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RELIABILITY AND VALIDITY STUDY OF THE SELF-CONFIDENCE SCALE

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Abstract

Each person can have confidence in certain areas. If a valid and reliable measurement tool is prepared and the self-confidence of the individual is determined, some problems encountered in the training of the person can be solved. Thus, some problems related to self-confidence, which is an important variant of the education system, can be solved; the quality of education can be increased. What is the level of validity and reliability of the self-confidence scale in the research? Search for an answer to the question. The quantitative research method was used in this study. In data collection, 302 students were identified using a stratified sample and these eleven-question measurement tools were given to them. The reliability of Cronbach's Alpha of the eleven substances was calculated and the value of .816 was found. Reliability was calculated on the data and then factor analysis was performed. A Kaiser-Meyer-Olkin (KMO) analysis was conducted to determine the sample size for this. The value obtained by the Kaiser Meyer- Olkin test for the sample size is .794. Bartlett's test was used to determine the factorability capacity. Then, using the varimax rotation technique, it was determined how many of the basic components and variances were explained. According to the results of factor analysis, variables can be collected in three dimensions, as it explains 53,230 of the scale which is studied on. Looking at the Table of Total Variance Explained, it may not be possible to achieve a healthy decision without developing the scale. Therefore, the factor structure of the scale has been studied. The Scree Plot

graph was discussed. Because of the large difference in the first three values, they were considered factors. The differences between the others because it is small and close to each other, were not considered a factor. The scale was finalized.

***Keywords**: Self-confidence, self-confidence scale, reliability, validity*

Introduction

Confidence can also be considered self-confidence. This concept has been used frequently in psychology since the second half of the 20th century. Bandura (1977) first used the concept of self-efficacy. According to Bandura, self-efficacy can be considered "belief, self-confidence, ability, power, and determination that a person will do a certain activity successfully" (Bandura, 1977). Some thinkers have divided the concept of self-confidence into self-efficacy and perceived efficacy (Bandura, 1997; Harter, 1982). Whichever way you think about it, self-esteem can involve many dimensions.

These can be collected in the dimensions of self-satisfaction and self-esteem, or they can be named " Start, "Don't Give Up" and "Persistence" (Yıldırım & İlhan, 2010). In another categorization, his past experiences are grouped into four categories as observed experiences of others, persuasion, and affective experiences (Cassidy & Eachus, 2002). In this regard, employees divide their self-confidence into two internal and external. Self-confidence is the state of being at peace with ourselves, that is, being satisfied with ourselves; external internal trust may be the trust we give to the outside (Özbey, 2004).

Self-efficacy beliefs can also include judgments about whether a person can achieve this job with his/her talent (Zimmerman, 1995). If a person willingly chooses the field he decides to work in, he can work with all his might be successful in this field. He can spend his material and spiritual strength to solve the problem. He can devote a large portion of his time to this job; because he has chosen this field willingly, and his motivation level toward the field is high. In this context, one's self-efficacy belief can only be related to a certain area; it may not contain all fields. For example, a person with high self-efficacy in solving mathematical problems may have a very low self-efficacy in motor repair. In some matters, he may even be prevented, it afraid of dealing with that area.

Literature

Some other studies in this field are summarized below:

Significant relationships between self-confidence and being successful in certain areas have been identified through research (Aşkar, & Umay, 2001; Günalp, 2007; Çetin, 2008; İpek, & Acuner 2011). High self-confident people can be much more assertive, independent, with high attitudes and interests, successful and creative. This is an expected result; because a person who has self-confidence and says that he will be successful in this field knows and uses his abilities and power correctly, can solve the problem he faces and eventually overcome it. For this, the self-confidence scale can also allow a person to know himself. He can know his strengths and weaknesses. He can strengthen himself by participating in activities that will eliminate his weaknesses.

