

DEVELOPING A TEACHER TRAINEES' DEMOCRATIC VALUES SCALE: VALIDITY AND RELIABILITY ANALYSES

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The purpose of this study was to develop a Teacher Trainees' Democratic Values Scale (TTDVS) related to educational life. The TTDVS was determined by using factor analysis, which was conducted with 979 participants. The scale is composed of 24 items grouped into three subscales, which can be combined into a main scale. The results of the study showed that the TTDVS has an identifiable factor structure and it is a reliable and valid scale.

Keywords: teacher trainees, democratic values, scale.

Values are defined as descriptive trans-situational goals that serve as guiding principles in people's lives (Shechtman, 2002). Value is a distinctively intellectual and desirable action which involves an operation of comparing and judging that guides behaviors (Dewey, 1944; Halstead & Taylor, 2002). Values are an individual's mental judgment and represent many things such as the person's belief in God, democracy and so on (Simadi & Kamali, 2004). According to Jahorik (1978, p. 668), "a value can be thought of as something which is good or desirable or preferable". There are several definitions of value, defining it as mental and emotional judgment which represent an individual's aims in life, attitudes and interests on the abstract level. In the educational context, "Valuing is concerned with the worth or value a student attaches to a particular object, phenomenon or behaviors" (Gronlund, 1995, p. 104). A value is mostly

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permanent and difficult to change. It affects one's way of thinking and behaviors and can be measured in various ways.

The question in this study was about what democratic values mean. According to Büyükdüvenci (1990), Levin (1998), Öhrn (2001), Kıncal and Işık (2003) and Puolimatka (as cited in Worsfold, 1997), the concept of democratic values includes individual freedom, right, justice, caring, equality, respect for life, role of authority, questioning, dialogue, tolerance, diversity, divergent views, active participation, solidarity, ability to make contributions in support of others, sovereignty of mind, integrity, responsibility, dignity, truth, liberty, honesty, searching well, cooperation, self-confidence, sensitivity, acceptance of differences, security, peace, development, perfection and effectiveness. It is clear that the content of the concept of democratic values is very extensive.

Value development is the main and fundamental element of education. If we analyze the aims of education in many countries, it is clear that the primary aims are related to education in democracy and democratic value acquisition for all students from preschool to postgraduate. A lot of research about democracy, human rights and citizenship education has stressed the importance of democratic value acquisition in the educational system. Some studies have examined value acquisition in the institutional learning process in which an individual absorbs values and norms (Arweck & Nesbitt, 2004; Simadi & Kamali, 2004).

There is an assumption that the student's democratic values are influenced by his/her teachers' democratic values and behaviors, teaching styles and teaching methods. The results of the limited number of studies available (Butroyd, 1997; Carr, 1993; Davies, 1994; Halstead & Taylor, 2002; Hansen, 1993; Kelly, 2002; Meyer, 1990) have confirmed this assumption.

Teachers put their democratic values, which play a central role in defining, choosing, organizing and supporting learning and teaching, into practice in school. The democratic values of teachers ensure the sharing of ideas, feelings, attitudes, beliefs, and values among students. If the teacher has democratic values, the students easily learn democratic values because the teacher's democratic values are shaping his/her own life and the students' lives at the same time. Thus, teachers must have stronger democratic ideas, values and behaviors.

In the present study, a scale was developed to determine the democratic values of primary school teacher trainees on issues related to educational life. Development of this scale with a Turkish sample will shed considerable light on the level of awareness of democratic values in educational contexts.

METHOD

PARTICIPANTS

The participants of this study were 979 undergraduate primary school teacher

trainees, including the first grade to the fourth grade students enrolled in nine programs. Participants were selected randomly and 293 (29.93 %) of them were males, 686 (70.07 %) were females. The mean of participants' ages was 23 (range = 16-36) and the standard deviation was 43.34.

DEVELOPMENT OF THE SCALE

The scale was designed by the author to measure the degree of teacher trainees' democratic values on issues related to educational life.

Five steps were followed in the development of the scale. The first step was reviewing the studies in the literature related to democratic values and democratic values scales. Three scales related to democratic values were found: Canetti-Nisim (2004), Shechtman (2002), Watts and Feldman (2001). Canetti-Nisim's study examined the nature of the relations between religiosity, authoritarianism and democratic values. Watts and Feldman's study analyzed distinctions between defensive and universal democracy. The two studies measure democratic values in terms of political bases. Only Shechtman's Democratic Teacher Belief Scale (DTBS), measured the democratic values in teachers' belief related to students and classroom life. The DTBS is composed of 34 items and three subscales related to three main principles of democracy; equality, freedom and justice. The structure and context of the DTBS differ from those which are relevant to the purpose of this study.

