in addition to verbal communication skills in conducting interpersonal relationships. The present study aims to develop a scale that is intended to measure the nonverbal communication skills of school administrators and evaluate the relationships between the nonverbal communication skills of school administrators and the professional performance of teachers.

### **Job performance**

Job performance represents the degree of success

achieved in any given profession (Demirtaş and Güneş, 2002). Balcı (2010) defines performance as the output or end product produced as a result of the processing of the input at the disposal of the individual through his/her cognitive, emotional and behavioral strength in the environment he/she is in.

Professional performance is a concept that measures the degree of success in achieving a set goal and to what extent the goals have been achieved. The professional performance of a teacher is about how successful that teacher is in fulfilling his duties and responsibilities. A teacher with high professional performance successfully lives up to his/her duties and responsibilities and makes significant contributions to the school's academic success. The academic success of a school is closely associated with the professional performance of its teachers.

Studies suggest that negative physical conditions and in-house escalations increase the number of complaints raised by the teachers and this, in turn, leads to the reduction of their performance; on the other hand, high wages, maintaining good communication and positive relationship with the administrators improve their professional performance (Akbaba and Kipici, 2015).

The studies suggest that the professional performance of teachers is associated with such variables as job satisfaction (Arifin, 2015; Koç et al., 2009); leadership (Adeyemi, 2010; Cerit, 2012; Okoji, 2015, Özdemir and Yirmibeş, 2016); organizational justice (Altaş and Çekmecelioğlu, 2015; Kalay, 2016); and organization climate (Balkar, 2015). On the other hand, there is a significant relationship between communication and the employee's professional performance (Asamu, 2014; Dehghan and Ma'toufi, 2016; Khuong et al., 2016).

The main purpose of this study is to develop a scale intended for measuring the nonverbal communication skills of school administrators and reveal the relationship between the nonverbal communication skills of school administrators and the professional performance of teachers using this scale.

## **METHODOLOGY**

### **Objective of the study**

The main purpose of this study is to develop a scale intended for measuring the nonverbal communication skills of school administrators, and reveal the relationship between the nonverbal communication skills of school administrators and the professional performance of teachers by using this scale.

### **Study group**

The initial pilot study group consisted of the primary teachers that work at 18 different primary schools located in the city center of Giresun, Turkey. During the initial pilot implementation where the item analysis was conducted and items examined in terms of their compatibility with the entire scale, the scale was applied to 109

teachers that were selected based on random sampling. If the number of items included in the scale during the pilot implementation stage is 30 or more, then reaching out to sample size that is 2 or 3 times the number of items in the scale will be sufficient (Seçer, 2015).

In this respect, it can be argued that 109 teacher -selected through simple random sampling method- will be enough for item analysis. Of those teachers 65 of them were male (59.6%), 44 of them female (40.4%), 11 of them were at the age of 22 to 31 (10.1%), 19 of them at the age of 32 to 41 (17.4%), 31 of them at the age of 42 to 51 (28.4%), 45 of them at the age of 52-61 (41.3%) and 3 of them at the age of 62 and over (2.8%).

During the second pilot implementation where the factor structure of the scale was tested, the scale was applied to 220 teachers -selected based on simple random sampling method- who were employed at 18 different schools located in the city center of Giresun. Of those teachers 117 of them were male (53.2%), 103 of them female (46.8%), 31 of them were at the age of 22 to 31 (14.1%), 57 of them at the age of 32 to 41 (25.9%), 61 of them at the age of 42 to 51 (27.7%), 66 of them at the age of 52-61 (30.0%) and 5 of them at the age of 62 and over (2.3%). Seçer (2015) suggests that the fact that the number of participants -which are being determined during the factor analysis- are five or ten times the number of items in the scale can be taken as a basis.

A correlational screening model was employed for using the scale in a research and reporting on its results. The study group of this study consists of 289 primary school teachers that work in 18 different primary schools located in the provincial center of Giresun, Turkey, and who have been selected based on simple random sampling method. Of those teachers 157 of them were male (54.3%), 132 of them female (45.7%), 37 of them were at the age of 22 to 31 (12.8%), 70 of them at the age of 32 to 41 (24.2%), 83 of them at the age of 42 to 51 (28.7%), 94 of them at the age of 52-61 (32.5%) and 5 of them at the age of 62 and over (1.7%). 24 of the teachers (8.2%) were single and 265 of them (91.7%) married. While 23 of them (8%) had a work experience of 1 to 5 years, 42 of them (14.5%) had been employed for 6 to 10 years, 27 of them (9.3%) 11 for 15 years, 45 of them (15.6%) for 16 to 20 years, 152 of them (52.6%) for more than 20 years.

