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EXAMINING BELIEFS OF PRESERVICE TEACHERS ABOUT EPISTEMOLOGY AND LIFE-LONG LEARNING COMPETENCY VIA CANONICAL CORRELATION ANALYSIS

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Abstract. In this study canonical correlation between preservice teachers' life-long learning beliefs and epistemological beliefs were investigated. Canonical correlation analysis might explain the relationships between two data clusters containing more than one variable (Tatlıdil, 1996) and from that aspect, it is more advantageous than simple correlation tests that explain the relationship between two variables or multiple correlation or regression techniques that explain the relationships between a dependent variable and several independent variables (Temurtaş, 2016) because each of the beliefs being examined in this study consisted of subdimensions (factors). The findings of the study demonstrated that there is a significant canonical correlation between epistemological beliefs and life-long learning competency beliefs with an effect size of 34%. In conclusion, epistemological beliefs predict life-long learning competency beliefs. "Effort" dimension of epistemological beliefs is the single most powerful predictor of life-long learning competency beliefs.

Key words: Preservice teachers, epistemological beliefs, life-long learning competency beliefs, canonical correlation

1. Introduction

With a primary importance among educational studies across the world, "Life Long Learning" is a concept that could occur anywhere an individual is and removes all kinds of limitations like place, time, age and educational background (Güleç et al., 2012). According to the manifesto of the European Council dated 2000, life-long learning signifies making more investments in human and knowledge and extending flexible and innovative learning opportunities (Polat and Odabaş, 2008). In life-long learning, individuals are required to believe in their own competence and have a self-confidence in coping with knowledge problems. At this point, it will be appropriate to suggest that belief systems lie behind all the decisions and behaviors of individuals (Hofer and Pintrich, 1997; Pajares, 1992). Being an individual attribute; epistemological beliefs are generally accepted as subjective beliefs regarding what individuals think about knowledge and how knowing and learning occur.

Epistemological beliefs are capable of determining variables like the ways in which individuals process and interpret new knowledge, as well as their comprehension levels, high-level thinking and problem-solving approaches, effort and time spent on learning (Brownlee and colleagues, 2001; Hofer and Pintrich, 1997). Schommer-Aikins and Hutter (2002) emphasize that epistemological beliefs signify the clearness and organization of knowledge and control of individual over knowledge. Studies reveal that individuals with advanced epistemological beliefs have higher academic achievements and

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more efficient learning habits; indeed, they are more successful in inspecting the level of comprehending new knowledge (Schommer, 1990). According to Hofer and Pintrich (1997) who draw attention to the importance of epistemological beliefs in developing life theories and obtaining information; beliefs of students about the nature of knowledge and nature of knowing form the basis of their life theories.

On the other hand, individuals will be able to successfully conduct the activities of solving knowledge problems only through becoming individuals who could direct and motivate themselves and learn life-long. Emphasizing the importance of raising students as life-long learners in the information society, Harpe and Radloff (2001) also draw attention to the necessity for both teachers and students to get equipped with knowledge regarding life-long learning. However, individuals will be raised as life-long learners only by life-long learner teachers. Chapman and colleagues (2003) touch upon the importance of teacher education in reaching life-long learner societies and emphasize the necessity of developing competence of preservice teachers regarding the life-long learning approach in education. As life-long learners; teachers should always conduct screenings, inquiries and information surveys both in their own profession and in other fields of interest. They should also be; "curious", "interested in new developments and issues", "information literate", "competent in organization", "competent in learning", "investigator", "competent in communication", "competent in using the technology efficiently", "creative" and "committed to teamwork" (Demiralay and Karadeniz, 2008).

In his individual case study examining the beliefs of a preservice teacher, Bryan (1998) has determined that there is little information about the content of teachers' beliefs, what kind of experiences play a role in these beliefs or what changes their thoughts. In another study examining the relationship between the self-sufficiency belief aimed at the solution of knowledge-based problems and epistemological beliefs, whose importance in explaining reasons lying behind the behaviors of individuals is frequently mentioned, Erdem, Yılmaz and Akkoyunlu (2008) emphasize the critical effect of both variables on the phenomenon of life-long learning.

