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Developing a Scale to Measure Prospective Teachers' Self-Efficacy Belief in Value Education

Filiz CETIN¹

Abstract

This study aims to develop a reliable measurement tool to measure prospective teachers' beliefs in their self-efficacy in value education. The research group of the study consisted of 351 final year students attending the Faculty of Education, Gazi University in 2015-2016 academic year. Opinions of experts were taken in order to ensure scale's content and face validity and Exploratory Factor Analysis (EFA) was applied to the data set based on students' opinions in order to ensure construct validity. It was observed as a result of the Factor Analysis that the construct consisting of 26 items and four factors explained 60.44% of the total variance. The resulting factors after the factor analysis were Self-Efficacy Belief in Planning Value Education (SEBPVE), Self-Efficacy Belief in Implementation (SEBI), Self-Efficacy Belief in Cooperation (SEBC) and Self-Efficacy Belief in Assessment (SEBA). The reliability of the whole scale and sub-scales was tested with internal consistency and test-retest methods and it was observed that the reliability coefficients were within acceptable limits. Findings resulting from the item analysis showed that all items of the scale were discriminative. Based on these findings, the scale can be said to be a reliable measurement tool that can be used to measure prospective teachers' beliefs in their self-efficacy in value education.

Keywords: values, value education, self-efficacy belief, prospective teacher education.

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Introduction

The current century has been witnessing important developments and changes in many fields. Outstanding developments especially in the field of science and technology have affected every area of life and forced organizations and individuals to adapt to change. Education is no doubt the most effective tool that enable individuals to adopt to this change easily. However, beyond gaining knowledge and skills, education has the responsibility to produce values that will enable the society to continue its existence, preserve existing values and harmonize new and old values (Akdag & Taskaya, 2011). If education maintains only its scientific and cognitive aspects, it is not possible for it to perform its function (Bacanli, 2006). From this perspective, education has the responsibility to transfer the values of the society to individuals and help individuals adapt to society. Values are norms that have been accepted by the society. Values are concepts that gain people their behavior and moral perspective. "Values function as standards that guide the selection or the change of behavior, people and events" (Fidan, 2009). Values have major effects on the regulation of relationships with others (Kale, 2007).

Ensuring the continuity of existing values in the society requires the subject of value education to be on the agenda at all times (Halstead, 1996). Value education is a versatile combination of education and ethics. It is wrong to consider value education as only a part of education. Value education constitutes the soul of the educational model (Dilmac, 1999). In value education, students need guidance from their families and other adults. They need opportunities to discuss why civic and personal values have been chosen by the school and the society. They need to understand what behaviors are associated with basic values. Most importantly, they need to practice values in and outside the school (Deroche & Williams, 2001).

Values are among both implicit and explicit purposes of the educational program. While value education can be carried out in schools with planned educational activities, the cultural environment in the school and the classroom and teacher's definition of right and wrong constitute the implicit value education for students (Demirel, 2009). The explicit value education in the educational program is referred to as the direct value education. The direct value education is given to students via different methods and techniques used in the classroom in a planned manner. The implicit value education is given to students via rules in the school environment, attitudes and behavior of administrators and teachers, etc. Value education is carried out in an unplanned, unscheduled manner in the implicit value education (Akbas, 2009).

For this reason, "Schools are indispensable pioneers in value education" (Aspin, 1997). Schools have important roles in adoption of value education. As well

as mental and physical development and improvement of health, education given in schools must focus on development of ideas and emotions and teaching students moral and spiritual concepts and values (Oktay, 1999). Therefore, the planned and scheduled value education given in schools is of great importance for students. As such, the role of teacher, a formal character, is very importance in value education and attainment.

The teacher is the most important component of the educational system. Teachers play the lead role in ensuring peace and harmony in the society, socializing and preparing individuals for social life and transferring the culture and values of the society to the younger generation (Ozden, 2002). Teachers have a major role in the process of gaining values to students (Suh & Traiger, 1999). The attitude and the behavior of the teacher is very important in value education. Students are influenced the most by what teachers do in the classroom, rather than what they say (Saban, 2000). The performance and competence of teachers depend not only on their education, but also their beliefs in that they are able to perform their duties and responsibilities (Yilmaz M. et al., 2004).

