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Pre-service Mathematics Teachers' Attitudes towards the Profession of Teachıng*

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ABSTRACT

Teachers' ability to give students mathematical instruction in an effective way depends mainly on teachers' attitudes towards the profession of teaching. In this context, this research study was planned with the idea that it is important to determine the teaching attitudes of pre-service teachers who graduated from the faculty of Science and Letters and the faculty of Education. The research problem was to investigate pre-service elementary mathematics teachers' attitudes towards the profession of teaching and the teaching attitudes of the Mathematics graduates from the faculty of Science and Letters who have taken teaching formation courses in terms of different variables. The research was conducted with the pre-service mathematics teachers enrolled in the senior grade of the program of Mathematics Education in Hasan Ali Yücel Faculty of Education and those taking teaching formation courses in the academic year of 2012-2013. The data were collected using the "Teaching Approach Scale" developed by Çetin (2006) and a demographical information form prepared by the researchers. This quantitative research study was conducted in survey method. An SPSS 16 statistical program was used to analyse the data. According to the findings, it was observed that pre-service teachers' attitudes towards teaching did not differ in terms of gender, parents' educational level, type of high school of graduation. On the other hand, a significant statistical difference was detected between the pre-service teachers' attitudes towards teaching in terms of parents' monthly income. The research findings were discussed in the light of the relevant literature and some suggestions were provided for further research and researchers.

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Keywords:
Mathematics, Pre-service mathematics teachers, Attitudes towards the profession of teaching.

Introduction

In today's world, where technology is advancing rapidly, mathematical knowledge and skills have an important role in the adaptation of individuals because mathematics has an interdisciplinary nature. Even though mathematics exists in our lives since birth, mathematics learning occurs systematically by the help of teachers since the day individuals start elementary education. In this context, one can argue that teachers' ability to give students mathematical instruction in an effective way depends mainly on teachers' attitudes towards the profession of teaching.

Betz (1978) argues that mathematics is the most effective tool of today's world organization and mathematics learning and acquisition of mathematical skills have become more important than ever. According to the researches, there are several factors that play an important role in mathematics learning

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and teaching, but the most important of all is teachers (Çakmak, 2005). Therefore, teachers who will be employed in the process of mathematics learning and teaching are obviously the cornerstones of mathematics education (Gülten, 2011).

Teacher training is an integral part of improving education system. Teacher training programs require merging and structuring of educational sciences and special field education both in terms of contents and personnel. This is the only way of training knowledgeable and skilled teachers. In this context, special field education should be emphasized (Erdoğan, 2011). A type of training that mathematics teachers receive to be good mathematicians and teachers would contribute to the formation of a positive teaching attitude. On the other hand, no matter how well the goals in education are determined, no matter how organized the curriculums are, it is not possible to get the desired outcome unless they are conducted by teachers who have such goals and perceptions (Sünbül, 2001). Teachers are the most essential element of education since they are the initiators, developers and implementers of education. Teachers' role in education can change, increase, and decrease, but it can never be ignored. Overemphasis on textbooks, education tools, curriculum, class arrangements and administration types has caused teachers to be neglected recently. However, the gravity of teachers role in the process of education can be changed and teacher dependence can be diminished. This can be the case, but it should not mean neglecting the teacher completely (Cüceloğlu and Erdoğan, 2013).

Teaching is not a profession like a technician that carries out only technical roles. Cüceloğlu and Erdoğan (2013) discuss the concepts of "teaching" and "being a teacher" and they argue that those who do the necessary technical acts by means of described procedures are just teaching. However, they state that being a teacher means taking a deeper responsibility and a teacher's relationship and interaction with his/her students cannot be limited to a time period or space. In this context, the concept of "being a teacher," which is emphasized by Cüceloğlu and Erdoğan (2013), does not mean to neglect the roles of a teacher. On the contrary, they underline a high level interaction which requires teachers to assert themselves, devote themselves to their jobs, and challenge themselves. The way teachers do their parts effectively depends on identifying properties about teachers themselves and their professions and taking necessary precautions during pre-service trainings (Pehlivan, 2008). However, while teacher training institutions try to equip prospective teachers with necessary technical skills, they should also attach importance to providing a convenient environment and arrangements taking into account the importance of attitudes which will help them become "a good teacher". In this context, since the profession of teaching requires a constant interaction between teacher and students, it is important for prospective teachers to acquire teaching attitudes which provide the basis for a long-lasting behaviour (Gümüş and Çapar, 2011). Attitudes and perceptions towards a profession influence professional competence and professional achievement (Bulut, 2009; Terzi and Tezci, 2007).

