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## The Relationship Between Pre-Service Teachers' EQ Levels And Epistemological Beliefs

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### Abstract

This study focused on the analysis about the relationship between pre-service teachers' EQ levels and epistemological beliefs. The sampling consisted of 209 pre-service teachers studying at Hacettepe University, Faculty of Education. The data were collected through "Epistemological Beliefs Scale" developed by Schommer (1990), which was adapted to Turkish by Deryakulu & Buyukozturk (2002) along with the "Emotional Intelligence Scale" developed by Schutte, Malouff, Hall, Haggerty, Cooper, Golden & Dornheim (1998), which was translated into Turkish by Gocet (2006). The findings were used to evaluate the relationship between pre-service teachers' EQ levels and epistemological beliefs. The Cronbach Alpha reliability coefficient of "EIS" was found to be .81. The reliability coefficient of "EBS" was determined to be .80.

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### 1. Introduction

There are various differences between individuals. Teaching programs are designed by considering similarities between individuals along with their differences. Teaching students to seek knowledge, revealing and improving their different aspects require the qualifications of the teaching profession. Therefore, it is a common phenomenon to take individual features of student teachers into consideration. Emotional intelligence levels and epistemological beliefs stand forward as important individual features within the education and teaching process (Onen, 2012).

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Emotional Intelligence (EQ), in its definition, involves the individuals' recognition of his/her own feelings as well as others', while reflecting them on his/her thoughts and behaviors (Mayer & Salovey, 1990; Salovey & Mayer, 1997). EQ, having a defining effect and power over the success in both real and professional life, has been questioned to be an innate talent or a skill to be improved or even a competence. Findings have shown that while EQ could be an innate feature, it could also be improved through learning (Goleman, 1996; Cooper, 1997; Kocayoruk, 2004; Somuncuoğlu, 2005). The subjective belief of individuals about what knowledge is and how learning occurs is generally named as their epistemological beliefs (Perry, 1981; Vergnaud, 1990; Ozden, 2003). Epistemological beliefs reflect thoughts such as "what is knowledge?", "How is knowledge attained?", "how accurate is knowledge?", "what are the limitations and criteria for knowledge?" is knowledge attained when the experts of discipline transfer it to students or is it attained through interaction?" (Hofer and Pintrich, 1997; Ozden, 2003, p 6; Ravindran, Greene & Debacker, 2005; Aksan & Sozer, 2007). The basic theory lying underneath Schommer's (1990) approach is that individuals have different developmental levels regarding their thoughts about what knowledge is and how it is attained, which are also reflected on students' behaviors. Epistemological belief dimensions identified by Schommer (1994) indicate a distribution rather than continuity. Each dimension is defined with significant distributions standing between underdeveloped or naïve epistemological beliefs and complex epistemological beliefs (Schommer-Aikins & Hutter, 2002). Magolda (1993) expresses the development process of epistemological beliefs through the social constructivist perspective in a statement as "people construct their own lives effectively and meaningfully by themselves; evaluate events and experiences in their own ways; and reach to conclusions regarding what these events and experiences meant for them from their current perspectives". Studies on evaluation of epistemological beliefs through EQ emphasize the fact that affective characteristics of individuals should also be considered within the knowledge seeking and attainment process. These aspects have defining effects on individuals' thoughts, behaviors, ways of attaining knowledge, approaching events and problem solving skills. Therefore, in improving student teachers' qualifications, epistemological beliefs and EQ are quite important. Additionally, the relationship between these two variables should be taken into consideration in designing and organizing teaching-learning processes for contributing to the effectiveness of education. In this respect, this study focused on the relationship between student teachers' epistemological beliefs and emotional intelligence levels.

## 2. Method

### 2.1. Sampling

The sampling of the study consists of 209 pre-service teachers studying at Hacettepe University in Turkey within the 2011 – 2012 academic year. Participants are students of Chemistry Education, Physics Education, Biology Education and Science Education departments.

### 2.2. Data collection tools

#### 2.2.1. Emotional Intelligence Scale (EIS)

In order to determine student teachers' EQ levels, Emotional Intelligence Scale developed by Schutte, Malouff, Hall, Haggerty, Cooper, Golden & Dornheim (1998), modified by Austin et.al. (2004) and translated into Turkish by Gocet (2006), was applied. The 5-point Likert-type scale consisted of 37 statements with three factors. The Optimism-Organizing Spiritual State subdimension of the scale consisted of 17 statements, while benefiting from Emotions subdimension had 6 and Expression of Emotions subdimension had 14 statements. The Cronbach Alpha internal consistency coefficient was calculated for the scale as 0.81, while it was found to be 0.77 for the Optimism-organizing Spiritual State subdimension, 0.73 for Benefiting for Emotions subdimension and 0.54 for Expression of Emotions subdimension.

#### 2.2.2 Epistemological Beliefs Scale (EBS)

The Epistemological Belief Scale, which was developed by Schommer (1990) was translated into Turkish by Deryakulu and Buyukozturk (2002). The reliability and validity studies were completed. It is a 5-point Likert-type scale and it has a three-factor structure. The first factor of the scale called "Belief that learning depends on effort"

consists of 18 items. The second factor of the scale called “Belief that learning depends on skills” consists of 9 items. “Belief that there is only one correct knowledge”, the third factor, consists of 8 items. The dual correlations between the factor scores of the scale show that factors are independent from each other, which means that the scale assesses different dimensions related to epistemological beliefs. The Cronbach Alpha inner consistency coefficient for the whole scale was found to be .80. The calculation was found to be .79 for the first factor, .76 for the second factor and .72 for the third factor (Deryakulu & Buyukozturk, 2005; Vural and Gomleksiz, 2007). The low average scores of the factors were evaluated as underdeveloped/unimproved epistemological belief and the high average scores were evaluated as developed/improved epistemological beliefs (Izgar & Dilmaç, 2008).