Self-efficacy is the “confidence” that individuals have in themselves. According to Bundura, self-efficacy is people’s beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. In short, self-efficacy is an individual’s belief about what he or she can do (Lee, 2005). Teacher self-efficacy, on the other hand, is defined as the degree of the teacher’s beliefs and assurance of his capability to be effective in the learning of his students, including the students that are classified as having problems or having a low level of motivation (Guskey & Passaro, 1994). Teachers’ self-efficacy beliefs influence their effort, purpose and desire to teach (Tschannen-Moran, Hoy, & Hoy, 1998). Because self-efficacy improves motivation (Snyder & Lopez, 2002). It is pointed out that as the self-efficacy belief of the teacher improves, the teacher gets more satisfaction from teaching (Goddard & Goddard, 2001). Individuals with low self-efficacy belief perceive the task to be more difficult than it actually is. This way of thinking increases anxiety and stress, while shrinking individual’s perspective regarding solving the problem in the best way possible. For this reason, self-efficacy belief strongly affects of individual’s level of success (Pajares & Schunk, 2001). It is stated that self-efficacy perception is a factor that the individual encounters in every activity in everyday life and affects social and academic success and it is suggested that “teachers’ self-efficacy beliefs” must be particularly emphasized (Akbas & Celikkaleli, 2006). Self-efficacy beliefs of prospective teachers regarding value education that they develop during their student days will play a decisive role in shaping their attitudes and behavior toward value education when they become teachers. Appropriate measurement tools are required to be developed and used in order to determine prospective teachers’ self-efficacy beliefs and develop necessary programs.

When the literature on the subject is reviewed, it is seen that various terms such as “moral education”, “values education” and character education” are used in different countries to refer to value education. For example, the current term in the USA is “character education” at the moment. Only ten or twenty years ago, the more popular term was “moral education”. The term “moral education” is now preferred in countries other than the USA, especially Asian countries. A group in Japan combined this term with psychology and created a new term: “*moralogy*” (Berkowitz, 2002). Although the literature shows differences in different countries in recent years, the concept of character education seems to shine out. In this sense, when the studies on the subject are reviewed, there seems to be several studies on self-efficacy beliefs of teachers and prospective teachers in value education (Milson & Mehlig, 2002; Nucci, Drill, Larson & Browne, 2005; Jacobson, 2010; Ledford, 2011; Boon, 2011; Toney, 2012; Carolyn, 2013; Waters & William, 2014). When Turkish studies on the subject are reviewed, there seems to be studies on opinions of prospective teachers related to value education (Fidan, 2009; Tay, 2009; Oguz, 2011; Yazar, 2012; Oguz, 2012; Tasdemir, 2012) value preferences of prospective teachers (Aydin, 2005) and value perceptions of prospective teachers (Dilmac, Bozgeyikli & Cikili, 2008; Dilmac, Deniz & Deniz, 2008; Dilmac, Ertekin & Yazici, 2009; Sari, 2005).

However, no studies could be found on developing a scale to measure self-efficacy beliefs of teachers and prospective teachers in value education. Available studies seem to be related to different fields and especially on identifying general teacher self-efficacies (Bikmaz, 2004; Kucukyilmaz & Duban, 2006; Cakiroglu & Isiksal, 2009; Gurol, Altunbas & Karaaslan, 2010; Sag, 2010; Demirtas, Comert & Ozer, 2011; Dogan, Beyaztas & Kocak, 2012; Yesilyurt, 2013). Therefore, the purpose of this study is to develop a reliable measurement tool that can be used to measure self-efficacy beliefs of prospective teachers in value education.

Method

The general screening model was used in order to develop the scale. Therefore, this study is a descriptive research utilizing the screening model. Screening model is a research approach aiming to describe a situation, an event, an individual, a society or an object in the past or present within its own conditions and as is (Buyukozturk *et al.*, 2013).