In literature, there are studies that either determine the life-long learning competencies of teachers and preservice teachers or reveal the distribution of these competences according to several demographic variables (Diker Coşkun and Demirel, 2012; Eker, 2014; Gencel, 2013; Harpe and Radloff, 2001; İzci and Koç, 2012; Karakuş, 2013; Kılıç, 2014; Korkmaz, 2010; Selvi, 2011; Şahin, Akbaşlı and Yanpar Yelken, 2010; Şahin and Arcagök, 2014; Uzunboylu and Hürsen, 2011). In addition to this, studies on epistemological beliefs are related with either developing a scale on epistemological beliefs or determining the effect of different variables on these beliefs (Bozaslan, 2012; Eroğlu and Güven, 2006; Gürol, Altunbaş and Karaaslan, 2010; Erdem, Yılmaz and Akkoyunlu, 2008). It is indicated that epistemological beliefs used in educational researches enable forming a higher quality learning environment (Buehl and Alexander, 2005; Erdem, 2008; Mason, Boscolo, Tornatora and Ronconi, 2013; Pamuk, Sungur and Oztekin, 2016; Tsai, Jessie Ho, Liang and Lin, 2011).

Recent studies are addressed from all aspects in order to get healthier and more reliable results. Thus, a particular attention is paid to examining the effects of all variables as separately as possible in studies. In some cases, dependent and independent variables might be more than one, which makes it necessary to use canonical correlation based on transforming variables in these sets into canonical variables comprising of linear components and finding a relationship in determining the relationship between two variable sets (Gürbüz, 1989). Developed by Hotelling in 1936, canonical correlation analysis is among multivariate analysis techniques that require complicated stages like factor analysis (Tatlıdil, 1996). Canonical correlation analysis aims to determine and analyze the relationships between two variable clusters and maximum correlations between linear functions (Borga, 1998). Canonical correlation is also used in testing whether two variable clusters obtained from the same individual are statistically independent from each other or not and determining variables in both variable clusters, making the greatest contribution to the inter-cluster correlation (Alpert and Peterson, 1972; Tekin, 1993). In educational research literature, there are some studies revealing the relationships between data sets by using canonical correlation analysis at the least (Dunlop et al., 2000; Larson et al., 2000; Şen and Kalyoncu, 2001; Tabachnick and Fidell, 2001; Tatar and Eliçin, 2002; Timm, 2002; Keskin and Özsoy, 2004; Akbaş and Takma, 2005; Sit and Lindner, 2005; Sun et al., 2005).

Preservice teachers should become conscious of their implicit beliefs to increase their effectiveness in the teaching-learning process. From this point of view; it is significant and important to discuss the relationship between life-long learning and epistemological beliefs via canonical correlation analysis on the basis of preservice teachers in this day, when the necessity of life-long learning is felt even greater. In this context, it is believed that determining the perceptions of preservice teachers regarding life-long learning and epistemological beliefs brings a prominence into the study in terms of raising individuals as life-long learners. Besides, it is expected that the study will create an important resource for future studies as there is no other extensive study being carried out in faculties of education on this subject. On the other hand, this study will try to reveal the relationship between life-long learning and epistemological beliefs in institutions that train teachers, which will consequently enable us to make some suggestions for instructors in faculties of education that train teachers regarding the activities and development of a high-level teacher competence. Based on the literature mentioned above research questions of this study were posed as follows:

1. Is there a statistically significant correlation between epistemological belief set and life-long learning competency belief set?

2. If there is a statistically significant correlation, from which subdimensions (factors) of each belief set does this significant total correlation stem from?

2. Method

In this part of the paper research method, sample, data collection tools and data analysis method are explained. This is a correlational study, which uses the advanced statistical method of canonical correlation analysis (CCA) in order to reveal the maximum correlation model between epistemological belief set (factors) and life-long learning competency belief set (factors).