The adaptation of Self-Confidence in Sports Scale to Turkish Population, Miçooğulları, and Kirazcı (2010), Vealey et al. (1998) out of 43 statements and nine sub-dimensions (Specialization, Presentation of Skills, Physical and Mental Preparation, Physical Self Presentation, Social Support, Coach/ Coach Leadership), Empathy Experience, Environmental Comfort, Situational Suitability) and the Statefulness and Continuous Sportive Confidence scale (WHSGO) were used in the field of sports sciences. The analysis revealed that the Self-Confidence in Sports scale is a valid and reliable scale for measuring and evaluating the sources of self-confidence in athletes.

In the study on "Self-confidence and religious attitude" conducted by Sarıçam and Güven (2012), the Self-Confidence Scale (Akın, 2007) and the ReligiousAttitude Scale (Ok, 2011) were used together. According to the findings of the study, it was observed that there were statistically significant relationships between internal self-confidence and external self-confidence and religious attitude, and the religious attitude scores of the students with high self-confidence were also high. Because of the research, it was found that self-confidence is an important predictor of religious attitude.

Hill, Mann, et al. (1987) also found a significant and positive relationship between students' previous computer experience and computer self-efficacy beliefs, because they researched 133 undergraduate female students. Research conducted by Aşkar and Umay (2001) also supports this result. Students' experience and less computer use also reduce their self-efficacy levels. Significant relationships were found in the study named "The Relationship Between Computer Use Self-Efficacy Beliefs and Demographic

Characteristics of Computer and Instructional Technology Education (BOTE-CEIT) Students." (Akkoyunlu, & Orhan, 2003).

Those working on self-confidence have prepared many scales consisting of various categories and questions. a self-confidence scale was developed by Akın (2007), consisting of external and internal self-confidence categories and 33 items, whose validity and reliability are calculated. The internal and external reliability coefficients of my scale were found to be high. It has been argued that the scale can be used in education and psychology.

The self-validity scale, prepared by Yıldırım and İlhan (2010), is a Likert-type scale consisting of three sub-categories and 17 items. -confidence can be separated as internal and external self-confidence; internal self-confidence is grouped as, self-love, communication skills, self-knowledge, and self-expression; he grouped external self-confidence under the subheadings of setting clear goals, self-assertion, positive thinking, and controlling his emotions.

Characteristics observed in children with poor self-esteem: "Shy and withdrawn, aggressive, unusually quiet, having nervous breakdowns at regular intervals, reluctant to engage in new activities, bully, clinging to his mother, father, or both, regularly running away from school, having trouble socializing with other children, does not cooperate when asked for something, behave quite timid when confronted with new situations, often wants to reassure and get help, who is immediately hurt by the positive correction of his behavior, constantly asking whether he is loved or not, his habit of seeing himself inferior, his parents' pleasant It has been claimed that he neglects his lessons even if his parent will not tolerate them (Yıldırım ve İlhan, 2010).

Sarıçam, H., Akın, A., Akın, Ü. & Çardak, M. (2013) adapted the Perceived Social Competence Scale developed by Anderson-Butcher, Iachini, and Amorose (2007) into Turkish and performed its validity and reliability analysis. According to these results, they emphasized that the Perceived Social Competence Scale is a valid and reliable measurement tool that can be used in the fields of education, psychology, and guidance. Therefore, the Perceived Social Competence Scale, which was translated into Turkish and adapted to Turkish culture, is thought to have significant contributions to evaluating and perceiving multidimensional communication skills.

Cantürk-Günhan and Başer (2007) developed a scale to determine students' self-efficacy beliefs toward geometry. A validity and reliability study of the developed scale

was conducted. At the end of the research, it was found that the validity and reliability (α = 0.90) of the scale developed for determining the students' self-efficacy toward geometry was high.

Many self-confidence scales have also been developed abroad. Grundy prepared a five-item self-confidence scale for nurses (Grundy, 1993). Shrouger and Schohn developed a self-confidence scale. Harvey and McMurray (1994) prepared a two-dimensional self-confidence scale. Uysal ve Gürol (2018) prepared, to develop the "Self-confidence toward Teaching" Scale that can be used to determine the self-confidence of social studies Teachers. The scale was fed to 269 teachers to determine the reliability and the construct validity of the scale.