The second step was to ask 75 primary school teacher trainees an open-ended question. These trainees were not the participants in the study, but had the same features as participants. The question was: "According to your point of view, what are teachers' democratic values related to educational life?" Sixty-nine students replied to this question. In the light of the results of the literature review and teacher trainees' views on teachers' democratic values related to educational life, 85 items were developed.

A pool of items was formed in the third step. Items were selected and formed according to the opinions of twelve experts of whom three studied the measurements and development of the scale, six studied democracy in education, democracy, citizenship and human rights education, and three studied the Turkish language. Modifications were made according to these experts' suggestions and this resulted in the inclusion of 75 items.

In the fourth step the scale was administered to 32 teacher trainees in order to test the understandability of the items for participants and to determine the time of administration and conditions. The fifth and the last step covered the statistical analysis of the items and, as a result, a Teacher Trainees' Democratic Values Scale (TTDVS) was formed.

Before factor analysis, the TTDVS consisted of 75 items. While 17 items were positive, 58 were negative. A Likert-type of scale was used and the choices for

each item were as follows: 1 = *strongly disagree*; 2 = *disagree*; 3 = *neutral*; 4 = *agree*; 5 = *strongly agree*.

PROCEDURE

The TTDVS was administered to the participants in their regular class hours in April 2005 by the researcher. Participants were asked not to write their names on the questionnaires to ensure the anonymity of their responses. It took approximately 25 minutes to complete the form.

Normal distribution analyses were carried out first for the validity and reliability of the TTDVS. Within these analyses, average, minimum and maximum score range, skewness, Kurtosis and Kolmogorov-Smirnov Z indices were calculated. To determine the items to be covered in the scale, item analyses covering the Pearson moment indices and items' total correlations were calculated. In order to determine the structure of the democratic value scale, defined by items on the TTDVS, principal component analysis and varimax rotation were carried out. Cronbach alpha (α) was used to determine the internal coefficient for the whole scale and subscale. Analyses were carried out with SPSS 13.0 and 0.05 was accepted as the significance level.

RESULTS

VALIDITY FINDINGS

In order to determine the structure of the democratic value scale principal component analysis and varimax rotation were applied. The following criteria were considered to hold the items in the scale: (a) according to the results of varimax rotation, the items should be in only one factor with a factor load of .40 or above (Coombs & Schroeder, 1988); (b) if an item appears in more than one factor, the difference between two loadings should be at least 0.10. Bartlett's Test of Sphericity (BTS) which tests the hypothesis "correlation matrix = unit matrix" was also used. The rejection of the hypothesis shows that the correlation between the variables is different from 1 and the factor analysis is appropriate for the variables (Hutcheson & Sofroniou, 1999). An approximate chi-square value for the BTS of 7778.85 ($p < 0.0001$) was found for the study.

Twenty-one factors with eigen-values greater than 1 were identified. When too many factors emerge as a result of factor analysis, the use of a Scree test to decrease the number of factors is suggested (Kline, 1994). The data were then forced to fit a third factor solution with a new analysis and third factors were determined.

As a result, 24 items were selected from the scale. The results of factor analysis are shown in Table 1.

TABLE 1
THE RESULTS OF THE FACTOR ANALYSIS OF TEACHER TRAINEES' DEMOCRATIC VALUES AND FACTOR LOADING

Item	Factor Loading		
	I	II	III
52	.72	.26	
51	.68	.26	.12
56	.67	.13	
57	.67	.23	
58	.66	.23	
53	.62	.28	
61	.58	.36	
54	.56	.28	.14
62	.45		
70	.23	.71	.23
71	.32	.68	.18
69	.12	.63	.24
66	.40	.61	
65	.38	.58	
72	.11	.58	.20
73	.29	.58	.11
64		.52	.11
26	.29	.41	.24
15		.14	.66
28	.12	.19	.64
29	.13	.22	.64
12*			.64
25			.63
39*			.53
% of Variance	17.74	15.83	11.24

* This item scored reverse

Note: Items having loading of .40 higher are shown in boldface

As seen in Table 1, 24 items with a factor loading from .72 to .41 were loaded on one of the three factors after the varimax rotation. Three factors together accounted for 44.81% of the variance. The first factor, referred to as Rights of education about dimension of democratic values, accounted for 17.74% of the variance and contained nine items (e.g., "The ways of accessing knowledge should be taught to students"). The second factor accounted for 15.83% of the variance and included nine items all characterized by Solidarity (e.g., "The teacher should cooperate with students while solving problems"). The third factor referred to as Freedom about dimension of democratic values accounted for 11.24% of the variance and contained six items (e.g., "Students should have examinations whenever they feel they are ready").