2.1. Sample

The target population of the study is all preservice teachers in Turkey from four different departments, i.e. i.) Turkish Education, ii) Social Sciences Education, iii) Primary Education and iv) Science Education. The study sample consisted of 1242 preservice teachers from four different departments of a state university in the west of Turkey.

Table 1. *Study Sample*

Variables (Groups)	Level (Subgroups)	Frequency	Percentage
Gender	Female	753	% 60.6
	Male	489	% 39.4
Department	Turkish Education	239	% 19.2
	Science Education	197	% 15.9
	Social Science Education	431	% 34.7
	Primary Education	375	% 30.2
Year of Study	1	206	% 16.6
	2	323	% 26.0
	3	311	% 25.0
	4	402	% 32.4
	Total	**1242**	**% 100**

It was determined that 753 (60.6%) of the preservice teachers were female, and 489 (39.4%) were male; 206 (16.6%) of students were in the 1st year of study, 323 (26.0%) of students were in the 2nd year of study, 311(25.0%) of students were in the 3rd year of study, and 402 (32.4%) were in the 4th grade. It was determined that 239 (19.2) of the preservice teachers were in Turkish Education, 197 (15.9%) were in Science Educations, 431 (34.7%) were in Social Science Education, and 375 (30.2%) were in Primary Education Department.

2.2. Data Collection Tools

In this study, two different scales were used as data collection tools. First one is the 51-items Life Long Learning Competencies Scale with six factors developed by Uzunboylu and Hürsen (2011). The second is the Scale for Epistemological Beliefs that was developed by Schommer (1990) and adapted into Turkish by Deryakulu and Büyüköztürk (2002). The Life-long Learning Competence Scale is a 5-point Likert-type rating scale and consists of the options as "Complete", "Very", "Medium", "Low" and "None". Additionally, the expressions in the scale were scored by giving numerical values from 5 to 1 towards "None" option from "Full" option. This scale has a reliability value of .95. The scale consisted of 51 items and six dimensions such as “self-direction competence” (13 items), “learning to learn competence” (12 items), “sense of initiative and entrepreneurship competence” (10 items), “obtaining knowledge competence” (6 items), “digital competence” (6 items) and “decision-making competence” (4 items) (Uzunboylu and Hürsen, 2011).

In the epistemological belief scale; there are 18 items in the factor named “The belief that learning depends on effort”, 9 items in the second factor named “The belief that learning depends on ability” and 8 items in the third factor named “The belief that there is only one truth”. The scale is a 5-point Likert scale varying between (1) Strongly Disagree and (5) Strongly Agree. The Cronbach Alpha internal consistency coefficient of the adapted scale of 35 items was calculated as; 0.83 for the first factor, .62 for the second factor, .59 for the third factor and 0.71 for the entire scale (Deryakulu and Büyüköztürk, 2002).

2.3. Data Analysis

In this study the existence of statistically significant correlations between epistemological belief set (factors) and life-long learning competency belief set (factors) were examined using canonical correlation analysis (CCA). CCA is a multivariate statistical technique by which the existence and degree of relations between two sets of random variables are examined (Tekin, 1993). By using this method, maximum correlations of linear combinations of a set of variables with linear combinations of another set of variables are investigated (Tatlıdil, 2002). The number of these maximum and significant correlations are always equal to or less than the number of variables in the smaller set (Bayyurt, 2004). Then the number of these significant overall correlations are always less than the permutation of correlations between two sets. Therefore, CCA is at the same time a data reduction or a dimension reduction analysis. The aim of CCA is to find the simplest model by which the relationship between two sets of variables can be maximally explained (Hardle and Simar, 2015; Kalaycı, 2014; Temurtaş, 2016).

In CCA one of the variable sets might be independent variables (covariates) and the other set might be dependent variables (Kalaycı, 2014). In this study, epistemological belief set (factors) were treated as covariates (independent variables) and life-long learning competency belief set (factors) as dependent variables. In the analysis, first it was checked whether the hypothetical assumptions of CCA were met. For this aim, i) missing values and outliers examined, ii) normality of the data was examined, iii) then the normality of the data was examined, iv) homoscedacity was examined and v) existence of multiple collinearity and singularity problems were checked.