A study was conducted by Tatlı, Akbulut, and Altınışık to determine the self-confidence of fourth-grade students at Trabzon Technical University Fatih Education Faculty in 2015–2016. A single group experimental design was used in this study. The data used in the study were gathered through an opinion survey on the effectiveness of the use of Web 2.0 technologies for education, and the technological pedagogical content knowledge self-confidence (TPCKSC) scale. At the end of the study, a significant increase in the TPACK self-confidence level of the pre-service teacher was found ($t_{(45)=}4$, 24, $p<0.05$). The pre-service teachers who participated in the research stated that they prefer Powtoon, quiz maker and draw max applications and they intend to use them in their professional life (Tatlı, Akbulut, & Altınışık, 2016).

Powers and Reeve conducted a study in the United States in 2018 to describe the perceptions, self-confidence and family invitations of 395 intensive care nurses during resuscitation and to evaluate the differences according to nurse factors. The Family Presence Risk-Benefit Scale and the Family Presence Self-Confidence Scale were applied to the participants to collect personal, professional and workplace information, and the frequency of inviting family members to the room during the resuscitation was collected by self-report. Nurses who worked in a facility with a family presence policy during resuscitation, were trained in this field, and had experience in a clinical setting, were more likely to have positive perceptions and self-confidence, and to invite family members to the hospital (Powers & Reeve, 2018).

Surya, Putri and Mukhtar. The study of improvıng the mathematical problem-solving ability and self-confidence of high school students through a contextual learning model in 2017 is semi-experimental research. It was conducted to search for answers to

4 sub-problems related to the mathematics course by 180 students. Because of the study, it was seen that the students' ability to solve mathematical problems taught with the contextual learning model was higher than that of students taught through the presentation. The self-confidence of the students taught with the contextual learning model was found to be higher than the students taught with the presentation. To develop students' mathematical problem-solving skills, the interaction between the learning model and students' early math skills was revealed. An interaction was found between the learning model and students' early math skills to improve students' self-confidence. (Surya, Putri, & Mukhtar, 2017).

The impact of Facebook Addiction and self-esteem on students' academic performance: A multi-group analysis study by Busalim, Masrom, Binti Wan Zakaria in 2019 was conducted on 240 students at a state university in Malaysia. The results of the study revealed that addicted students were statistically different from non-addicted students in terms of self-esteem. Additionally, the results found that Facebook addiction had a significant effect on students' academic performance for both samples, and the frequency of Facebook use was also a positive predictor of Facebook addiction (Busalim, Masrom, Binti Wan Zakaria &, 2019).

Technological pedagogical content knowledge self-confidence of prospective pre-school teachers for Science Education during the COVID-19 period: A Structural Equational Modeling study was conducted by Gozum and Demir in 2021. This research determined the relationship between pre-school teacher candidates' Technological Pedagogical Content Knowledge (TPACK) self-confidence for Science Education and TPACK subscales. The study group of the research consists of 280 pre-school teacher candidates studying at the education faculties of two different state universities located in the eastern part of Turkey. Data were collected with the “Technological Pedagogical Content Knowledge Self-Confidence Scale” developed by Graham, Burgoyne, Cantrell, Smith, and Harris (2009) and adapted into Turkish by Timur and Taşar (2011). It has been shown that the TPACK variable is directly and positively affected by the Technological Pedagogical Knowledge (TPK) and Technological Content Knowledge (TCK) variables. The TPK and TCK variables were directly and positively affected by the Technological Knowledge (TK) variable (Gozum, Demir, 2021)

A study on self-esteem and self-efficacy was conducted among 329 teachers in China in 2019 by Fu, Tang, Xue, Li, and Shan. It showed that emotional exhaustion and depersonalization of Chinese private teachers were moderate and personal achievement was low.

The objective of the Study

Each person can have confidence in certain areas. If a valid and reliable measurement tool is prepared and the self-confidence of the individual is determined, some problems encountered in the training of the person can be solved. In Turkish society, if the resources and level of self-reliance of the people are determined, scientific proposals can be made to make them more consistent. Thus, some problems related to self-confidence, which is an important variant of the education system, can be solved; the quality of education can be increased.