Smith (1968) defines attitude as a tendency attributed to an individual that arranges in an orderly manner that individual's thoughts, feelings, and behaviours in relation with a psychological object. Sherif (1973) accepts value as a departure point in defining attitude because according to him, attitude is the psychological process of a value that results in an individual, which is, in other words, an individual aspect of a value (cited in Eserpek, 1981). In other words, attitude is a form of value that is internalized by an individual and is an intrinsic part of an individual (Eserpek, 1981). Freedman, Sears and Carlsmith (2003) define attitude as "a lasting system that involves a behavioral disposition and cognitive/emotional elements". For Baron and Bryne, attitudes are well-organized, long-lasting tendencies of emotion, belief, and behaviour (cited in Cüceloğlu, 2005). Attitude is an acquired inherent state that affects an individual's choice of individual activities towards a group of things, individuals, events, and a variety of situations (Senemoğlu, 2001). The Dictionary of Educational Terms defines attitude as "a learned tendency that impels an individual to act in a certain way when faced with certain individuals, objects, and situations" (Demirel, 2003). Attitude is known as one's positive or negative approach towards an object, situation, or event (Türker and Turanlı, 2008). An individual's approach towards another individual, object or thing depends on the value and attention they pay (Türker and Turanlı, 2008). An individual tends to have a negative approach towards the one he/she deems valueless while he/she tends to have a positive approach towards the one he/she deems valuable and is attached to (Çetin, 2006).

When the above mentioned definitions are taken into account, teaching attitude can be defined as a value a teacher gives to the profession and the acts he/she is engaged in as a result of the impact of this value. Teachers with a positive professional attitude are expected to have better teaching performance. As also stated by Semerci and Semerci (2004), positive attitudes facilitate learning and teaching and they increase success; on the other hand, negative attitudes reduce success. Positive attitudes that pre-service teachers develop towards the profession during teacher training programs have an important role in creating a permanent change in students' behaviour. A teacher who loves his/her job, who regards it important, and who is patient, tolerant, self-confident and who loves children and enjoys teaching children would be more successful than a teacher who lacks these attributes Therefore, positive attitudes towards the profession are among the most essential properties for prospective teachers to attain during teacher training processes (Güven and Kaya, 2013).

In this context, to be aware of pre-service teachers' attitudes towards the profession would give an idea about the kind of pre-service training (Üstüner, 2006; Semerci and Semerci, 2004) necessary to be given. When the literature is examined (Pehlivan, 2008; Özbek, 2007; Yüksel, 2004; Çapa and Çil, 2000; Bulut, 2009; Çapri and Çelikkaleli, 2008; Karataş, 2010; Eraslan and Çakıcı, 2011; Tekerek and Polat, 2011; Demirtaş, Özer and Cömert, 2011; Derman et al. 2008; Kılıç, 2006; Tanel, Şengören and Tanel, 2007; Açışlı and Kolomuç, 2012; Güven and Kaya, 2013), there are several research studies on pre-service teachers' attitudes towards the profession of teaching. However, there has been no research on the relationship between the teaching attitudes of pre-service elementary mathematics teachers and pre-service mathematics teachers who graduated from the Faculty of Science and Letters. Yet, both groups of pre-service teachers are of essence in terms of mathematics learning and teaching because elementary mathematics teachers will work as mathematics teachers when students prepare for high school and pre-service mathematics teachers who are graduates of the Faculty of Science and Letters will work as mathematics teachers when students prepare for university. In this context, the faculties of Education and Science and Letters are known as the institutions which serve to train teachers in Turkey. This research was planned to determine the teaching attitudes of pre-service teachers who graduated from the faculties of Education and Science and Litarature.

The research problem is to investigate pre-service elementary mathematics teachers' attitudes towards the profession of teaching and the teaching attitudes of the mathematics graduates from the Faculty of Science and Letters who take teaching formation courses in terms of different variables.