Then, the existence of a statistically significant canonical correlation was examined using multivariate tests of significance. If such a significant canonical correlation existed, the number and nature of functions contributing to the model were examined using eigenvalues, effect sizes and dimension reduction analysis. After the number and nature of significant functions were determined, the contributions of each covariate (independent variable) and dependent variable to these functions and to the entire model were investigated. Then the results of these tests were interpreted.

3. Findings

In this part of the paper, findings of canonical correlation tests are presented. First of all, number of missing values and outliers were examined, and it was found that no missing values and outliers (z-score smaller than -3 or larger than 3) were present in the dataset (Tabachnick and Fidell, 2012). In fact, there were multivariate outliers revealed by Mahalanobis distances in SPSS, but since there were

9 variables and the initial calculations by omitting the multivariate outliers did not yield different results, the multivariate outliers were not removed from the analysis as recommended (Tabachnick and Fidell, 2012). Then, normality assumption was tested for all 9 observed variables (factors or subdimensions of two beliefs) (Weston and Gore, 2006). Skewness and kurtosis values between -1 and 1 for all items indicated normality assumption was met for the scale (Tabachnick and Fidell, 2012). Table 2 illustrates skewness and kurtosis values for all variables.

Table 2. *Findings of skewness and kurtosis tests for all belief subdimensions (variables)*

		N	Skewness		Kurtosis	
Beliefs	**Variable**	**Statistic**	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
Life-long Learning Competency	SelfDirect	1242	-0,087	0,069	-0,500	0,139
	LearnTOLearn	1242	-0,091	0,069	-0,357	0,139
	SenseIn&Ent	1242	-0,218	0,069	-0,349	0,139
	ObtainKnowl	1242	-0,569	0,069	-0,173	0,139
	Digital	1242	-0,829	0,069	0,049	0,139
	DecMake	1242	-0,166	0,069	-0,321	0,139
Epistemological	Effort	1242	-1,054	0,069	1,032	0,139
	Ability	1242	0,647	0,069	-0,123	0,139
	SingleTruth	1242	0,152	0,069	-0,042	0,139
	Valid N (listwise)	1242				

The findings shown in Table 2 indicate that all the variables demonstrated a normal distribution. Then linearity assumption was examined using Pearson correlations between paired variables. The findings of linearity test were shown in Table 3.

Table 3. *Findings of monolinearity*

		Epistemological Beliefs		
		Effort	**Ability**	**SingleTruth**
Life-long Learning Competency Beliefs	SelfDirect	,478**	-,161*	,121*
	LearnTOLearn	,487**	-,137*	,064*
	SenseIn&Ent	,500**	-,146*	,134*
	ObtainKnowl	,414**	-,106**	-,135*
	Digital	,379**	-,087**	-,132*
	DecMake	,423**	,143*	,126**

According to Table 3, all paired variables (subdimensions of both beliefs) were linearly correlated with p values greater than or equal to either ,01 or ,05. Then homoscedasticity assumption was tested looking at the distributions of residuals in SPSS. As an example, the finding of homoscedasticity test for SelfDirect variable with Effort, Ability and SingleTruth variables is shown in Figure 1.