Research Group

The study was carried out with a research group consisting of student attending the faculty of education in 2015-2016 academic years. The research group consisted of 351 students in total, 200 female students (56.98%) and 151 male students

(43.02%) attending five different teacher education programs. Criteria suggested by Tabachnick & Fidell (2007) for factor analysis were taken into account when determining the sample size. The authors consider 300 as “good”, 500 as “very good” and 1000 as “excellent” for factor analysis. From this perspective, it can be said that the sample from which the data set obtained was adequate.

Developing The Measurement Tool

Scale development stages proposed by Crocker and Algina (1986) and DeVellis (2003) were taken into account when developing the Self-Efficacy Belief in Value Education Scale (SEBVES).

- *Creating An Item Pool:* In order to developing the measurement tool, a literature review was performed and research on self-efficacy and value education was examined. An original 41-item trial scale was developed based on measurement tools in the literature. The scale was prepared by the researcher. Attention was paid to write scale items in a clear way that will not bore the respondents.
- *Taking Expert Opinions:* Opinions of experts in the field of educational sciences were taken regarding the clarity and content of the scale items. Necessary adjustments were made based on the feedback received from the experts and the 41-item trial scale was prepared for the preliminary application.
- *Preliminary Trial Stage:* The 41-item trial scale prepared based on opinions and suggestions of experts was applied to 35 senior students attending the faculty of education and feedback was received from the student regarding items considered to be difficult to understand. Necessary corrections were made on the relevant items.
- *Actual Trial Application:* In this stage, the 41-item trial scale was applied to 351 senior students attending Faculty of Education, Gazi University, selected via the random sampling method.
- *Factor Analysis Stage:* The items in the scale were structured in the 5 point Likert-type format: “Completely Agree”, “Largely Agree”, “Somewhat Agree”, “Disagree”, “Completely Disagree”.

The exploratory factor analysis was applied using the principal components method. With this analysis, item/factor loadings were examined in order to determine whether the scale items were in the expected sub-dimensions or not and whether there items were overlapping or not. “Rotated Principal Component Analysis” was used in order to collect information about the construct validity of the scale and Pearson correlation coefficients were calculated to reveal the relationship between scores of four sub-dimensions of the scale.

- *Reliability Determination Stage:* In order to give the scale, which passed through scale development stages, its final shape, Cronbach's Alpha reliability coefficients of the scale and its sub-dimensions were calculated. The data was analyzed with SPSS 18.0 to calculate the reliability.
- *Item Analysis:* The t-test was used in order to determine the difference between the scores as a percentage of the upper 27% and lower 27% of the total group and whether each item discriminated participants in relation to their self-efficacy beliefs in value education.
- *Split Half Test and Test-Retest:* The split half test was used to determine whether all items in the scale measured the same property or not by splitting the scale into half and the test-retest method was used to determine stability of the scale.

Findings

Construct Validity

In this section, exploratory factor analysis was applied to reveal the construct validity of SEBVES.

Exploratory Factor Analysis (EFA)

The construct validity and the factor structure of the scale was examined with exploratory factor analysis (EFA). Before applying the factor analysis, the Kaiser-Meyer-Olkin (KMO) coefficient was calculated and the Barlett Sphericity test was applied in order to see whether the derived data were suitable for factor analysis. Both tests are used to determine the suitability of the data for factor analysis. The KMO coefficient of the 41 items was found to be .94. It is stated in the literature that the KMO value must be at least .60 for factor analysis and the Barlett Sphericity test result must be significant (Buyukozturk, 2007). KMO values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb (Field, 2002). The KMO test result of this measurement tool was found to be .94. This value corresponds to "superb". As such, it can be said that the factor analysis on this data set will give very reliable results. The Barlett test result was found to be 3544.93; $p < .001$. The BTS test was highly significant (99% reliability range) for the data in this study. Based on these results, it can be said that the data were suitable for factor analysis. The varimax perpendicular rotation method was used to identify independent sub-factors of the scale. Factor loads greater than 0.45 were accepted to be sufficient. A structure consisting of 4 factors with eigenvalues greater than 1 was obtained as a result of the principal components factor analysis

performed with the varimax rotation method. The first factor had an eigenvalue of 1.60 and explained 18.88% of the total variance, the second factor had an eigenvalue of 1.81 and explained 15.08% of the total variance, the third factor had an eigenvalue of 1.24 and explained 14.88% of the total variance and the fourth factor had an eigenvalue of 1.07 and explained 11.60% of the total variance. Four factors explained 60.44% of the total variance. The greater the explained variance is, the stronger the factor structure is. In social sciences, this rate is accepted to be sufficient between 40% and 60% (Tavsancil, 2002).