### The process of developing a data gathering tool

During the process of developing a School Administrator's Nonverbal Communication Skills Scale, priority was given to the development of literature screening related nonverbal communication skills, and a pool of 42 items were created. In creating the items, the existing nonverbal communication skills scales were studied (Andersen et al., 1979; McCroskey et al., 1995; Richmond et al., 1987; Richmond et al., 2003).

At the end of this endeavor, the following dimensions, with the corresponding items, were created: kinesics, paralanguage, physical appearance, touch, Artifacts, proxemics, chronemics, silence. Expert opinion was sought for the 42 items thus created with respect to the nonverbal communication skills (2 communication experts, 2 educational management experts, 1 linguist, 2 evaluation and assessment experts). The experts were given an assessment form consisting of open and closed ended questions. The experts were asked to state their opinions regarding the items by saying "pertinent" "not pertinent" and "neutral" and the recommended they corrections they deemed necessary. In line with the opinions received from the experts, it was established that there was no need to remove any item from the scale but some of the statements needed revising. Once the necessary revisions and corrections were made in the scale, the "School Administrator Nonverbal Communication Skills Scale", consisting of 42 items, was created. The scale was designed in the form of a 5-point Likert type

scale (1-Never, 2-Rarely, 3-Sometimes, 4-Often, 5-Always). The items were then submitted to a linguist for perusal, and the scale took its final form. A pilot test was launched to try out the initially created 42-item scale. With the pilot test, it was intended to analyze the scale items and evaluate the compatibility of items with the entire scale. With this aim in mind, the scale was applied to a group of 109 teachers who are capable of representing the study group. After the pilot test, an item analysis was conducted to establish which items were more pertinent and which of them proved problematic in terms of total item correlation. As a result, seven items with very poor total item correlation were removed from the scale in line with the opinions of the field experts.

After the initial pilot test, the scale, now reduced to 35 items, was put to a second pilot test. In the second pilot test, the scale was reapplied to a study group that consisted of 220 teachers. An exploratory factor analysis was applied to the data thus obtained with a view to determining the factor structure of the scale. As a result of the factor analysis, it was established that the scale had a seven factor structure. In order to test out the validity of this seven-dimensional structure, a Confirmatory Factor Analysis (CFA) was applied.

In addition to the CFA and in order to identify to what extent the scores obtained from the scale were reliable, the Cronbach Alpha internal consistency coefficient -calculated based on the item analysis- was taken as a reference. Finally the process of developing a "School Administrators' Nonverbal Communication Skills Scale" was completed.

### Evaluation of the job performance

The teachers' job performance was measured in accordance with the statements developed by Sigler and Pearson (2000) and Kirkman and Rosen (1999). The statements in question were adapted to the Turkish context by Çöl (2008). The adapted versions of the statements were, once again, subjected to exploratory and confirmatory factor analyses. As a result of the factor analysis, it was established that the job performance had a single factor structure and that the contribution made by the said factor to the total variance was around 68.26%. Factor loadings ranged between .797 and .844. A confirmatory factor analysis was performed to validate the single factor structure. According to the results of the CFA, the fit indices for the model were calculated as  $\chi^2/df$  ratio 1.13 ( $\chi^2=2.271$ ,  $df=2$ ,  $p<0.000$ ). The fit indices for the model were found to be as follows: RMSEA= 0.022, GFI=0.99; AGFI= 0.98, CFI= 0.99, IFI= 0.99, RFI=0.98, NFI=99, RMR= 0.005. Such values show that the goodness of fit is at a perfect level (Perfect goodness of fit values are presented in the Table 3). Reliability (Cronbach Alpha) of the items regarding to the job performance was calculated as 0.84.

### Data analysis

Exploratory (EFA) and confirmatory (CFA) factor analyses were employed to establish the factor structure of the nonverbal communication skills scale. A correlation analysis was performed to identify the relationship between the school administrators' nonverbal communication skills of and the teachers' job performance. The SPSS software was used for the EFA, while the AMOS software was used for the CFA.

## RESULTS AND DISCUSSION

### Item analysis

Prior to the performance of exploratory factor analysis, an

Table 1. Item analysis results.

