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Development of the Teacher Report Form of Anxiety in Pre-school Children

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Abstract

This research was aimed to develop the Teacher Report Form of Anxiety in Pre-School children. A descriptive research was conducted with two study groups. The scale is based on teachers' assessment for preschoolers aged 3-6. During the development process of the form, the theoretical structure was examined and expert opinion was take for the prepared draft. The descriptive research model was used in the research. The research has two study groups. Within the scope of the research, there were 250 preschool teachers in the first group and 260 in the second group. The construct validity was determined as well based on AFA and DFA. The corrected item-total correlations and Cronbach's alpha reliability coefficient were calculated in order to determine the reliability of the answers given to the scale items. The KMO and Barlett test have showed that the factor analysis is suitable for the data set. It was determined that the items in the scale has clarified 48% of the total variance. With the data acquired as a result of the analyzes, it was determined that the 21 items showed a one-dimensional structure. The Cronbach 's alpha coefficient for the scale was determined as 0.939. The corrected item-total correlation coefficients of the items in the final form of the scale vary between 0.483 and 0.744. As for the factor loading values of the items it differs between 0.38 and 0.41. Since the T value is found to be significant it showed that there were a significant relationships between the observed and latent variables. As a result of the calculations, a valid, reliable and useful measurement tool that can be used in the literature was developed, based on the teacher's assessment it is hoped that the scale will fill the gap in this field.

Keywords: Preschool, Anxiety, Teachers' Assessment

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Introduction

Anxiety disorder is one of the most common disorders in childhood. The prevalence in Preschool period is shown between 2.5-5% (Broeren & Muris, 2008; Rapee, Schniering, Hudson, 2009) and this rate is up to 10% in some sources (Egger & Angold, 2006; Mian, Godoy, Briggs-Gowan & Carter, 2012). There is evidence that this rate reaches 20% as the age increase.

Some anxiety and anxiety situations are seemed to be normal at an early age (Broeren & Muris, 2008). It is known that especially children from a young age often experience certain fears at certain ages (Seven, 2008). For example, fear of unrealistic assets such as ghost it is common at the age of 6 (Seven, 2008). Normal and abnormal anxiety should be differentiated during the developmental process. As a matter of fact, anxiety problems were found to affect the continuity of many different disorders at an older age (Muris & Rachman, 2007). Studies show that some pre-school anxiety disorders continue decisively until adolescence or even adulthood (Costello, Mustillo, Erkanli, Keeler & Angold, 2003).

The anxiety issue has been mostly seen in relation to adults in the past. For this reason, it is appeared that most of the researches are related to anxiety disorders in adults. (Egger & Angold, 2006). In the past few decades more research has been undertaken on the anxiety issue in adolescents and younger children. However, research on anxiety disorder in pre-school and early ages has been very limited (Edwards, Rapee, Kennedy, Spence, 2010). The development rate and changing developmental qualities of children at an early age make it difficult to develop appropriate measurement tools in this period. Young children show symptoms such as anxiety based on different developmental and behavioral disabilities. It appears to be risky to diagnose children in this age (Egger & Angold, 2006; Mian et al., 2012). For example, the level of shyness rises to the highest level in children aged 6-7 years (Seven and İnci, 2016). High level of unusual shyness is noticed to cause reactions such as fear and withdrawal in new and unknown situations (Broeren & Muris, 2008; Heiser, Turner, Beidel, Roberson-Nay, 2009).

Anxiety is associated with developmental characteristics and age characteristics. Anxiety is also a form of reaction related to fear. The fact that emotions develop mostly in the first three years shows the importance of developmental qualities and response styles in anxiety (Seven, 2008). This situation makes it difficult to present common symptoms as it is in adults (Mian et al., 2012).

Observation with parent and teacher's reports were also used together to collect information from children at an early age (Broeren & Muris, 2008; Edwards et al., 2010; Mian et al., 2012). In order to determine anxiety for young children and babies, evaluations were made based on parent's reports. In this way, findings indicating anxiety symptoms in infants aged 1-2 years were discorvered (Egger & Angold, 2006). Spence, Rapee, McDonald & Ingram, (2001), on the other hand based on

parent's reports it was determined that children aged 3 years were more anxious than those aged 4 or 5-years.