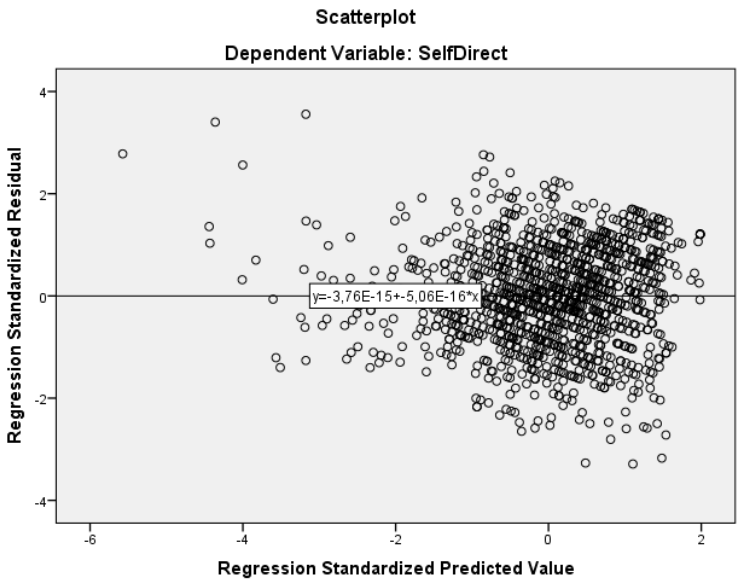

Figure 1. *Fitline in Homoscedasticity Test for SelfDirect Variable with Effort, Ability and SingleTruth Variables*

The fitline shown in Figure 1 is parallel to the x-axis which indicate that the homoscedasticity assumption was met for SelfDirect Variable with Effort, Ability and SingleTruth Variables. The same test for all variables of Life-long Learning Competency Belief set with all variables of Epistemological Belief set demonstrated similar results that homoscedasticity assumption was met (Koyuncu, 2016; Tabachnick and Fidell, 2012). Finally, the existence of a possible multicollinearity or singularity problem was examined. Multicollinearity problem arises when there is a too high level of correlation (r >,90) between two variables and singularity problem arises when the correlation between two variables is excellent (r = 1,00). As can be seen from Table 3, both problems did not occur in the dataset.

After it was assured that all the assumptions to conduct a canonical correlation analysis were met, the canonical correlation tests were performed using Syntax in SPSS 22. The canonical correlation analysis was conducted between epistemological belief set and life-long learning competency belief set. The findings are presented in the following section.

3.1. Canonical correlation between life-long learning competency beliefs and epistemological beliefs

First, the model fit and the existence of a statistically significant canonical correlation was examined using multivariate tests of significance. The findings are shown in Table 4.

Table 4. *Multivariate Tests of Significance*

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillais	0,35	26,94	18	3705,00	0,000
Hotellings	0,49	33,60	18	3695,00	0,000
Wilks	0,66	30,24	18	3487,94	0,000
Roys	0,31				

(S = 3, M = 1, N = 615 1/2)

According to the results shown in Table 4, the canonical correlation model is statistically significant [Wilks'λ=0,66, F(18, 3487,94)=30,24, p<0,001]. Therefore, it can be argued that there's a significant correlation between the life-long learning competency beliefs set and epistemological beliefs set. In addition, the effect size is the opposite of Wilks' λ so it can be calculated as 1- Wilks' λ=1-0,66=0,34.

So the shared variance between the two sets of variables is 34 % and indicates a medium level of association.

Although the canonical model was found to be significant, the significance of each canonical function should also be examined. Table 5. below shows the eigenvalues and canonical correlation for each canonical function.

Table 5. *Eigenvalues and Canonical Correlations*

Root No.	Eigenvalue	Pct.	Cum. Pct.	Canon Cor.	Sq. Cor
1	0,46	92,84	92,84	0,56	0,31
2	0,03	6,89	99,73	0,18	0,03
3	0,00	0,27	100,00	0,04	0,00

When Table 5 is examined, it can be observed that the eigenvalue for the first canonical function is ,46 and this function explains 31% of variance between two sets of variables. Second and third canonical functions make only 3% and ,00% contribution to the model. Therefore, it can be argued that only the first two canonical functions make statistically significant contributions to the model. This finding was confirmed by the findings of dimension reduction analysis shown in Table 6.

Table 6. *Dimension Reduction Analysis*

Roots	Wilks L.	F	Hypoth. DF	Error DF	Sig. of F
1 TO 3	0,66	30,24	18	3487,94	0,00
2 TO 3	0,97	4,30	10	2468,00	0,00
3 TO 3	1,00	0,41	4	1235,00	0,80

According to Table 6, there are statistically significant correlations between two sets of variables for both the first and the second canonical functions [Wilks'λ=0,66, F(18, 3487,94)=30,24, p<0,01 and Wilks'λ=0,97, F(10, 2468,00)= 4,30, p<0,01 respectively]. In contrast, there seems to be no statistically significant correlation between two sets of variables for the third canonical function [Wilks'λ=1,00, F(4, 1235,00)= 0,41, p>0,01].