Item	Scale average if item is removed	Scale variance if item is removed	Total item correlation	Cronbach alfa if item is removed
i1	156.9358	253.061	0.352	0.795
i2	156.5505	257.324	0.308	0.797
i3	155.9266	254.106	0.459	0.794
i4	155.5505	236.287	0.045	0.875
i5	156.6147	255.832	0.324	0.797
i6	157.8073	254.916	0.259	0.798
i7	155.9358	256.283	0.385	0.796
i8	155.8440	257.244	0.406	0.796
i9	155.7982	256.551	0.410	0.796
i10	155.8440	256.966	0.410	0.796
i11	156.0367	251.276	0.445	0.793
i12	155.8349	251.843	0.484	0.793
i13	155.9083	252.269	0.515	0.793
i14	155.8073	252.176	0.576	0.792
i15	155.6514	255.637	0.518	0.795
i16	155.5229	258.733	0.445	0.797
i17	155.7615	256.109	0.439	0.795
i18	157.1835	251.522	0.349	0.795
i19	157.6606	251.800	0.315	0.796
i20	157.7890	252.335	0.350	0.795
i21	158.0459	253.248	0.310	0.797
i22	156.1284	250.317	0.498	0.792
i23	156.1743	249.664	0.558	0.791
i24	156.0000	253.722	0.513	0.794
i25	156.1193	250.550	0.578	0.791
i26	156.0550	251.515	0.531	0.792
i27	156.4771	246.696	0.560	0.789
i28	156.0275	253.897	0.485	0.794
i29	156.6422	255.158	0.311	0.797
i30	156.3761	255.181	0.396	0.795
i31	156.5321	254.029	0.401	0.795
i32	156.7523	255;873	0.268	0.798
i33	155.6239	258.089	0.433	0.797
i34	155.6881	256.235	0.494	0.795
i35	155.5505	258.453	0.467	0.797
i36	155.7798	255.155	0.464	0.795
i37	157.4037	264.539	0.002	0.807
i38	157.3303	261.057	0.104	0.803
i39	158.3028	264.695	0.009	0.806
i40	157.2936	258.339	0.196	0.800
i41	157.4312	263.692	0.053	0.804
i42	157.9633	265.888	-0.024	0.807

item analysis was performed on the assessment tool as the first stage of the process. Item analysis establishes the internal consistency of the scale and the compatibility of each item to the entire scale. As a result of this analysis, the items that were more pertinent and those

proved to be problematic in terms of total item correlation were identified. The results of this analysis are presented in Table 1.

Observing Table 1, it appears that the total item correlations range between -.024 and .578. The total item

correlations are expected not to be negative, but to be at least 0.20 (Tavşancıl, 2014). Büyüköztürk (2014) suggests that, in total item correlations, the items with the correlation of 0.30 and above distinguishes individuals better, and that the items between 0.20 to 0.30 can be tested or should be corrected if deemed necessary, and that the items below 0.20 should not be tested at all.

Accordingly, the total item correlation values of the items 4, 37, 38, 39, 40, 41 and 42 were found to be less than 0.20. Such items were removed from the scale in line with the opinion of the experts. According to Table 1, the total item correlation value of the item number 6 is .259; and the total item correlation value of the item number 32 is 0.268. The field experts suggested that those two particular items assessed significant behaviors in the factor they were in and thus they had to be included in the scale in terms of the content. These two items were not removed from the scale. For the remaining 35 items, the Cronbach Alpha value of the scale was calculated as .904.

### Exploratory factor analysis (EFA)

An EFA was performed for establishing the factor structure of the scale. First of all, efforts were made to see whether the data gathered from 220 teachers was consistent with the factor analysis. To this end, Kaiser-Meyer-Olkin (KMO) value and Bartlett Sphericity Test (BTS) were performed. Since the KMO coefficient for the scale was calculated as 0.88, the sample size can be accepted as ok. The result of the Bartlett Sphericity Test was found as follows: ( $\chi^2=4625.013$ ,  $df=595$  and  $P<0.05$ ). This result suggests that the scale is suitable for the factor analysis (Çokluk et al., 2014; Field, 2013).