Despite the periodic difficulties, many studies pointed out the necessity to detect anxiety in preschool years. (Hirshfeld-Becker & Biederman, 2002). The most important reason for this is that anxiety was found to affect the continuity of many different disorders. Anxiety symptoms in preschool and primary school are related to depression and externalization problems during adolescence (Bittner et al., 2007) can show as example to this condition. The importance of identifying anxiety disorder risk by resarch, as well as the difficulty of identifying those showing criteria for anxiety disorder in preschool period was come up here, Based on this point, Broeren and Muris (2008) reported that risk could be reduced by early prevention and intervention programs. It is understood that scales with large screening qualities are required in preschool period, in order to make determinations that will reduce the risk in the following years.

When related literature is examined, it is shown that some scales have been developed to measure anxiety in preschool period. Child behavior assessment scale (Achenbach, 1991) and strength s and difficulties questionnaire (Goodman, 1997), (Children's Moods, Fears & Worries Questionnaire) (Bayer, Sanson & Hemphill, 2006), (Koala Fear Questionnaire)(Muris, Meesters, Van Den Berg, 2003), are some of them.

The Preschool Anxiety Scale was developed by Spence, Rapee, McDonald and Ingram (2001). With this study, they showed that anxiety symptoms in preschool children are clustered in structures that closely match anxiety disorders as+ defined in DSM. The scale they developed with this aspect is one of the rare scales evaluating different anxiety symptoms in children. It was designed extensively based on parent's reports. This scale does not have a teacher form, On the other hand, there are anxiety scales adapted to Turkish to use in preschool. Behavior assessment List (Yurduşen, Erol, Gençöz, 2013), Strenghts and difficulties questionnaire (Güvenir et al., 2008), Preschool Anxiety Scale (Uğraş, Demiray, Mutluer & Coşkun, 2018) and the Revised Preschool Anxiety Scale Turkish form (Güler, 2016).

It make it possible to get reports of teachers, who are a professional observer, together with parent reports in determining anxiety when children start school, in preschool period. It was understood that there was a need for measurement tools that will allow data collection from different sources in response to the difficulties mentioned above, especially in preschool period. No anxiety scale in preschool children which is discussed from a wide perspective based on the teacher's assessment were found in Turkey, for this reason in this study it was aimed especially, to develop an anxiety scale based on teacher assessment in preschool which is from the theoretical structure of the Preschool Anxiety Scale by (Spence et al., 2001).

Method

Information about the model, universe and sample of the research, data collection techniques and analysis of the data are given in this section.

Model of the Research

A descriptive scanning model was conducted in this research the descriptive scanning method is summarized, the topics as it is in the research studies (Büyüköztürk, Kılıç Çakmak, Erkan Akgün, Karadeniz, Demirel, 2017).This model is commonly used in education. The purpose in the screening models is to describe a situation in the current as is it in the past. A descriptive screening model was conducted in this research to develop the teacher Form of the anxiety scale in Preschool Children.

Sampling

The study group of the research consists of preschool teachers working in public and private schools in Ankara in 2018. The research has two study groups. Within the scope of the research, 250 preschool teachers were first reached, teachers were asked to answer the scale items for children attending their classrooms, and in accordance with the opinions of the teachers, the analysis was carried out. It was found that 44.8% (n=112) of the teachers in the first group of the study served in the official independent kindergarten, 30.4% (n=76) in primary/secondary school kindergarten, and 24.8% (n=62) in private kindergarten. All teachers (100% n=250) were found to be women. It was found that the age of the teachers who make up the first working group varies between 21 and 52, and the average age of teachers is 33.00 (±7.32). It was determined that 21.6% (n = 54) of the pre-school teachers are high school graduate, 15.6 (n = 39) associate degree graduates, 71.2% (n = 178) bachelor degree, and 4.8% (n = 12) have a master degree. Distribution of teachers according to their ranking was also examined, and it was found to have 21.6% (n = 54) of 0-5 years, 47.2% (n = 118) of 6-10 years, 18.4% (n = 46) 11-15 years, 3.2% (n = 8) 16-20, 9.6% (n = 24) 21 years ranking and more. An exploratory analyses were conducted with the data obtained in the first study group. Afterwards a new study group was created for confirmatory studies and 260 pre-school teachers were reached.