Problem Statement

What is the level of validity and reliability of the Self-confidence scale?

Sub Problems

What is the level of validity of the Self-confidence scale?

What is the level of reliability of the Self-confidence scale?

Method

A survey model of quantitative research methods was used in this study.

Data Collection process

Before these domestic and foreign sources and studies based on self-confidence are read and necessary notes were taken. Using these grades and university lecturers, opinions about the basic and compulsory characteristics of self-confidence and their reflection on the measurement were determined. Regarding the appropriateness of these findings, two opinions were taken from seven faculty members at three-month intervals. Whether a significant relationship between these views was tested with the Pearson Product Moment Correlation Coefficient technique. After this step, the basic and necessary characteristics of self-confidence were determined. After these processes, a table of tokens was prepared, and the observable and measurable properties (behaviors) of these values were determined. The Pearson Product Moment Correlation Coefficient

was tested for the relationship between the opinions of these seven experts, which were taken three months apart (Sönmez, & Alacapınar, 2016).

Twenty-two questions are prepared at first, to measure 3 basic control specifications of behavior related to the value of self-confidence in the indicator chart. They were presented to the experts. Because of feedback received from the experts, the 22 questions are reduced to 18 questions at first, then 14 and 11 later on. It is assumed that there's a problem with each specification of self-confidence.

Data Analysis

151 undergraduate students who are successful and enterprising and 151 undergraduate students with low self-esteem shy, quiet, making 302 students, who are studying in faculties of education in Turkey, are identified stratified sampling, who have been given an eleven-question assessment tool.

The students were given a questionnaire measuring 11 questions. The data were collected. Reliability was calculated on the data and then factor analysis was performed. A Kaiser-Meyer-Olkin (KMO) analysis was conducted to determine the sample size for this. Bartlett's test was used to determine the factorability capacity. Then, using the varimax rotation technique, it was determined how many of the basic components and variances were explained. According to the results of this analysis, the scale was given the final shape (Sönmez & Alacapınar, 2016).

Expert Opinions Regarding the Quality of Self-Confidence and Scope Validity

Two opinions were received from seven faculty members working at universities in the fields of psychology and psychological counseling and guidance at intervals of three months, are given on the appropriateness of answers on self-confidence. The Pearson Product Moment Correlation technique is used to test if there is a significant relationship between these opinions. The results are presented in Table I.

Table 1. *Pearson Product Moment Correlation Coefficient for Expert Opinion Regarding the Use and Presence*

	First application	The second application
The first application of Pearson Correlation	1	.86**
Sig. (2-tailed)		.000
N	7	7
Second application Pearson Correlation	.86**	1
Sig. (2-tailed)	.000	
N	7	7

Pearson The correlation coefficient between views on the fundamentals of the essence of teaching multiplication of seven experts based on these findings is .86. This coefficient suggests a significant positive for high levels at .001 level. Based on these data, the properties determined in the essence of teaching are conformable. This relationship may be a testament to the validity of the measurement tool's scope.

Reliability of Measurement Tool

Cronbach's Alpha was used to calculate the reliability of the measurement instrument with about 302 students and the findings are presented in Table 2.

Table 2**:** *Findings Related to Reliability of the Assessment Tool*

Cronbach Alpha	Number of Items
.816	11

According to Table 2, data obtained which consisted of 11 substances and applied to 302 students, is analyzed by Cronbach's Alpha. Cronbach's alpha coefficient was .816 for thirteen substances. The reliability of the test, following these findings, can be said to be very high.

Exploratory Factor Analysis

Table 3 shows the adequacy of the sample size determined by exploratory factor analysis.