The analyses up to here showed that there's a statistically significant correlation between the life-long learning competency beliefs set and epistemological beliefs set. In addition, the effect sizes were %31 and %3 for the first two canonical functions which indicated a moderate level of total effect size. At the last stage of analysis, the contributions of each variable in both variable sets were given in Table 7 shown below.

Table 7. *Correlations between all variables and canonical variables*

		Function 1			Function 2			
Set	**Variable**	**Scc**	**Rc**	**Rc2(%)**	**Scc**	**Rc**	**Rc2(%)**	**h2(%)**
Life-long Learning Competency Beliefs	SelfDirect	-0,22	-0,86	0,74	0,42	0,10	0,01	0,75
	LearnTOLearn	-0,23	-0,89	0,78	-0,41	-0,13	0,02	0,80
	SenseIn&Ent	-0,27	-0,90	0,82	0,43	0,01	0,00	0,82
	ObtainKnowl	-0,10	-0,73	0,53	0,51	0,38	0,14	0,68
	Digital	-0,22	-0,67	0,45	0,23	0,32	0,10	0,55
	DecMake	-0,18	-0,79	0,62	-1,16	-0,55	0,30	0,93
Epistem. Beliefs	Effort	-1,02	-0,99	0,98	0,00	0,14	0,02	1,00
	Ability	-0,13	0,10	0,01	-0,49	-0,86	0,74	0,75
	SingleTruth	-0,03	-0,08	0,01	-0,63	-0,92	0,84	0,85

Scc: Standardized canonical coefficients, Rc: Correlations between COVARIATES, DEPENDENT VARIABLES and canonical variables, h2: Common effect

In canonical correlation analysis, it's recommended to use Rc(Correlations between covariates, dependent variables and canonical variables) instead of Scc (Standardized canonical coefficients) because the latter values are more sensitive to multicollinearity problems (Tabachnick and Fidell, 2006; Kalaycı, 2014). In terms of the contribution of variables to canonical analysis, Rc and values larger than .45 were taken as statistically significant contribution to the function and h2 values larger than .45 were taken as statistically significant contribution to the model and were underlined (Temurtaş, 2016). According to these criteria, all variables except Ability and SingleTruth made significant contributions to function 1. When it comes to function 2, only DecMake, Ability and SingleTruth made significant contributions. Totally, all variables made significant contributions to the model with ObtainKnowl and Digital variables making the least (.68 and .55 respectively).

The above explained findings could be summarized as follows: There's a statistically significant correlation between epistemological beliefs (covariate variable set) and life-long learning competency beliefs (dependent variable set) explaining total 34% of the covariance between the two belief sets. This is a statistically significant but moderate level of effect size. This significant relationship between two belief sets is rooted in two different relationship types (functions). The first type of relation (function) has the bigger effect size of 31% and reveals a significant relationship between all subdimensions of life-long learning competency beliefs and the Effort subdimension of epistemological beliefs. The higher one's score on the epistemological beliefs "Effort" subdimension that "learning depends on Effort", the higher his/her scores on all subdimensions of life-long learning competency beliefs scale. The second type of relation (function) has a very small effect size of only 3% and reveals a significant relationship between DecMake subdimension of life-long learning competency beliefs and the Ability and SingleTruth subdimensions of epistemological beliefs. The higher one's score on the epistemological beliefs "Ability" and "SingleTruth" subdimensions that "learning depends on ability" and "there's a single truth", the higher his/her scores on DecMake subdimension of life-long learning competency beliefs scale.

In other words, i) epistemological beliefs predict life-long learning competency beliefs, ii) the "Effort" subdimension of epistemological beliefs significantly predicts all subdimensions of life-long learning competency beliefs and ii) "Ability" and "SingleTruth" subdimensions of epistemological beliefs significantly predict "DecMake" subdimension of life-long learning competency beliefs.