It was determined that 48.5% (n=126) of the teachers forming the second study group work at official independent kindergarten, 28.8% (n=75 primary/secondary school kindergarten and 22.7% (n=59) at private kindergarten. All of the teachers (100%; 260) in the second study group are women. The preschool teachers' ages differ between 22 and 52 and the average age, was determined to be 33,64. (±7,01). It was determined that 8.8 (N=23) of the teachers who made up the second study group graduated from high school, 10.4% (n=27) graduated from associate degree, 72.7% (N=189) graduated from Bachelor's degree, 8.1% (N=21) graduated from Master's degree. İt was determined that the second study group of the research, 19.2% (n = 50), 0-5 years, 46.2% (n = 120), 6-10 years, 19.6% (n = 51) of 11- 15 years, 8.8% (n = 23) 16-20, and 6.2% (n = 16) 21 years or more working

time was found. A total of 1495 children were observed by the teachers. 9.8% (n = 147) of the children aged 3 years, 27.8% (n = 416) aged 4 years old, 57.9% (n = 866) aged 5 years, and 4.4% (n = 66) are in the age group of 6. 50.4% (n = 754) of the children are girls and 49.6% (n = 741) are boys.

Data Collection

The purpose of this study was to develop a valid, reliable and useful measurement tool Teacher Form of the anxiety scale in preschool student. firstly, the scale items designed to determine the anxiety levels of preschool children developed by (Spence and others 2001) were examined. The scale was created as parent form. Afterward, the items in the Spence Children's Anxiety study, which were translated into 33 different languages, were examined (http://scaswebsite.com). It was determined that the scale items occur with the anxiety literature's theories. It was anticipated that there were 22 items collected in five dimensions based on expert's opinion and child and parent form in the scale. However, the scale structure was not examined with the data set since no pre-application studies were conducted. Accordingly, permissions were obtained first, afterward the scale items were translated into Turkish by experts and necessary corrections were made.

The directive including the purpose of the scale, the number of items in the scale, the way the items were answered, the estimated time to answer the scale, the identity of the person who made the measurement was prepared and the draft of the scale form was created by arranging the items. After that at universities, opinions of 6 faculty members working in the field of preschool education regarding the items were taken. Adjustments were made in the clarity of the items, equability of the coverage in accordance with the opinion of the expert. Three preschool teachers were asked to answer the items scale by voice, and it was found that there were no items that the teachers misunderstand, have difficulty to understand or hesitate to answer. After making the necessary corrections on the items, implementations were made and the results were analyzed.

Data Analysis

In the analysis process of the data at first exploratory factor analysis (EDA) was done to determine the construct validity of the scale in line with the answers obtained from the first study group. Exploratory data analysis (EDA) aims to reach a few definable meaningful structures from a large number of variables, these variables can explain together (Büyüköztürk, 2008). After determining the scale structure with exploratory data analysis (EDA), Cronbach 's alpha reliability coefficients were calculated with the item-total corrected correlation coefficients.

After the scale's structure was determined with the exploratory data analysis (EDA), the scale was applied to the second study group, and the confirmatory factor analysis was calculated with the data of the second study group. EDA is a technique that analyses the number of factors and the indicators related to the factors which are previously determined. And it used to test the accuracy of

the previously determined factor structure as well (Kline, 2011). Accordingly, whether the scale structure determined by EDA was confirmed in another study group it was aimed to reveal the scale structure clearly in the scope of cross validity study.

It is determined that there is no missing and incorrect data in the data related to both study groups. An extreme value analysis was conducted and it was determined that the data were normally distributed. Results were placed in table and interpreted.