This research study aims to explore pre-service elementary mathematics teachers' attitudes towards the profession of teaching and the teaching attitudes of the pre-service mathematics teachers who graduated from the Faculty of Science and Letters in terms of different variables. Answers will be sought to the following questions: Do the teaching attitudes of pre-service elementary mathematics teachers and pre-service mathematics teachers who graduated from the Faculty of Science and Letters differ significantly in terms of the following variables:

1. Gender
2. Type of high school of graduation
3. Parents' level of education
4. Monthly family income
5. Faculty

As is known, teachers' attitudes towards their profession play a significant role in doing what the profession takes (Durmuşoğlu, Yanık and Akkayounlu, 2009). As also stated by Eraslan and Çakıcı (2011), Ajzen and Fishbein (1977) define attitude as one of the most important factors in predicting people's behaviours and they add that when their teaching attitude is positive, individuals show better performance in their jobs and have better success, and vice versa. Therefore, pre-service mathematics teachers' ability to carry out teaching qualitatively depends on their attitudes towards the profession of teaching. In this context, this research is important as it is necessary to study pre-service mathematics teachers' attitudes towards the profession and to identify the existing situations. On the other hand, there has been no similar research on pre-service elementary mathematics teachers and the graduates of the Faculty of Science and Letters who take teaching formation courses. Therefore, this research study is considered to contribute to the literature. Besides, it is considered essential for pre-service teachers, mathematics teachers, and teacher

training institutions to identify pre-service mathematics teachers' attitudes towards the profession of teaching.

This research is limited to pre-service mathematics teachers enrolled in the senior grade of Primary Mathematics Education in the Faculty of Education and the graduates of the Faculty of Science and Letters who take teaching formation courses at a university in the city of İstanbul during the academic year 2012-2013. The attitude scale which was developed by Çetin (2006) and checked for validity and reliability is assumed to be able to identify teaching attitudes. Pre-service teachers' answers were accepted to be sincere and honest. The research sample is believed to represent the scope.

Method

Model

This research study is designed in descriptive survey model. The conditions under which pre-service teachers in the study sample are tried to be described without an external intervention since survey model aims to describe the existing situation as it stands in the past or currently (Karasar, 2005).

Scope and Sample

The scope of the research is composed of pre-service mathematics teachers who are the graduates of the program of Primary Mathematics Education and the graduates of the department of Mathematics in the Faculty of Science and Letters who take teaching formation courses. The research sample consists of pre-service mathematics teachers enrolled in the senior grade of the program of Primary Mathematics Education in Hasan Ali Yücel Faculty of Education in the academic year of 2012-2013 and those taking teaching formation courses. The research was conducted with 102 pre-service teachers, 49 of which were enrolled in the senior grade and 53 of which were taking teaching formation courses.

Data Collection Tools

The data were collected using the "Teaching Profession Attitude Scale" developed by Çetin (2006) and a demographical information form prepared by the researchers. Personal information form includes questions regarding gender, department, parents' level of education, type of high school of graduation, and parents' income.

Teaching profession attitude scale. The five-point Likert-type "Teaching Profession Attitude Scale" developed by Çetin (2006) is composed of 35 items and is a three-factor scale with sub-dimensions of love, value and harmony. The 35 items consist of 15 negative and 20 positive items. The items, which are five-point Likert type, are graded as "I strongly agree", "I agree", "I am not sure", "I disagree", "I strongly disagree". Positive statements are scored from 5 (I strongly agree) to 1 (I strongly disagree), while negative statements are scored from 1 (I strongly agree) to 5 (I strongly disagree). Cronbach Alpha internal consistency coefficient of the Teaching Profession Attitude Scale was found to be .95 by Çetin (2006). It was calculated as .68 in this study.

Data collection and analysis. Data collection tools were applied at the end of the second semester in the academic year 2012-2013. The application of data collection tools was done under the surveillance of the researchers and some verbal information was given about the scale and personal information form so as to prevent any problem during application. An SPSS 16 statistical program was used for the data analysis. The Independent t-test, Kruskal Wallis test and Mann Whitney-U test were used as statistical techniques in the study. The significance level was taken as .05 for the statistical analyses.

Findings

The research findings based on the sub-problems were given and interpreted in tables.