Table 3. Exploratory factor analysis KMO and Bartlett's Test results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		,794
Bartlett's Test of Sphericity	Approx. Chi-Square	506,635
	df	55
	Sig.	,000

Sample sizes before the measuring tool according to the findings in Table 3 were polled by exploratory factor analysis. The value obtained by the Kaiser Meyer- Olkin test for the sample size is .794. This value may indicate that the sample size was excellent. In this condition, the sample size is suitable for the factor analysis. The first condition is provided. After this, in the second step, it is determined if there is a significant value of Bartlett's Test of Sphericity. In the above data, this condition was fulfilled; because this value of 506,635 is greater than the one in the table. Factor analysis was performed after these two conditions were met.

Factor Analysis

Data on the variance ratio with the description of each variable is a common factor presented in Table 4.

Table 4. Total Variances Explained

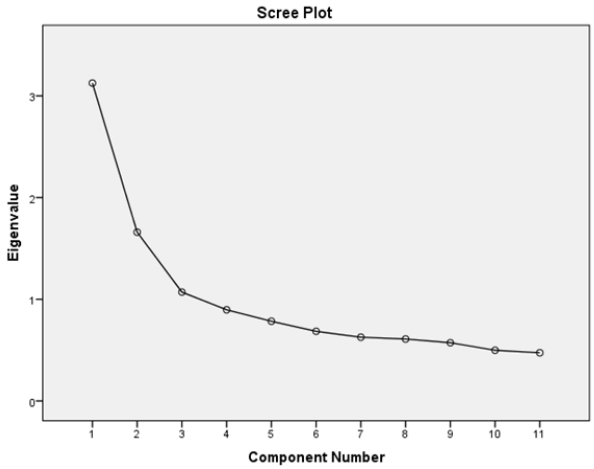
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	3,125	28,413	28,413	3,125	28,413	28,413
2	1,660	15,087	43,500	1,660	15,087	43,500
3	1,070	9,731	53,230	1,070	9,731	53,230
4	,896	8,147	61,378			
5	,784	7,125	68,502			
6	,685	6,223	74,726			
7	,627	5,699	80,424			
8	,609	5,534	85,958			
9	,573	5,206	91,164			
10	,0498	4,530	95,694			
11	,474	4,306	100,000			

Extraction Method: Principal Component Analysis.

While determining the scale of the determining factor number, the self-value of a lower dimension in factor analysis must be at least one or higher and accounts for 5% of the variance of the least explanation. The first variable to the value of the total size of the table is 3,125 and explains at least 28,413; the second variable to the value of the total size of the table is 1,660 and explains at least 15,087; the third variable to the value of the total size of the table is 1,070 and explains at least 9,731. However, as the value of the other variables was less than one, they should be examined as a factor. Here, variables can be grouped into a single instead of 3 subdimensions; because the total variance being worked on this scale is explained as 53,230 of it. The total variance of the scale should generally be above 75%. According to some, it is enough to be accepted for 52% (Stevens, 1996; Henson & Roberts, 2006). The variance explained by the scale must be greater than the variance it cannot explain and is accepted as a basic principle. Therefore, it is expected to show a specially high.

By looking at the table of Total Variance Explained, scale development may not reach a healthy decision. Therefore, the scale factor structure was examined and Screen Plot (Figure 1). the chart is discussed. It viewed the size of the difference between the table points. The above factors are the biggest difference between the first three points, while others are small and very close together. Because of the large difference in the first three values, four values were considered as factors. The differences between the others because it is small and close to each other, were not a factor.

Figure 1. Scree Plot



After this process, the load factor of the substance and the distribution of substances in the factors were examined. Component Matrix table was addressed to it. The table is presented below.

Tablo 5. Component Matrix

	Component		
	1	2	3
VAR00001	,695		
VAR00002	,529		
VAR00003	,546		
VAR00004	,636		
VAR00005	,605	,583	
VAR00006	,654		
VAR00007	,-570	,523	
VAR00008	,565		
VAR00009	-,469	,607	
VAR00010	-,516	,445	
VAR00011			,905

Extraction Method: Principal Component Analysis.

a.3 components extracted

Article factor loadings of each item in the component matrix table are shown. There is no factor below.30 According to these data. Thereafter, was examined whether the comorbid factors. With the difference between the three factors, none of the collected materials under a load factor was less than.10. So there is no comorbid substance. This scale can be said to consist of four dimensions. Here, the converting of the rotation is mandatory. Rotation *Components Matrix* conversion results are presented in Table 6.