### 3. Findings

#### 3.1. Findings on student teachers epistemological beliefs

In order to determine student teachers’ epistemological beliefs, their scores on the subdimensions of EBS were analyzed. The arithmetical averages and standard deviation values of subdimension scores were displayed on Table 1

**Table 1. Analysis of student teachers’ epistemological belief scores**

Epistemological belief dimensions	N	$\bar{x}$	Sd
Belief that learning depends on effort	209	4.00	.33
Belief that learning depends on skills	209	2.37	.65
Belief that there is only one correct knowledge	209	3.05	.57

Table 1 shows that the highest score averages of student teachers were on the “Belief that learning depends on effort” subdimension, while the lowest were on “Belief that learning depends on skill”. In other words, student teachers have improved beliefs that learning depended on effort.

#### 3.2. Analysis on student teachers’ EQ levels

In order to determine student teachers’ EQ levels, the scores of student teachers at the EQ Scale were analyzed. The arithmetical averages and standard deviation values of subdimension scores were displayed on Table 2.

**Table 2. Analysis of student teachers’ EQ Scale scores**

EQ scale subdimensions	N	$\bar{x}$	Sd
Optimism	209	3.8477	.36
Benefiting from emotions	209	2.4920	.61
Expression of emotions	209	2.6671	.41

Table 2 shows that student teachers received higher scores from “optimism” subdimension than other subdimensions, while receiving the lowest from the “benefiting from emotions” subdimension.

#### 3.3. Analysis of the relationship between student teachers’ epistemological beliefs and emotional intelligence levels

The research also sought answers to the question on a potential relationship between the Emotional Intelligence Scale and Epistemological Beliefs Scale. Therefore, the numeric values obtained from the data collection tools were summarized on Table 3.

Table3. Pearson Multiplication Moment Correlation Analysis results of the subdimensions scores of epistemological beliefs scale and EQ

Subdimensions of epistemological beliefs scale	Scale		
	Subdimensions of EQ SCAle		
	Optimism	Benefiting from emotions	Expression of emotions

<b>Belief that learning depends on effort</b>	<b>r</b>	.059	.693*	-.035
	<b>p</b>	.395	.000	.615
<b>Belief that learning depends on skills</b>	<b>r</b>	.039	-.636*	.*539
	<b>p</b>	.575	.000	.000
<b>Belief that there is only one correct knowledge</b>	<b>r</b>	.044	-.031	.045
	<b>p</b>	.526	.660	.515

N= 209, \* p<.01

Table 3 shows that there is a significant and negative relationship between “belief that learning depends on skills” subdimension of epistemological beliefs scale and “benefiting from emotions” subdimension of EQ Scale, while a significant and positive relationship was observed on the “expression of emotions” subdimension ( $r = -.636$ ,  $r = .539$ ,  $p < .01$ ). a positive significant relationship was observed between the “belief that learning depends on effort” and “benefiting from emotions” subdimensions ( $r = .693$ ,  $p < .01$ ).

#### 4. Conclusion and Discussion

In order to determine the relationship between student teachers’ epistemological beliefs and EQ levels, this study made use of the arithmetical averages and correlations of subdimensions of epistemological beliefs scale and EQ Scale. Looking at the scores of student teachers at the epistemological beliefs scale, the highest score was observed on the “belief that learning depends on effort”. This means that student teachers have a strong belief that learning depends on effort. Scores from each factor of the epistemological beliefs scale show that individuals have developed/underdeveloped beliefs regarding that factor according to the strength of the score (Izgar & Dilmac, 2008). Similarly, student teachers’ EQ levels displayed highest averages on the “optimism” subdimension, while indicating the lowest averages for the “benefiting from emotions” subdimension. Analysis concluded that they had positive EQ levels according to the statements in the “optimism” subdimension. In other word, optimist EQ levels of student teachers were found to be more advanced than other intelligence levels. These findings show that student teachers were able to organize their optimist spiritual states when they face challenging situations; however, they failed to benefit from their emotions effectively while making these organizations. Torun’s (2011, p 56) study on Science and Technology teachers concluded that teachers received the highest scores from the “optimism” subdimension”. The relationship between student teachers’ epistemological beliefs and EQ levels displayed a positive significant relationship between “belief that learning depends on effort” subdimension of Epistemological Beliefs Scale and “benefiting from emotions” subdimension of EQ Scale. The significant negative relationship was observed between the “belief that learning depends on skills” subdimension and “benefiting from emotions” subdimension, while a significant positive relationship was observed with the “expressing emotions” subdimension.

It is very important to know student teachers’ EQ levels and epistemological belief levels today as they are directly reflected on the teaching program they prepare, materials they use, the way they teach, the teaching methodology they choose, the assessment and evaluation technique they apply as well as on the students naturally. Determining epistemological beliefs and EQ levels of students and preparing programs and materials accordingly would contribute to the quality of education. Analyzing student teachers’ epistemological beliefs and EQ dimensions as the focus of this study along with determining their relationship would doubtlessly bring important conclusions for educational research and contribute to other studies in the field.

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