Results

In this section, information on the analysis of the data obtained from the first working group and the second working group is included. KMO and Bartlett tests were carried out to determine whether the data of the 250 pre-school teachers who constitute the first study group of the research are suitable for factor analysis. According to the teachers' answers, the value of 0,906 KMO was calculated.

Kaiser it was determined that the value is excellent as it approaches to 1, Unacceptable below 0.50, (Excellent at 0.90s, very good at 0.80s, average at 0.70 and 0.60, bad at 0.50) (Tavşancıl, 2002).

0.906 KMO value; shows that the data set is perfect for factor analysis. 0.906 KMO value calculated according to the teacher' s answers shows that the data set is perfect for factor analysis, as for the Bartlett test, it was found to be significant at the end of the analysis ($p < 0.01$). The high correlation between the variables shows that the data set is suitable for factor analysis (Kalaycı, 2009).

In the first exploratory factor analysis done with the 22 items in the scale, it was determined that there were three factor with an eigenvalue greater than 1. However, when the scree plot in the Figure is examined, it is seen that there is only one factor dominating the variance explained with its eigenvalue. Still, when the scree plot in the Figure 1 is examined, it is shown that there is only one dominant factor form the others, the variance explained with the eigenvalue.

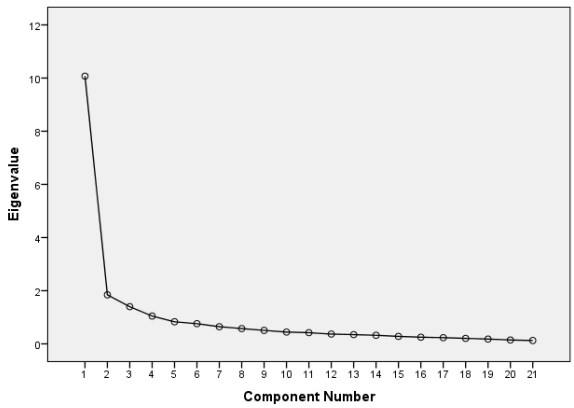

Figure 1. Screen Plot Relating to the Factors of the Eigenvalue

After determining the factor number of the scale, factor analysis was repeated and item - loading values of the single factor structure were examined, Whether an item in the scale is included in a factor to be defined in the exploratory factor analysis depends on the high loading value indicating its relationship with that factor.

Items that give a high loading value with a factor is called items that measure the structure defined by the factor. The loading value of the item factor is desired to be 0.45 and higher (Tabachnick & Fidell, 2012). Accordingly, an item which the factor loading is under (0.45) (item8) was removed from the scale. Calculated factor loading values related to the 21 unique -factor item scale structure are presented in the Table 1.

Table 1. Factor Loading Values of the Scale Items

Items	Factor Loading Value	Items	Factor Loading Value
I11	0.800	I3	0.698
I13	0.787	I18	0.694
I5	0.777	I17	0.689
I21	0.776	I1	0.669
I20	0.749	I16	0.639
I14	0.730	I6	0.620
I2	0.723	I4	0.617
I10	0.721	I7	0.607
I15	0.717	I12	0.542
I19	0.712	I9	0.477
I22	0.703		

As it shown in the Table, the factor loading values of the items in the scale differ between 0.477 and 0.800. In other words, the items on the scale bring a moderate and high level of clarity to the anxiety levels of preschool children. İt was determined that the items in the scale clarified 48 of the total variance. (Büyüköztürk, 2008) expressed that the variance explained in unique factor scales which is 30% and more would be sufficient. In addition, the variance explained in multi-factor patterns between 40 and 60 can be considered to be sufficient (Çokluk et al. 2010). Accordingly it is shown the variance explained by the scale therefore the validity of the structure can be acceptable. Corrected item-total correlation coefficients of the items in the scale were calculated and the results are presented in the Table.

Table 2. Calculated, Corrected Item-Total Correlation Coefficients Related to the Scale Items.