The first sub-problem of the research was to search for an answer to the question whether attitudes of pre-service elementary mathematics teachers' and the graduates of the Faculty of Science and Letters

towards the profession of teaching differ or not in terms of gender. The findings related to this sub-problem were given in Table 1.

Table 1. Results of independent group ttest performed to determine whether teaching profession attitude scale sub-dimension scores differ or not in terms of gender

Scores	Groups	N	X	SS	SH_x	t	t test Sd	p
Love	Female	57	72,89	8,51	1,12	-0,075	100	,941
	Male	45	73,02	8,62	1,28			
Value	Female	57	35,89	5,84	0,77	1,647	100	,103
	Male	45	33,73	7,40	1,10			
Harmony	Female	57	13,05	5,13	0,68	-1,419	100	,159
	Male	45	14,46	4,80	0,71			
Total	Female	57	121,84	11,58	1,53	0,235	100	,815
	Male	45	121,22	15,11	2,25			

As shown in Table 1, as a result of the independent group t test performed to determine whether teaching profession attitude scale sub-dimension scores differ or not in terms of gender, the difference between the arithmetic means of the groups was not found to be meaningful. Accordingly, it can be concluded that gender does not affect the attitude towards the profession of teaching. This result might depend on the sample.

In the second sub-problem, teaching attitudes of pre-service mathematics teachers enrolled in the program of Mathematics Education and those who take teaching formation courses in terms of the type of high school were studied and the related findings were presented in table2.

Table 2. Results of Kruskal Wallis test performed to determine whether teaching profession attitude scale sub-dimension scores differ or not in terms of type of high school of graduation

Scores	Groups	N	Mean Rank	Chi-square	Sd	p
Love	Anatolian Teacher Training High School	45	51,16	3,055	2	0,217
	General High School	25	59,50			
	Other	32	45,73			
	Total	102				
Value	Anatolian Teacher Training High School	45	50,34	1,183	2	0,553
	General High School	25	47,94			
	Other	32	55,91			
	Total	102				
Harmony	Anatolian High School	45	58,43	4,952	2	0,084
	General High School	25	49,18			
	Other	32	43,56			
	Total	102				
Total	Anatolian Teacher Training High School	45	53,42	0,573	2	0,751
	General High School	25	52,12			
	Other	32	48,31			
	Total	102				

As shown in Table 2, as a result of the Kruskal Wallis test performed to determine whether teaching profession attitude scale scores differ or not in terms of type of high school of graduation, no significant statistical difference was found among the groups. When the table is examined, it is also observed that pre-service teachers who graduated from Anatolian teacher training high schools had higher scores in the dimension of harmony and total scores of the scale. Since the graduates of teacher training high schools receive an additional score to their advantage, the graduates of teacher training high schools compose the majority of the Education faculty. When the fact that the score of harmony was in favor of the graduates of

Education faculty (see Table 7) is taken into account, the variable of faculty rather than type of high school of graduation is likely to influence the difference. When the lack of absence in the other dimensions unites with this finding, it can be concluded that high school is not very influential. The fact that it has been a long time since the pre-service teachers finished high school and that they graduated from high schools of similar quality might lead to this finding. As is known, certain high schools are admitted to the programs of Mathematics in the faculties of Education and Science and Letters. It is observed that the sample of the research does not consist of the graduates of different types of high school. Although the researchers inquire all types of high school, it is observed that the sample group mainly consists of the graduates of general high schools and Anatolian teacher training high schools. For this reason, other types of high school were grouped under the "other" option. These are mainly super high schools, vocational religious high schools (imam-hatip high schools), science high schools, and Anatolian high schools that implement general high school program. Therefore, the lack of difference in terms of high school of graduation can be taken for granted. Besides, the fact that many students take additional courses in addition to high school courses to prepare for university entrance exams might neutralize the difference due to the type of high school of graduation. These findings indicate that receiving teacher training at university level approximates pre-service teachers' attitudes. It must be taken into account that teacher training high schools, which are opened with the aim of giving a teaching attitude at early ages, are not as functional as it is desired. Because teacher training high schools are of the same quality as general high schools and Anatolian high schools and they serve nothing but to increase the variety of high schools. Besides, another reason might be that students who have to prepare for university entrance exams and concentrate on basic sciences perceive vocational teaching courses as a burden, which causes negative attitudes. Therefore, it might be a better idea for the teacher training system to give teacher training more qualitatively in higher education level and to use teacher training for in-service educational activities instead of wasting their energy in teacher training high schools.