Tablo 6. Rotated Component Matrix

	Component		
	1	2	3
VAR00001	,681		
VAR00002	,605		
VAR00003	,660		
VAR00004	,666		
VAR00005		,668	
VAR00006	,711		
VAR00007		,743	
VAR00008	,601		
VAR00009		,777	
VAR00010		,624	
VAR00011			,932

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization

According to this table 1, 2, 3, 4, 6 and 8th articles are first; 5, 7, 9,10 articles are second; 11 article is third in grouping factors. No material has been removed from the test for whether comorbid. The validity and reliability of the determined values of self-confidence given the scale may consist of eleven substances.

Discussions and Recommendations

This research aims to determine the value of self-confidence by the people scientifically and to present it to the users by preparing a measuring instrument with high reliability and validity that the researchers can use. The necessary procedures for this have been scientifically determined. Then, according to this process, necessary work was done.

While preparing the scale, basic sources about the value given to the self-confidence were read. The basic characteristics of these values were determined and opinions from seven experts were obtained. Pearson Moments Multiplication Correlation Coefficient is used to calculate the relationship between the views of the experts. This relationship was .86. The extent of coverage of the measuring tool being higher than .80 can be regarded as a desired basic feature in general (Sönmez

& Alacapınar, 2016). Based on these findings, the coverage of the measurement tool is high.

Stratified sampling was used to determine 302 students, who were undergraduates studying in education faculties in Turkey 151 of them were successful, assertive, and sociable and 151 of them were timid, quiet, and unsociable. The students were given a questionnaire measuring 11 questions. The data were collected. Reliability was calculated on the data and then factor analysis was performed. A Kaiser-Meyer-Olkin (KMO) analysis was conducted to determine the sample size for this. Bartlett's test was used to determine the factorability capacity. Then, using the varimax rotation technique, it was determined how many of the basic components and variances were explained. According to the results of this analysis, the scale was given the final shape (Büyüköztürk, 2012; Sönmez & Alacapınar, 2016).

Reliability is also an important basic feature of measurement tools. For this, an indication chart was set. Twenty-two questions were prepared to measure self-confidence in the statement table, and these were presented to the experts. Care was taken to find a problem with every aspect of self-confidence. The 22 questions agreed on by the experts were first reduced to 18, then fourteen, and finally to eleven. These fourteen questions were given to 302 students. Item analysis was performed based on these data. Material analysis was performed on these data. Of these fourteen items, eleven items measuring each object were taken and put in the final test. The reliability of this eleven-item test was calculated using the Cronbach Alpha. This value was .816.

After all, these operations, factor analysis was done. For this, the first Kaiser Meyer-Olkin analysis was conducted to determine whether the sample size was sufficient. At the end of this analysis, there was an association of .794. This value can show a high correlation. In the second step, it was determined whether the value of Barlett's Test of Sphericity was meaningful. Without these two analyzes, you cannot go to factor analysis (Büyüköztürk, 2012; Sönmez & Alacapınar, 2016). This value was found to be 506,635. Factor analysis was performed after these two conditions were satisfied.

According to the results of factor analysis, variables can be collected in three dimensions, as it explains 53,230 of the scale which is studied on. This can be regarded as an adequate value. Looking at the Table of Total Variance Explained, it may not be possible to achieve a healthy decision without developing the scale. Therefore, the

factor structure of the scale has been studied. The Scree Plot graph was discussed because of the large differences in the first three values, they were considered factors. The differences between the others because it is small and close to each other, were not considered a factor. The scale was finalized.

The scale should be applied to different schools, teachers, and students, and validity and reliability should be tested every year. Thus, a more valid and reliable scale can be reached. Moreover, if a parallel measuring instrument is prepared and applied, more valid and reliable results can be obtained than the measurements.

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