Examining the results of the factor analysis, it was found that some items had a high loading in multiple factors. Based on these results, 15 items (8, 9, 18, 20, 21, 22, 23, 24, 25, 32, 33, 34, 35, 39, 41) were removed from the scale and the factor analysis was repeated after removing each item. At the end of the analysis, a 26-item SEBVES consisting of four sub-dimensions was obtained. After factor rotation, the first sub-dimension of the scale consisted of 7 items (1, 2, 3, 4, 5, 6, 7), the second sub-dimension consisted of 9 items (10, 11, 12, 13, 14, 15, 16, 17, 19), the third sub-dimension consisted of 6 items (26, 27, 28, 29, 30, 31), the fourth sub-dimension consisted of 4 items (36, 37, 38, 40).

These sub-factors were named Self-Efficacy Belief in Planning Value Education, Self-Efficacy Belief in Implementation, Self-Efficacy Belief in Cooperation and Self-Efficacy Belief in Assessment respectively. Findings obtained as a result of the Exploratory Factor Analysis (EFA) are given in *Table 1*.

Table 1. *Self-Efficacy Belief in Value Education Scale (SEBVES) Factor Analysis Results*

FACTORS	Common Factor Variance	Varimax Factor Loads	Eigenvalue	Explained Variance %
Factor 1: Self-Efficacy Belief in Planning			11.600	18.880
1. I have sufficient knowledge about basic values to teach students.	.537	.641		
2. I can make a correct analysis of values that student posses and do not posses.	.599	.655		
3. I can organize values to be taught according to priority.	.510	.593		
4. I can plan activities related to teaching values according to students' needs.	.685	.662		
5. I can make necessary arrangements to carry out the value education in an effective and efficient way.	.664	.612		
6. I can correctly explain the reasons for values to be taught.	.582	.663		
7. I can identify appropriate methods-techniques to teach values.	.580	.606		

FACTORS	Common Factor Variance	Varimax Factor Loads	Eigenvalue	Explained Variance %
Factor 2: Self-Efficacy Belief in Implementation			1.807	15.080
10. I can answer all questions that students ask in relation to values.	.578	.577		
11. I can organize the class in relation to value teaching.	.675	.682		
FACTORS	Common Factor Variance	Varimax Factor Loads	Eigenvalue	Explained Variance %
Factor 2: Self-Efficacy Belief in Implementation				
12. I can ensure the active participation of students to activities related to value teaching.	.647	.737		
13. I can guide students about activities related to value teaching.	.722	.745		
14. I can identify behavior patterns appropriate for a value.	.628	.515		
15. I can give concrete examples to explain values.	.477	.593		
16. I can create opportunities in the classroom for students to internalize values (to transform values into behavior).	.658	.674		
17. I can be a role model for students to internalize values.	.519	.569		
19. I can use different approaches in value education.	.521	.553		
Factor 3: Self-Efficacy Belief in Cooperation			1.241	14.878
26. As well as classroom activities, I can organize various activities related to value teaching outside the classroom.	.458	.539		
27. I can work in cooperation with the administration, other teachers and parents in teaching values.	.553	.688		
28. I can guide other teachers and parents about teaching values.	.588	.668		
29. I can share the results that I obtained with relevant people.	.691	.787		
FACTORS	Common Factor Variance	Varimax Factor Loads	Eigenvalue	Explained Variance %
Factor 3: Self-Efficacy Belief in Cooperation				
30. I can motivate parents and my colleagues to contribute to activities.	.604	.740		
31. I can correctly guide relevant people.	.574	.632		

FACTORS	Common Factor Variance	Varimax Factor Loads	Eigenvalue	Explained Variance %
Factor 4: Self-Efficacy Belief in Assessment			1.067	11.602
36. I can identify assessment criteria related to value learning of students.	.663	.710		
37. I can identify whether discussed values transformed into behavior.	.736	.778		
38. I can analyze the results of my practices in relation to teaching values.	.704	.680		
40. I can make necessary adjustments related to values that were not transformed into behavior.	.563	.486		

Total Explained Variance: 60.44%

Examining *Table 1*, it can be seen that factor loadings vary between .48 and .87 for all four factors.