The third sub-problem of the research was to inquire whether the teaching attitudes of pre-service mathematics teachers in the sample differ in terms of parents' level of education. The findings related to this sub-problem were given in Tables 3 and 4.

Table 3. Results of Kruskal Wallis test performed to determine whether teaching profession attitude scale sub-dimension scores differ or not in terms of mother's level of education

Scores	Groups	N	Mean Rank	Chi-square	Sd	p
Love	Illiterate	13	55,50	2,969	4	0,563
	Elementary	46	48,29			
	Secondary	16	45,56			
	High School	16	58,19			
	University and higher education	11	59,09			
	Total	102				
Value	Illiterate	13	38,54	5,885	4	0,208
	Elementary	46	49,74			
	Secondary	16	54,12			
	High School	16	54,31			
	University and higher education	11	66,27			
	Total	102				
Harmony	Illiterate	13	62,12	2,277	4	0,685
	Elementary	46	50,34			
	Secondary	16	52,91			
	High School	16	47,62			
	University and higher education	11	47,41			
	Total	102				
Total	Illiterate	13	48,38	3,033	4	0,552
	Elementary	46	48,54			
	Secondary	16	48,44			
	High School	16	58,34			
	University and higher education	11	62,05			
	Total	102				

As shown in Table 3, as a result of the Kruskal Wallis test performed to determine whether teaching profession attitude scale scores differ or not in terms of mother's level of education, no significant statistical difference was found among the groups.

Table 4. Results of kruskal wallis test performed to determine whether teaching profession attitude scale sub-dimension scores differ or not in terms of father's level of education

Scores	Groups	N	Mean Rank	Chi-Square	Sd	p
Love	Illiterate	5	27,30	2,969	4	0,067
	Elementary	44	55,39			
	Secondary	13	65,73			
	High School	15	47,07			
	University and higher education	25	44,76			
	Total	102				
Value	Illiterate	5	67,30	5,885	4	0,179
	Elementary	44	49,26			
	Secondary	13	61,15			
	High School	15	38,97			
	University and higher education	25	54,78			
	Total	102				
Harmony	Illiterate	5	28,00	2,277	4	0,187
	Elementary	44	47,62			
	Secondary	13	52,23			
	High School	15	57,93			
	University and higher education	25	58,78			
	Total	102				
Total	Illiterate	5	27,00	3,033	4	0,101
	Elementary	44	51,35			
	Secondary	13	64,85			
	High School	15	42,70			
	University and higher education	25	55,00			
	Total	102				

As shown in Table 4, as a result of the Kruskal Wallis test performed to determine whether teaching profession attitude scale scores differ or not in terms of father's level of education, no significant statistical difference was found among the groups. According to these findings, it can be said that parents' level of education is not influential in pre-service teachers' teaching profession attitudes. On the other hand, when Tables 3 and 4 are examined, it is observed that parents' education level is mostly elementary.

The process of socialization starts in family. Therefore, parents' role in adolescence shapes individuals' behaviour in further years (Sandström, 1982). Parents are the most influential role models in the up-bringing of children. Therefore, parents' discipline methods, personality traits, cognitive styles, thinking mechanisms, values, attitudes, and habits play a major role in shaping adult behavior (Yıldız, 2010). However, no finding was found about the way parents' level of education affects pre-service teachers' attitudes. The reason might be that teacher training received by pre-service teachers make up the difference. Another reason might be that those with similar attitudes prefer teaching. On the other hand, the pre-service teachers in the sample are admitted to the program on condition that they pass the university entrance exam and this might be the reason for homogeneity. Meanwhile, when tables 5 and 6 are examined, the majority of pre-service teachers come from families with the monthly income of 1000-3000. Therefore, whatever level of education they have, when families have similar income level, they have a similar socio-cultural status. In other words, the sample consists of the pre-service teachers belonging to a similar socio-cultural status. On the other hand, when the conditions in Turkey are taken into account, whatever the level of education is, children of families with different level of income interact with each other in and outside school due to the recent urbanization. As a matter of course, this interaction might have led them to be influenced by each other. Development of human personality means identification with a model and exposure. Although this model is initially parents, parents are later replaced by other key figures (Yavuzer, 1993). Someone who has graduated from university might have been influenced by many other models in the formation of their personality and attitude.