In order to determine the factor structure of the scale, a basic components analysis and varimax method were employed. In the factor analysis, the acceptance level for factor loadings was determined as 0.40 (Field, 2013). As a result of the analysis, there were identified eight factors for 35 items whose eigenvalue was over 1. The items in those factors were evaluated in terms of being overlapped and whether they met the acceptance level for factor loadings. It was observed that five items (items number 3, 16, 17, 27, 28) were overlapped and that the factor loading of one item (11th item) was below the acceptance level. Such items were removed from the scale one by one and the remaining items were once again subjected to an exploratory factor analysis. The factor pattern achieved as a result of the removal of the problematic items and the item factor loadings are presented in the Table 2.

Once the inconsistent items were removed, it was observed that there were seven factors for 29 items whose eigenvalue was over 1. The contribution of these factors to the total variance was established as 71.93%.

The variance was calculated for the first factor as 14.28%, for the second factor as 10.56%, for the third as 10.48%, for the fourth as 9.53%, for the fifth as 9.52%, for the sixth as 9.33% and for the seventh as 8.22%. Based on the contents of the items, such factors were ascribed the following names in accordance with the literature: (1) Artifacts, (2) Tactile Contact, (3) (Paralanguage), (4) Proxemics, (5) Kinesics, (6) Chronemics, (7) Physical Appearance.

### Confirmatory factor analysis (CFA)

In order to determine the validity of the 7 factor structure resulting from the exploratory factor analysis a CFA was performed. A path diagram and the statistics of fitness were calculated for the 29 item 7 factor model.

According to the results of the confirmatory factor analysis, the  $\chi^2/df$  ratio was calculated as 1.688 ( $\chi^2=600.916$ ,  $df= 356$ ,  $p<.000$ ). The fact that the  $\chi^2/df$  ratio is less than 2 is considered to be a perfect fit (Kline, 2005). The ratio found in this study (1.688) proves that the assessment model fits well with the data. In order to evaluate the fitness of the model, other goodness of fit indices were calculated respectively. The goodness of fit indices for the model were found to be as follows: RMSEA= 0.056, GFI= 0.833, AGFI= 796, CFI= 0.934, IFI= 0.935, RMR= 0.053. The CFA results suggest that the goodness of fit values were not at the desired level. In order to bring the goodness of fit values up to scratch, some of the items were modified.

Following the examination of the modification indices, only the modification indices for the items of same size were taken into consideration in parallel with the theoretical foundation of the scale. In this respect, modifications were made to the items 22 and 23 in the artifacts dimension; to the items 17 and 18 in the paralanguage dimension; to the articles 29 and 30 in the proxemics dimension, and the CFA was repeated.

According to the CFA results, the goodness of fit indices of the model was reexamined and the  $\chi^2/df$  ratio was calculated as 1.365 ( $\chi^2=481.836$ ,  $df= 353$ ,  $p<0.000$ ). The goodness of fit indices of the model were established as follows: RMSEA= 0.041, GFI=0.869; AGFI= 858, CFI= 0.965, IFI= 0.966, RMR= 0.058. Table 3 presents the goodness of fit values of the scale.

According to the CFA findings presented in the Table 3, the level of statistical significance ( $p$ ),  $\chi^2/df$ , RMSEA, CFI, IFI, goodness of fit values were found to be perfect; while the RMR, GFI and AGFI goodness of fit values were found to be acceptable. It appears that the values regarding the entire model are either acceptable or perfect. According to the results of the confirmatory factor analysis, the values regarding the path diagram are presented in Figure 1 for the purpose of determining the loadings between the factors.

**Table 2.** Factor distributions and factor loadings.

Variable	Factor loading values						
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor7
M22	0.808	-	-	-	-	-	-
M23	0.876	-	-	-	-	-	-
M24	0.830	-	-	-	-	-	-
M25	0.873	-	-	-	-	-	-
M26	0.832	-	-	-	-	-	-
M18	-	0.799	-	-	-	-	-
M19	-	0.824	-	-	-	-	-
M20	-	0.838	-	-	-	-	-
M21	-	0.832	-	-	-	-	-
M7	-	-	0.728	-	-	-	-
M8	-	-	0.830	-	-	-	-
M9	-	-	0.839	-	-	-	-
M10	-	-	0.785	-	-	-	-
M29	-	-	-	0.740	-	-	-
M30	-	-	-	0.797	-	-	-
M31	-	-	-	0.857	-	-	-
M32	-	-	-	0.726	-	-	-
M1	-	-	-	-	0.790	-	-
M2	-	-	-	-	0.801	-	-
M5	-	-	-	-	0.736	-	-
M6	-	-	-	-	0.755	-	-
M33	-	-	-	-	-	0.748	-
M34	-	-	-	-	-	0.765	-
M35	-	-	-	-	-	0.803	-
M36	-	-	-	-	-	0.656	-
M12	-	-	-	-	-	-	0.608
M13	-	-	-	-	-	-	0.794
M14	-	-	-	-	-	-	0.780
M15	-	-	-	-	-	-	0.577