Findings Related to Reliability Studies

In this section, findings related to reliability analysis of SEBVES are given in *Table 2*.

Table 2 gives information about scale’s reliability, internal consistency and test-retest reliability values. Cronbach’s Alpha internal consistency coefficients were .87 for the first sub-scale, .91 for the second sub-scale, .85 for the third sub-scale, .84 for the fourth sub-scale and .95 for the whole scale. Two applications with an interval of three weeks were performed on 100 students to determine the test-retest reliability of the scale. Correlation coefficients between scores obtained in two applications were calculated in order to reveal the consistency between the first application and the second application. The test-retest reliability coefficient was found to be .91. Considering that scales with reliability coefficients greater than .70 are accepted to be reliable (Barlett, & Morgan, 2005; Pallant, 2005; Domino & Domino, 2006; Fraenkel, Wallen & Hyun, 2012), it can be said that the reliability coefficient of the scale was adequate. In addition, the Spearman-Brown internal consistency coefficient, calculated by splitting the test in two equal parts, was found to be 0.79. Therefore, all items of the SEBVES can be said to measure the same criteria.

Table 2. Results of Reliability Analysis

Factor -Item no	Total Item Correlation	Upper 27% - Lower 27% t	Cronbach's Alpha Internal Consistency Coefficient
Factor I			.87
Item 1	.578	9.427***	
Item 2	.575	7.713***	
Item 3	.573	8.422***	
Item 4	.708	11.787***	
Item 5	.731	13.480***	
Item 6	.556	8.606***	
Item 7	.632	9.675***	
Factor II			.91
Item 10	.695	12.373***	
Item 11	.721	11.483***	
Item 12	.650	10.910***	
Item 13	.725	12.208***	
Item 14	.733	14.000***	
Item 15	.581	9.178***	
Item 16	.695	11.801***	
Item 17	.628	11.057***	
Item 19	.653	10.538***	
Factor III			.85
Item 26	.573	7.779***	
Item 27	.521	6.849***	
Item 28	.595	8.444***	
Item 29	.578	8.574***	
Item 30	.518	8.275***	
Item 31	.620	9.404***	
Factor IV			.84
Item 36	.623	9.419***	
Item 37	.617	8.584***	
Item 38	.659	9.803***	
Item 40	.670	10.425***	
Scale Total			.95

*** $P < .001$

First the total correlation of corrected items was calculated and then the t-test was used in order to determine the difference between the scores as a percentage of the upper 27% and lower 27% of the total group and whether each item discriminated participants. The total correlation value of corrected items varied between 0.52 and 0.73. It was found as a result of the t-test between the upper 27% and lower 27% of the total group that the difference between the groups for all items was $\alpha = .001$. The significant t value related to the difference between the upper group and the lower group are considered to be an indicator of item's discrimination (Erkus, 2012). Based on these findings, it can be said that the scale items discriminated respondents strongly.

After the factor analysis, correlations of sub-factors among each other and between the whole scale were examined and the values found are given in Table 3.

Table 3. *Self-Efficacy Belief in Value Education and Correlations Between Sub-Factors*

Factors	Scale Total	1st Sub-factor	2nd Sub-factor	3. 3rd Sub-factor	4. 4th Sub-factor
1st Sub-factor	.872**	-----	.770**	.553**	.648**
2nd Sub-factor	.928**	-----	-----	.640**	.686**
3. 3rd Sub-factor	.805**	-----	-----	-----	.623**
4. 4th Sub-factor	.825**	-----	-----	-----	-----

** $P < .01$

As can be seen in *Table 3*, correlations between scores obtained from the scale and scores obtained from sub-factors vary between 0.55 and 0.93. It is seen that the scale and factors have positive correlations with each other on moderate and high levels at $\alpha=0.01$ significance level. High and significant correlation shows that the four sub-factors are the sub-factors of the self-efficacy belief in value education structure.