The fourth sub-problem of the research was to inquire whether teaching attitudes of pre-service mathematics teachers in the sample differ or not in terms of monthly family income. The findings related to this sub-problem were given in Table 5.

Table 5. Results ofkruskal wallis test performed to determine whether teaching profession attitude scale sub-dimension scores differ or not in terms of monthly family income

Scores	Groups	N	Mean Rank	Chi-Square	Sd	p
Love	0 - 1000 TL	17	59,09	2,069	3	0,558
	1000 - 2000 TL	38	52,33			
	2000 - 3000 TL	28	50,00			
	3000 TL and over	19	45,26			
	Total	102				
Value	0 - 1000 TL	17	36,47	7,942	3	0,047
	1000 - 2000 TL	38	59,87			
	2000 - 3000 TL	28	49,36			
	3000 TL and over	19	51,16			
	Total	102				
Harmony	0 - 1000 TL	17	61,97	3,775	3	0,287
	1000 - 2000 TL	38	53,30			
	2000 - 3000 TL	28	45,91			
	3000 TL and over	19	46,96			
	Total	102				
Total	0 - 1000 TL	17	50,79	2,367	3	0,500
	1000 - 2000 TL	38	57,07			
	2000 - 3000 TL	28	47,98			
	3000 TL and over	19	46,18			
	Total	102				

As shown in Table 5, as a result of the Kruskal Wallis test performed to determine whether teaching profession attitude scale sub-dimension scores differ or not in terms of monthly family income, no significant statistical difference was found among the groups except the ones in the sub-dimension of value. Mann Whitney-U test was later performed to identify among which groups the differentiation was in the dimension of value. This finding was presented in Table 6.

Table 6. Results of Mann Whitney-U test performed to determine in which sub-dimensions teaching profession attitude scale sub-dimension scores differ in terms of monthly family income

Dimension	Groups	*N*	*S.T.*	*S.O.*	*U*	*z*	p
Value	0 - 1000 TL	17	19,53	332,00	179,00	-2,691	,007
	1000 - 2000 TL	38	31,79	1208,00			
	Total	55					
Value	0 - 1000 TL	17	19,53	332,00	179,00	-1,394	,163
	2000 - 3000 TL	28	25,11	703,00			
	Total	45					
Value	0 - 1000 TL	17	15,41	262,00	109,00	-1,678	,093
	3000 TL and over	19	21,26	404,00			
	Total	36					
Value	1000 - 2000 TL	38	36,38	1382,50	422,50	-1,463	,143
	2000 - 3000 TL	28	39,59	828,50			
	Total	66					
Value	1000 - 2000 TL	38	30,80	1170,50	292,50	-1,197	,231
	3000 TL and over	19	25,39	482,50			
	Total	57					
Value	2000 - 3000 TL	28	23,66	662,50	256,50	-,209	,835
	3000 TL and over	19	24,50	465,50			
	Total	47					

As shown in Table 6, as a result of the Mann Whitney-U test performed to identify in which sub-dimensions teaching profession attitude scale sub-dimension scores differ, the members of the family who earn "1000-2000 Turkish Liras" had a higher mean score than those of the family who earn "0-1000 Turkish Liras". There was no statistically significant difference among other groups. Although there was a significant difference between the two groups, it will not be sufficient to make a consistent interpretation because it does not provide sufficient data in the dimension of value in terms of economic situation. As is known, the profession of teaching is usually preferred by the children of middle-class families. When the income groups in the study are compared, these groups are observed to be in the framework of middle-class family. When the sample distribution is observed, the biggest group consists of the children of families with the income level of 1000-3000 Turkish Liras, which explains the finding. Besides, it is highly probable that prospective teachers feel they will guarantee their future life when they become teachers, so they might have an attitude different from their families. For this reason, family income might not create a significant difference.

The last sub-problem of the research was to inquire whether the teaching attitudes of pre-service mathematics teachers in the sample differ or not in terms of the variable of faculty. The findings related to this sub-problem were given in Table 7.