**Table 3.** Goodness of fit values.

Goodness of fit values	Perfect	Acceptable	Study finding
P	0.05 ≤ p ≤ 1.00	0.01 ≤ p ≤ 0.05	0.000
χ <sup>2</sup> /df	0-2	2-3	1.365
RMSEA	≤ .05	≤ .08	0.041
RMR	≤ .05	≤ .08	0.058
CFI	≥ .95	≥ .90	0.965
IFI	≥ .95	≥ .90	0.966
GFI	≥ .90	≥ .85	0.869
AGFI	≥ .90	≥ .85	0.858

Adapted from Çokluk et al. (2014), Kline (2005), Seçer (2015) and Tabacknick and Fidell (2001).

**Reliability study**

The reliability of the scale was calculated based on the

data obtained from 220 teachers. The Cronbach alpha values were calculated with respect to the main and sub dimensions of the scale for the purpose of determining



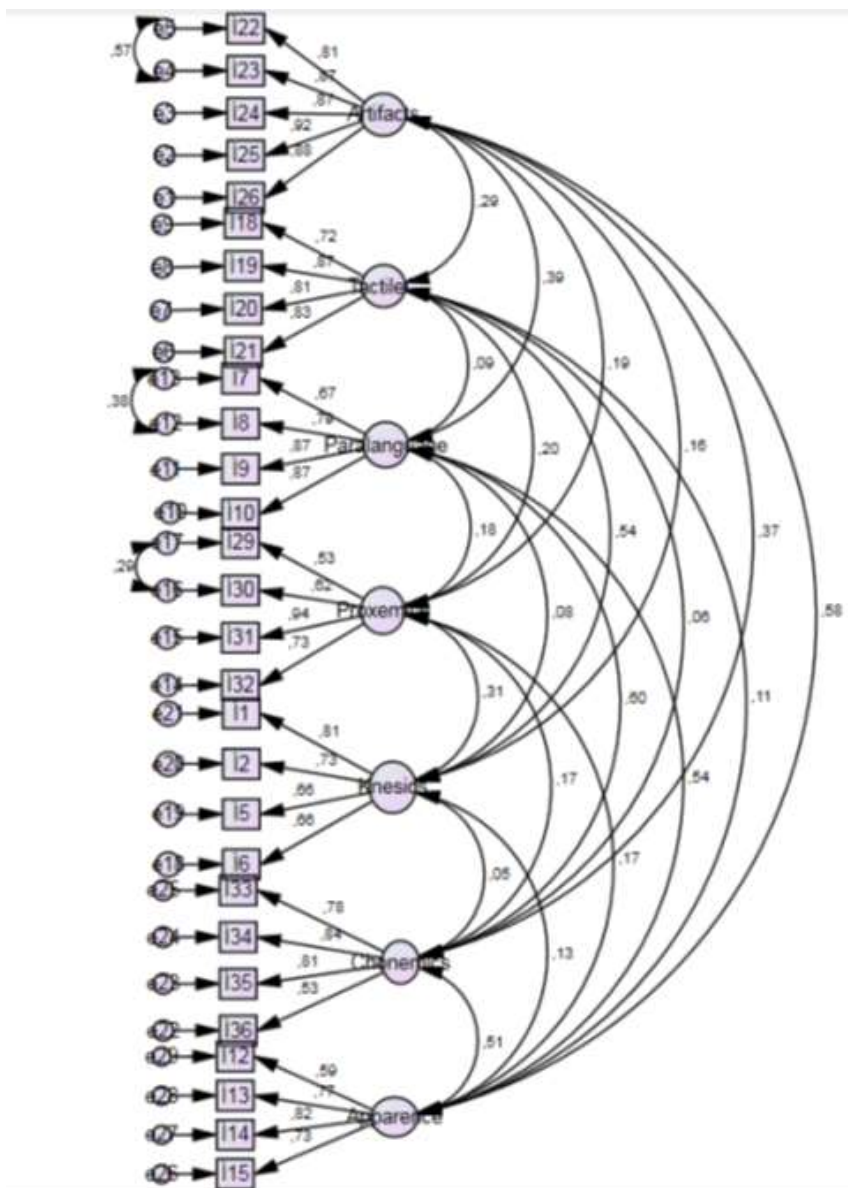


Figure 1. Path diagram.