Scoring Of SEBVES: There are a total of 41 items in SEBVES. The items in the scale were structured in the 5 point Likert-type format: “Completely Agree”, “Largely Agree”, “Somewhat Agree”, “Disagree”, “Completely Disagree”. The scale consists of 26 items and four dimensions called Self-Efficacy Belief in Planning Value Education, Self-Efficacy Belief in Implementation, Self-Efficacy Belief in Cooperation and Self-Efficacy Belief in Assessment. The maximum scale score is 130 and the minimum scale score is 26. All of the scale items are positive and there is no reverse scored item. High scores obtained from the scale or its sub-scales indicate high self-efficacy belief and low scores indicate low self-efficacy belief.

Discussion

The purpose of this study is to develop a reliable measurement tool that can be used to measure self-efficacy beliefs of prospective teachers in value education. The literature on the subject was taken into account when developing the measurement tool. A item pool was created, consisting of 41 items under planning, implementation, cooperation and assessment dimensions related to self-efficacy belief in value education. Content validity and face validity of the scale were

determined based on expert opinions. The 41 items in the scale were structured in the 5 point Likert-type format as “Completely Agree”, “Largely Agree”, “Somewhat Agree”, “Disagree”, “Completely Disagree” and the scale was applied to prospective teachers in the sample group. Exploratory factor analysis (EFA) was applied to find the construct validity of the scale. As a result of the analysis, five items were eliminated and 26 items remained. With the remaining 26 items and four-factor structure, the scale reached its final form. 26 items in the scale explained 60.44% of the total variance. The sub-factors were named Self-Efficacy Belief in Planning Value Education, Self-Efficacy Belief in Implementation, Self-Efficacy Belief in Cooperation and Self-Efficacy Belief in Assessment respectively.

The reliability of the scale was examined by calculating Cronbach’s Alpha internal consistency coefficients and applying the test-retest method. Cronbach’s Alpha internal consistency coefficients were .87 for the first sub-scale, .91 for the second sub-scale, .85 for the third sub-scale, .84 for the fourth sub-scale and .95 for the whole scale. Scales with reliability coefficients greater than .70 are accepted to be reliable (Ozdamar, 1999; Stangor, 2010). It was found that the scale and factors had positive correlations with each other on moderate and high levels at $\alpha=0.01$ significance level. High and significant correlation shows that the four sub-factors were the sub-factors of the self-efficacy belief in value education structure. Two applications with an interval of three weeks were performed on 100 students to determine the test-retest reliability of the scale and the reliability coefficient was found to be .91. The Spearman-Brown internal consistency coefficient, calculated by splitting the test in two equal parts, was found to be 0.79.

Conclusions

First the total correlation of corrected items was calculated and then the t-test was used in order to determine the difference between the scores as a percentage of the upper 27% and lower 27% of the total group and whether each item discriminated participants. The total correlation value of corrected items varied between 0.52 and 0.73 and it was found as a result of the t-test between the upper 27% and lower 27% of the total group that the difference between the groups for all items was $\alpha=.001$. Based on these findings, it can be said that the scale items discriminated respondents strongly.

Findings obtained in relation to psychometric properties of the scale at the end of the study provide evidence for that SEBVES is a reliable measurement tool that can be used to measure self-efficacy beliefs in value education. It is believed that the present study will contribute to the literature as a scale to measure self-efficacy belief in value education in Turkey.

Recommendations

Reviewing the relevant literature, no study on self-efficacy belief in value education could be found in the national literature, as previously mentioned. The available studies are mostly on opinions of prospective teachers on value education, value perceptions of prospective teachers and value preferences of prospective teachers.

In this sense, it is believed that the measurement tool developed with this study will greatly contribute to the literature and offer a new perspective. However, conducting the present study with different samples will ensure the reliability and validity of the scale, fill the gap in the relevant literature and contribute to development of similar scales.

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