Discriminant validity analysis was conducted to examine the following idea: teacher trainees who had a course or seminar related to democracy and human rights have positive attitudes toward having democratic values as compared to teacher trainees who did not have a course or seminar related to democracy and human rights. Wilks' Lambda value was calculated for discriminant validity. Wilks' value was found to be 0.99, $p = .022$ ($p < 0.05$) and there was a significant difference between the two groups. This result was interpreted as an indication of discriminant validity.

For the extreme group comparison, participants were ranked according to the points they received from the TTDVS. A *t*-test was performed with the top (27%) and bottom (27%) groups' average points for each item. The results showed that *t*-values of all items in the scale were significant at the $p < .0001$ level.

RELIABILITY FINDINGS

Normal distribution analyses of the possible score from the TTDVS were made and the results showed that the minimal score is 24 and the maximum possible score is 120. Analysis of the TTDVS showed that the lowest score was 45 and the highest was 120 and the range was 75. The mean of the scores of the scale was 102.23, the median was 102.00, standard deviation was 8.69, skewness value, calculated for distribution, was .42 and Kurtosis value was 1.64. The *p* value was 0.35 after Kolmogorov-Smirnov Z indices were calculated ($0.35 > 0.05$). These results show that the distribution was normal.

To examine the reliability of the scale, Cronbach's alpha coefficient, item-total correlations and extreme group comparison were calculated. The calculated Cronbach alpha coefficient was 0.87 for the whole scale; 0.84 for the first subscale which is composed of nine items, 0.82 for the second subscale which includes nine items, and 0.70 for the third subscale which includes six items.

Item-total correlations were also evaluated. Minimum and maximum correlation coefficients were .25 and .62, which is the generally accepted point. The correlation between the main scale and the first subscale was .81, the main scale and the second subscale was .85 and lastly the main scale and the third subscale was .69. The correlation between the first subscale and the second subscale was .65, the first subscale and the third subscale was .28, and finally the second subscale and the third subscale was .35. The correlations between the main scale and subscales were significant at the level of $p < .0001$.

DISCUSSION

In this study a teacher trainees' democratic values scale was developed. Developing a scale related to democratic values in education for teachers is expected to improve teachers' democratic awareness. The democratic teacher

emphasizes understanding democratic principles, and has a broader conceptualization of democratic values. He/she fosters active, engaged, democratic citizens by creating a democratic environment in school. Depending on this idea, a scale measuring primary school teacher trainees' democratic values related to educational life was developed.

Results of the literature review and teacher trainees' views about teachers' democratic values in education were highly connected. The initial pool of items was formed according to the results of the literature review, teacher trainees' views about teachers' democratic values in educational life, and experts' opinions.

Before the varimax rotation 21 factors were identified. This result indicated a multifactoring structure. After varimax rotations and scree test, the results showed that three factors were appropriate for factor solutions. The structures seen in each subscale will contribute in the way that democratic values as a different dimension are examined more thoroughly. In this situation, each subscale can be used independently from other scales. For example, the subscale which was formed in this study and called "solidarity" can be used as a separate scale in other studies.

The results of the factor analysis suggested that there are three subscales in the TTDVS: Rights of education, Solidarity and Freedom. It is clear that the dimensions of this scale are parallel to the literature related to this issue. There is a strong resemblance between Shechtman's (2002) study and this study. Shechtman's scale is composed of 34 items and three subscales are related to three main principles of democracy; equality, freedom and justice. This study is composed of 24 items and three subscales are related to three main principles of democracy; rights of education, solidarity and freedom. The two scales measured specific features of democracy in educational life. The main differences between the two scales were in their structure, and content of the items and subscales.

Reliability studies showed that the whole scale and subscale internal consistency values are at an acceptable level. The whole item-total correlation values are between .25 and .62. The significance level of all items in the scale is $p < .0001$. The content with discriminant validity and item-total correlations can be shown as evidence for the validity of this item.

Results of the validity and reliability studies show that the scale is acceptable for defining the democratic values of teacher trainees of primary school.

The present study has some limitations. First, the data were collected from primary school candidate teachers in an education faculty. It is, therefore, necessary that the scale should be investigated in further studies by collecting data from experienced primary school teachers. Second, additional study may be conducted by using scales that measure the teaching strategies, democratic attitudes and problem-solving skills of teachers which might be positively

related to democratic values. Third, this study is one of the first studies on definitions and measures of primary school teachers' democratic values in education. It should be kept in mind that the democratic values of teachers are more complex structures than the scale measuring these three dimensions. Thus, the scale should be revised in future studies.

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