the internal consistency coefficients of the reliability of the scale. The values obtained are presented in the Table 4. According to the Table 4, the Cronbach Alpha value for all 29 items of the scale was calculated as 0.897. The reliability coefficients for the dimensions were calculated as follows:

- (1) Artifacts, 0.939
- (2) Tactile contact, 0.892
- (3) Paralanguage, 0.885
- (4) Proxemics, 0.816
- (5) Knesics, 0.820

- (6) Chronemics, 0.798 and
- (7) Physical Appearance 0.777.

Such values prove that the scale is reliable. The final version of the scale, complete with the calculation of its reliability, is presented in the Annex 1.

### Implementation of the study

The scale that was developed to determine the nonverbal skills of school administrators was applied to the study

**Table 4.** Cronbach Alpha values regarding the school administrators' nonverbal communication skills scale.

Dimensions	Cronbach Alfa
Artifacts	0.939 (5 items)
Tactile contact	0.892 (4 items)
Paralanguage	0.885 (4 items)
Proxemics	0.816 (4 items)
Knesics	0.820 (4 items)
Chronemics	0.798 (4 items)
Physical appearance	0.777 (4 items)
Nonverbal communication skills of school administrators	0.897 (29 items)

**Table 5.** Mean and standard deviation values and the relationship among the variables.

Variables	$\bar{X}$	SS	1	1a	1b	1c	1d	1e	1f	1g	2
1 Nonverbal com. skills	3.86	0.46	--	-	-	-	-	-	-	-	-
1a. Artifacts	3.95	0.88	0.73**	-	-	-	-	-	-	-	-
1b. Tactile contact	2.75	0.98	0.62**	0.29**	-	-	-	-	-	-	-
1c. Paralanguage	4.37	0.59	0.58**	0.37**	0.13*	-	-	-	-	-	-
1d. Proxemics	3.64	0.83	0.55**	0.24**	0.20**	0.18**	-	-	-	-	-
1e. Knesics	3.34	0.84	0.56**	0.16**	0.46**	0.12*	0.28**	-	-	-	-
1f. Chronemics	4.54	0.53	0.51**	0.35**	0.07	0.51**	0.17**	0.02	-	-	-
1g. Physical appearance	4.40	0.64	0.63**	0.52**	0.12*	0.50**	0.18**	0.12*	0.45**	-	-
2. Job performance	4.29	0.54	0.41**	0.36**	0.10	0.39**	0.25**	0.13*	0.33**	0.26**	-

\*\*  $p < .01$ ; \*  $p < .05$ .

group in order to identify the relationship between the nonverbal communication skills of school administrators and the job performance of teachers. The scale that was applied to the study group was retested in terms of its validity through the performance of the CFA.

According to the findings of the CFA, the fit indices of the model were examined and the  $\chi^2/df$  ratio was calculated as 1.545 ( $\chi^2=545.381$ ,  $df=406$ ,  $p<0.000$ ). The fit indices for the model were established as follows: RMSEA= 0.044, GFI=0.886; AGFI= 859, CFI= 0.961, IFI= 0.961, RMR= 0.052.

According to these values, the significance level ( $p$ ),  $\chi^2/df$ , RMSEA, CFI, IFI, goodness of fit values were found to be perfect, while the RMR, GFI and AGFI goodness of fit values were found to be acceptable. The values regarding the model appear to be acceptable or perfect. The Cronbach Alpha value for the 29 items of the scale was calculated as 0.890.

A correlation analysis was performed to identify the relationship between the nonverbal communication skills of school administrators and the job performance of teachers. The mean and standard deviation values of the variables, and the relationship among the variables are presented in the Table 5.

According to the results presented in the Table 5 above, the general average for the nonverbal communication skills of school administrators (total scores) was calculated as  $\bar{X}=3.86$ , while the general average for the job performance of teachers (total scores) was calculated as  $\bar{X}=4.29$ . Of the nonverbal communication skills of school administrators, the average score obtained from the dimension of Chronemics ( $\bar{X}=4.54$ ) is higher than other dimensions.