4. Results, Conclusions and Recommendations

In this study existence of statistically significant and optimum (Tekin, 1993) correlations between epistemological belief set (factors) and life-long learning competency belief set (factors) were examined using canonical correlation analysis (CCA). For this aim, 6-factor Life Long Learning Competencies Scale (Uzunboylu and Hürsen, 2011) and 3-factor Epistemological Beliefs Scale (Schommer, 1990) were administered to 1242 preservice teachers from four different departments at four different years of study. Since both scales had several factors, the optimum relationship between these beliefs (belief sets) were examined using CCA.

By using this multivariate statistical technique, the existence of statistically significant maximum correlations between linear combinations of two sets of random variables mentioned above were shown (Tatlıdil, 2002). There was a maximum and significant correlation between epistemological belief set (factors) and life-long learning competency belief set (factors) which was based on two different functions. In fact, there were initially 6x3=18 possible correlation combinations for CCA to be interpreted which were reduced finally to 2 (Bayyurt, 2004). This dimension reduction allowed to find the simplest model by which the relationship between two sets of variables can be maximally explained (Hardle and Simar, 2015; Kalaycı, 2014; Temurtaş, 2016).

The statistically significant correlation between epistemological beliefs (covariate variable set) and life-long learning competency beliefs (dependent variable set) explains total 34% of the covariance between the two belief sets. This is a statistically significant but moderate level of effect size. This significant relationship between two belief sets is rooted in two different relationship types (functions). The first type of relation (function) has the bigger effect size of 31% and reveals a significant relationship between all subdimensions of life-long learning competency beliefs and the "Effort" subdimension of epistemological beliefs. The second type of relation (function) has the smallest effect

size of only 3% and reveals a significant relationship between "DecMake" subdimension of life-long learning competency beliefs and the "Ability" and "SingleTruth" subdimensions of epistemological beliefs.

Overall, the findings indicated that there is a statistically significant correlation between epistemological belief set and life-long learning competency belief set. Therefore, epistemological beliefs predict life-long learning competency beliefs. In this direction of relationships, "Effort" dimension of epistemological beliefs is the single most powerful predictor of life-long learning competency beliefs and the "Ability" and "SingleTruth" subdimensions of epistemological beliefs are the predictors of "DecMake" subdimension of life-long learning competency beliefs. When previous related research was examined the following results were encountered. In her study, Selçuk (2016) determined that there was a significant difference in the lower dimension of "competence perceptions of personal attempt and entrepreneurship" according to the variables of gender (of preservice teachers) and educational program (Hürsen, 2011). Additionally, while lowest contributions were found in the lower dimensions of "obtaining information" and "digital competences" in this study; it was determined that teachers had a high perception in these two lower dimensions in the study of Hürsen (2011). Lewis (2004) underlined the importance for teachers to realize their implicit beliefs in order to have a greater control over their applications. Because people who have strong beliefs about their competences are in tendency to make a high-level effort. They desire to struggle even under inappropriate conditions (Özgen and Bindak, 2008). According to these results, it might be suggested that the results obtained from previous studies align with the findings acquired from this study and epistemological beliefs predict beliefs regarding the competence of life-long learning.

It is important to direct preservice teachers in such a way that they realize their epistemological beliefs so that they will sustain the process of education successfully. Because the conception of education expects educators and institutions that train teachers to raise individuals as information literate. Individuals will be able to successfully conduct the activities of solving knowledge problems only through becoming individuals who could direct and motivate themselves and learn life-long. Thus, revealing the epistemological beliefs of preservice teachers and raising consciousness on this issue are of particular importance for the quality of education. In literature, there is a very limited number of studies that reveal the relationship between life-long learning and epistemological beliefs. Both life-long learning scale and epistemological belief scale are very important for analyzing life-long learning competencies and epistemological beliefs of preservice teachers and determining their deficiencies in this aspect. Thus, it is recommended to examine the relationship between life-long learning scale and epistemological belief scale via canonical correlation analysis and support it with different studies. Besides, using the scales in making comparisons between different departments or years of study aimed at preservice teachers in different universities will make a great contribution to literature.

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