Items	Correlation	Items	Correlation
I1	0.604	I13	0.744
I2	0.682	I14	0.677
I3	0.671	I15	0.704
I4	0.553	I16	0.627
I5	0.721	I17	0.626
I6	0.607	I18	0.635
I7	0.589	I19	0.658
I9	0.483	I20	0.675
I10	0.691	I21	0.715
I11	0.743	I22	0.631
I12	0.537		

The corrected item-total correlation coefficients of the items in the final form of the Teacher Form Anxiety Scale in Preschool Children differ between 0.487 and 0.744. Büyüköztürk (2008) stated that the item-total correlations should be at least 0.30. In this context, the items in the scale are in medium and high level relationship with the anxiety latent variable, It was determined that it brings a meaningful explanation to the scale. In order to determine the reliability of the responses given by preschool teachers to the scale items, The Cronbach's alpha coefficient, which is one of the internal consistency coefficients, was calculated, it was found to be 0,938. (Kalaycı, 2009) specified that the scale is quite reliable when the alpha's coefficient is 0.80 and above.

Findings of the Data from the Second Study Group

The 21-item scale collected in one dimension in the teacher form of anxiety scale in preschool children was reapplied to 260 preschool teachers. Confirmatory factor analysis was performed according to the data of the second study group.

The path diagram created as a result of the analysis is presented in the Figure 2.

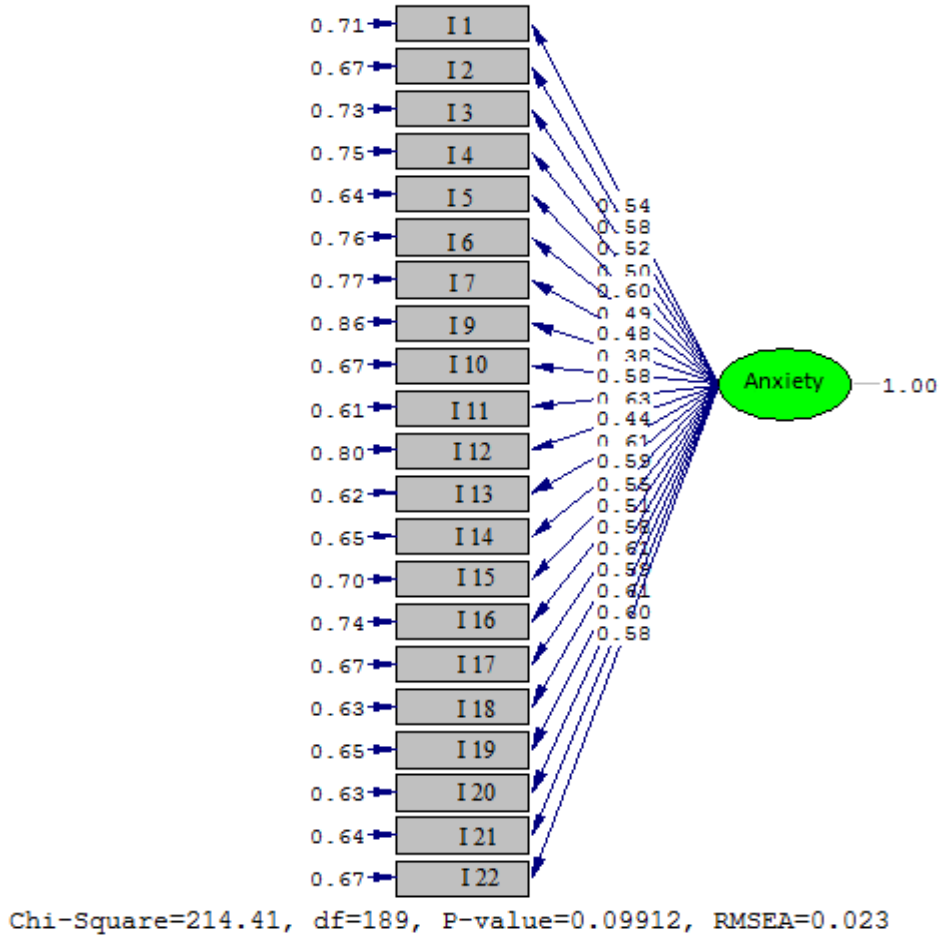

Figure 2. Standardized Coefficients of the Items in the Scale (Factor Loading Values)

As a result of the confirmatory factor analysis (CFA) it was determined that all the items in the Teacher Form of the Anxiety Scale in Preschool are a significant explanatory of the latent variable, and the t value was significant as well.