A review of the correlation coefficients among the variables shows that there is positively significant relationship between the nonverbal communication skills (total scores) and the job performance of teachers (total scores) ( $r=0.41$ ,  $p<0.01$ ).

Moreover, save for the tactile contact dimension, all the sub dimensions of nonverbal communication skills appear to be in a positively significant relationship between the job performance. The most statistically significant relationships between the nonverbal communication skills of school administrators and the job performance of teachers were established among the dimensions of paralanguage and job performance ( $r=0.39$ ,  $p<0.01$ ), artifacts and job performance ( $r=0.36$ ,

$p < 0.01$ ), chronemics and job performance ( $r = 0.33$ ,  $p < 0.01$ ).

## Conclusions

The present study aimed at developing a scale for identifying the nonverbal communication skills of school administrators in line with teachers' opinions and observing the relationship between the nonverbal communication skills of school administrators and the job performance of teachers through the scale thus was developed.

To this end, the literature in the field was reviewed and similar scales studied, and a pool of items created. After that, necessary corrections were made on the items in consultation with experts and the scale was made ready for the preliminary implementation. The exploratory factor analysis and confirmatory factor analysis were performed to identify the factor structure and validity of the scale respectively. Once those analyses were completed, the scale took its final form through reliability studies. The scale thus developed was applied to a new study group to study the relationship between the nonverbal communication skills of school administrators and the job performance of teachers.

The first version of the scale consisting of 42 items was applied to 109 teachers for item analysis. During the item analysis, it was found that the correlation values of the items number 38, 39, 40, 41 and 42 pertaining to the "silence" dimension of nonverbal communication and the item number 37 pertaining to the "time" dimension and the item number 4 pertaining to the "body language" dimension were fairly poor. Such items were removed from the scale in line with the opinions of the experts.

The 35 items, having passed the item analysis, was once again applied to a group of 220 teachers. The EFA was performed to establish the factor structure of the scale. As a result of the EFA, it was established that the five items (items number 3, 16, 17, 27 and 28) were overlapped and one item (item number 11) had a very low factor loading value. Such items were removed from the scale one by one and the scale was once again subjected to the exploratory factor analysis.

As a result of the exploratory factor analysis, it was established that the scale consisted of seven factors. In compliance with the item contents and literature, such factors were established as;

- (1) Artifacts
- (2) Tactile contact
- (3) Paralanguage
- (4) Proxemics
- (5) Knesics
- (6) Chronemics
- (7) Physical appearance.

It was observed that the factor loading values of the items with seven factors varied between 0.57 and 0.87. The total variance of the scale consisting of seven sub dimensions is 71.93. The CFA was applied for establishing the validity of the seven factor structure of the 29 item scale.

The  $\chi^2/df$  ratio, calculated through the CFA, was found as 1.365. This value shows that the model has an acceptable goodness fit, in other words, the model is consistent with the real data. According to the goodness fit indices presented in the Table 3, the goodness fit values for a seven factor model meet the acceptable compliance criteria. It can be argued that the seven factor structure is a viable and valid model for a scale thus developed.

There is a number of studies conducted on the effects of nonverbal behaviors on students in an educational setting (Comadena et al., 2007; Martin and Mottet, 2011; McCroskey et al., 2006; Pribyl et al., 2004; Pogue and AhYun, 2006; Witt and Wheelless, 2001).

The nonverbal communication scales used in those studies are intended to identify the nonverbal communication skills of teachers in line with the opinions of students or their relationship with various different variables. However, considering the importance of nonverbal communication skills in interpersonal communication process, no scale has been developed so far to represent and assess the nonverbal communication skills of school administrators. Moreover, it is also established that the previously developed nonverbal communication skills scales are of single dimensional nature.

However, when the literature is reviewed, it is observed that nonverbal communication has multiple dimensions and such dimensions are not exactly covered by the existing scales. Being the most up-to-date one, NIS developed by Richmond et al. (2003) is a single dimensional scale, which omits the items pertaining to such nonverbal communication elements as physical appearance, artifacts and chronemics.

In this respect, it was thought necessary to develop a scale that would include many aspects of both school administrators and nonverbal communication. Developed in line with this aim, the "Nonverbal Communication Skills of School Administrators Scale" (NCSSAS) is capable of being used in the studies that are intended study the relationship between the nonverbal communication skills of school administrators and the job performance of teachers, and various different variables including their job motivation and satisfaction.

Having been tested for validity and reliability, the scale was applied to 289 teachers to identify the relationship between the nonverbal communication skills of school administrators and the job performance of teachers. The findings suggest that according to the opinions of teachers, the nonverbal communication skills are "most of

the time" statistically significant. This finding is partially in compliance with the finding of Uzun and Ayık (2016), who found the nonverbal communication skills of school administrators to be somewhat high. According to these findings, the teachers stated that their performance is fairly high in the interval of "always".

This finding concurs with the findings presented in the works of Koç et al. (2009); Cerit (2012) and Özdemir and Yirmibeş (2016) who found the performance of teachers to be high in general. According to these findings, there is a positively significant relationship between the nonverbal communication skills of school administrators (total scores) and the job performance of teachers (total scores).

Moreover, except for the tactile contact dimension, all the sub dimensions of the nonverbal communication skills of school administrators were found to have a positively significant relationship with the job performance of teachers. In the literature review, we have failed to find a research studying the relationship between the nonverbal communication skills of school administrators and the job performance of teachers.

However, there are nevertheless studies conducted so far that present the significant relationships between communication and the job performance of the employees (Khuong et al., 2016; Asamu, 2014; Dehghan and Ma'toufi, 2016). The findings of the study are, generally, in support of such studies which establish a positive relationship between communication and job performance.

Developed in line with this aim, the NCSSAS is capable of being used in the studies that are intended study the relationship between the nonverbal communication skills of school administrators and various different variables such as the organizational loyalty and organizational citizenship behaviors of teachers and their job motivation and job satisfaction. The scale thus developed is not exclusively applicable to school administrators, but it can also be applied to all executives and employees working in various different fields.

## CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

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**Annex 1**

<b>NONVERBAL COMMUNICATION SKILLS OF SCHOOL ADMINISTRATORS SCALE</b>	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>	<b>Always</b>
<b>Please state your level of agreement to the following statements by ticking (X) the relevant box on a scale of one to five</b>					
1- Our administrator gesticulates when talking to people.					
2- The facial expression of our administrator changes depending on his/her mood when talking to people.					
3- Our administrator's posture changes in line with his/her mood when talking to people.					
4- Our administrator's leg and foot movements change when talking to people.					
5- Our administrator is mindful of his/her accentuation when talking to people.					
6- Our administrator is mindful of his/her intonation when talking to people.					
7- Our administrator adjusts his/her vocal loudness when talking to people.					
8- Our administrator adjusts his/her vocal rhythm when talking to people.					
9- Our administrator is mindful of his/her physical appearance when communicating with people.					
10- Our administrator is mindful of his/her personal accessories.					
11- Our administrator is attentive to his/her personal grooming or make up.					
12- Our administrator is attentive to his/her attire.					
13- Our administrator embraces people when he/she welcomes them or bids them farewell.					
14- Our administrator touches people on the shoulder or arm when talking to them.					
15- Our administrator kisses people on the cheeks when he/she meets up with them.					
16- Our administrator feels the need to make physical contact when talking to people.					
17- Our administrator is mindful of the choice of furniture in his/her office.					
18- Our administrator is mindful of the choice of accessories in his/her office.					
19- Our administrator is mindful of the harmony of objects in his/her office.					
20- Our administrator is mindful of the colors of furniture, objects and accessories in his/her office.					
21- Our administrator is mindful of the choice of paintings in his/her office.					
22- Our administrator comes 0 to 35 cm closer to his/her family members when talking to them.					
23- Our administrator stands at an approximately 40 to 80 cm distance when talking to his/her close friends.					
24- Our administrator stands at an approximately 80 cm to 2 m distance when talking to the people he/she has just met.					
25- Our administrator stands at a distance of 2 m or above from people in general public.					
26- Our administrator is attentive to the punctuality of his/her appointments.					
27- Our administrator is mindful of the amount of time he/she spends when talking to people.					
28- Our administrator is diligent about his/her working hours.					
29- Our administrator devotes his/her time to the meetings in accordance with the "degree of importance" of such meetings.					

The dimensions and items created in the scale: (1) Manipulable objects and environmental features (Artifacts) dimension: 17-18-19-20-21; (2) Tactile Contact dimension: 13-14-15-16; (3) Paralanguage dimension: 5-6-7-8; (4) Proxemics dimension: 22-23-24-25; (5) Knesics dimension: 1-2-3-4; (6) Chronemics dimension: 26-27-28-29; (7) Physical Appearance dimension: As well as consisting of the items number 9-10-11-12