Coefficient results calculated as a result of the confirmatory factor analysis (CFA) are presented in the Table 3

Table 3. Factor Loading Values of the Items in the Scale, Standardized Regression Coefficient and the t Value.

Items	Standardized regression coefficient (λ)	Regression coefficients (R^2)	t value
I1	0.54	0.29	8.99
I2	0.58	0.33	9.75
I3	0.52	0.27	8.53
I4	0.50	0.25	8.32
I5	0.60	0.36	10.17
I6	0.49	0.24	8.07
I7	0.48	0.23	7.81
I8	0.38	0.14	6.06
I9	0.58	0.33	9.76
I10	0.63	0.39	10.77
I11	0.44	0.20	7.15
I12	0.61	0.38	10.49
I13	0.59	0.35	10.08
I14	0.55	0.30	9.19
I15	0.51	0.26	8.38
I16	0.58	0.33	9.72
I17	0.61	0.38	10.48
I18	0.59	0.35	10.08
I19	0.61	0.37	10.47
I20	0.60	0.36	10.25
I21	0.58	0.33	9.72

Standardized factor loads (λ = Lambda), this value is high since a unit change in the latent variable indicates how much variation it leads to the observed variable and shows a strong relationship between the latent and observed variable. Standardized regression coefficients (R2) values show how much of the explained variance in the observed variable is due to the latent variable. The Factor load values of the items in the scale vary between 0.38 and 0.41.the fact the t value is Significant show that there is significant relationships between the observed and latent variables (Çokluk, Şekercioğlu & Büyüköztürk, 2010). The factor loading values of the items in the scale differ between 0.38 and 0.41 and the Standardized regression coefficients differ between 0.14 and 0.39 as well. Calculated t values for all items are significant. Accordingly, the items included in the Anxiety Scale Teacher Form in Preschool Children explain the anxiety levels of preschool children at medium and high levels.

After the model calculation phase, it was started to evaluate the model-data fit. The calculated model-data fit indices are presented in Table 4.

Table 4. Calculated Fit Indices According to the Scale

Compliance criteria	Excellent compliance	Acceptable compliance	Scale values
X^2/sd	$0 \leq {}^2/sd \leq 4$	$0 \leq {}^2/sd \leq 5$	1,13
RMSEA	$0 \leq RMSEA \leq .05$	$0.05 < RMSEA \leq 0.08$	0.023
NFI	$0.95 \leq NFI \leq 1.00$	$0.90 \leq NFI < 0.95$	0.96
NNFI	$0.97 \leq NNFI \leq 1.00$	$0.95 \leq NNFI < 0.97$	0.99
CFI	$0.95 \leq CFI \leq 1.00$	$0.90 \leq CFI < 0.95$	0.99
GFI	$0.95 \leq GFI \leq 1.00$	$0.90 \leq GFI < 0.95$	0.93

Source (Schermelleh-Engel, Moosbrugger and Müller, 2003)

In line with the information in the Table, the 21 items in the Anxiety Scale in Preschool Children-Teacher Form show a one-dimensional structure with the data obtained from the second study group.

In order to determine the reliability of the answers given to the scale items of the second study group (n = 260), cronbach's alpha Coefficient was calculated as 0.939. In other words, it was determined that preschool teachers in the second study group answered the scale items at a reliable level.

Discussion, Conclusion and Recommendations

The excellent score in the Kasier's test is 1, Therefore, the value gets closer to excellent as it approaches 1. On the other hand, if a value less than 0.50 is taken, this is considered to be unacceptable (Tavşancıl, 2002).The 0,906 KMO value calculated according to the teachers' answers shows that the data set is perfect for factor the analysis. As for the Bartlett test, it was found to be significant at the end of the analysis ($p < 0.01$). The high correlation between the variables shows that the data set is suitable for the factor analysis (Kalaycı, 2009).

Once the factor number of the scale is determined, the factor analysis was repeated, the item factor loading values related to single factor structure were examined. It is important that the loading value is high in the exploratory factor analysis. Items that give a high loading value with a factor are called items that measure the structure defined by the factor. The item factor loading value is required to be 0.45 and higher (Tabachnick & Fidell, 2012). Accordingly, an item which the factor loading value is under (0.45) was removed from the scale.

It was determined that the items in the scale clarified 48 of the total variance. Büyüköztürk, (2008), takes 30% as a criterion when a scale is accepted as a single factor. However, the variance between 40% and 60% was considered acceptable in the acceptance of a scale with multiple factors (Çokluk and others, 2010). Accordingly, it is shown that the variance explained by the scale and therefore the validity of the structure is acceptable. The corrected item-total correlation coefficients of the items in the final form of the Teacher Form of the anxiety scale in preschool children vary between 0.483 and 0.744.

Büyüköztürk (2008) states that the item-total correlations should be at least 0.30. In this context, it has been determined that the items in the scale have a moderate and high level relationship with anxiety as a latent variable, and bring a meaningful explanation to the scale. In order to determine the reliability of the test, the Cronbach's alpha coefficient was calculated from the internal consistency coefficient and was found to be 0.938. (Kalaycı, 2009) states that the scale is quite reliable when the alpha coefficient is 0.80 and above. In this context, it was determined that the preschool teachers in the first study group answered the scale items at a very reliable level.

The factor loading values of the items in the scale vary between 0.38 and 0.41. The fact that the T value is significant, indicates that there are significant relationships between the observed and latent variables (Çokluk, Şekercioğlu & Büyüköztürk, 2010).

In this research, it was aimed to develop an anxiety scale from the theoretical structure of the Preschool Anxiety Scale by Spence, Rapee, McDonald & Ingram, (2001) based on teacher's assessment. The research has two study groups. Firstly, 250 pre-school teachers and secondly, 260 pre-school teachers were reached within the scope of the research. Teachers were asked to answer the scale items for children attending their classes. Analyses were done in line with the opinions of the teachers. After the analyses conducted in accord with the data obtained from the first and second study groups. It was determined that the 21 items including in teacher form of the Preschool Anxiety Scale- and the items were collected in a unique dimension. The Scope validity was determined based on the expert's opinion of the scale. Construct validity was also determined based on AFA and CFA. This finding shows that the teacher form of the Anxiety Scale in Preschool Children differs from the preschool anxiety scales in terms of structure based on parent reports. As a matter of fact, the Preschool anxiety scale (Spence et al., 2001) shows a 5-factor structure and Revised Preschool Anxiety Scale (Edwards et al., 2010) with a 4-factor structure. With this aspect, it is understood that the scale will generally detect the anxiety tendency in preschool.

On the other hand, corrected item-total correlations and Cronbach's alpha reliability coefficients were calculated in order to determine the reliability of the answers given to the scale items.

As a result of the calculations, a valid, reliable and useful measurement tool has been developed that can be used in the literature. The most important result of the research is the development of a scale based on teacher reports for the first time other than parent reports and child observations in measuring anxiety in preschool period. A new scale based on teacher evaluation has been added to the literature. There are several limitations in parents' observations about anxiety. Some emotional obstacles interfere with the observations of the parents. In this aspect this situation has been described as a limitation in many anxiety-based studies on preschool (Güler, 2016; Uğraş, Demiray, Mutluer, Coşkun, 2018). There is evidence that anxious parents transfer this anxiety to their children.

Therefore, it is understood that a more professional and neutral perspective is needed in the assessment of anxiety. Preschool teachers have educational qualifications to evaluate in a more professionally way. It is considered that this aspect of this scale will contribute to the literature.

There are several limitations in the study. The research was conducted in Ankara province and can adapt to Turkey in general. All of the teachers in the sample are women. The absence of male teachers in the sample is an important limitation of the research. On the other hand, the genders of the children are out of the scope of the research. It is recommended in future research to conduct new studies based on teacher assessment with wider range and different dimensions.

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