Table 7. Results of independent group t test performed to determine whether teaching profession attitude scale sub-dimension scores differ or not in terms of faculty

Scores	Groups	N	X	SS	SH_x	t test t	Sd	p
Love	Formation taker	53	73,52	8,78	1,20	0,710	100	,480
	Elementary	49	72,32	8,27	1,18			
Value	Formation taker	53	35,84	6,18	0,84	1,445	100	,152
	Elementary	49	33,95	7,02	1,00			
Harmony	Formation taker	53	12,37	4,40	0,60	-2,809	100	,006
	Elementary	49	15,08	5,30	0,75			
Total	Formation taker	53	121,75	13,26	1,82	0,147	100	,883
	Elementary	49	121,36	13,25	1,89			

As shown in Table 7, as a result of the independent group t test performed to determine whether teaching profession attitude scale sub-dimension scores differ or not in terms of faculty, it was found that while pre-service mathematics teachers who are graduates-to-be of the program of Primary Mathematics Education had higher mean scores than the graduates of the Faculty of Science and Letters who take teaching formation courses in the sub-dimension of harmony, the difference in other sub-dimensions and the total difference were not found to be statistically meaningful. According to these results, it can be concluded that pre-service teachers in both groups have similar attitudes towards the profession of teaching. The fact that both groups have taken pre-service teacher training might have led to this finding. However, the difference in favor of the graduates of the Education faculty might be due to the fact that the four-year training received by the members of this group influences harmony positively. As stated by Kağıtçıbaşı (2013), individuals are not born with attitudes, they learn atttudes later. Although cognitive, affective, and behavioral components do not all have to be on the basis of the formation of an attitude, an established attitude has a three-dimensional formation (Chaiken, 1993; cited in Kağıtçıbaşı 2013). Therefore, it is likely that teacher training activities which encompass cognitive, affective, and behavioral components have changed pre-service teachers' attitudes.

Conclusion and Discussion

According to the findings, it was observed that there was no difference in teaching attitudes of pre-service teachers in the sample in terms of gender. Moving from this finding, it can be concluded that pre-service teachers' teaching attitudes were not influenced by gender. This finding overlaps with the research findings by Bulut and Doğar (2006), Hacıömeroğlu and Şahin Taşkın (2010), Çakır, Kan, and Sünbül (2006), Bulut (2009), Tanel, Şengören, and Tanel (2007), Demirtaş, Cömert, and Özer (2011). Some research studies (Çapri and Çelikkaleli, 2008; Pehlivan, 2008; Yüksel, 2004; Uğurlu and Polat, 2011) suggest that female students' teaching profession attitudes were found to be more positive than those of male students. On the other hand, a research by Eraslan and Çakıcı (2011), which was conducted with students of pedagogical

formation courses, male students had a more positive teaching attitude than female students did. Different research findings obtained in relation to teaching profession attitudes can be discussed and an agreement can be reached by using different samples and methods.

As a result of the evaluation, it was found that there was no difference between teaching profession attitudes and parents' level of education. According to the results of research studies by Derman, Özkan, Altuk and Mülazımoğlu (2008); Tanel, Şengören and Tanel (2007), Güven and Kaya (2013), there was no significant difference between parents' level of education and teaching profession attitudes. Accordingly, it can be concluded that pre-service teachers' attitudes towards the profession of teaching were not influenced by parents' level of education. Further research studies can be carried out with different samples in order to explore the motives of this finding.

As a result of the analyses conducted in terms of type of high school of graduation, it was found that type of high school of graduation did not affect teaching profession attitudes. Besides, pre-service teachers who graduated from Anatolian teacher training high schools had higher scores in the dimension of harmony and total score of the scale. However, this finding was also observed in the comparison of faculty differences. Similarly, there was a finding in favor of the graduates of the Education faculty. However, since the graduates of the Anatolian teacher training high schools are also the graduates of the Education faculty, this finding might be due to the variable of faculty. If this difference is due to the variable of faculty, it can be argued that the type of high school is not an influential variable. According to this finding, it can be concluded that teacher training high schools and other types of high schools are equally influential in guiding students to the profession of teaching. When the fact that teacher training high schools are founded with the aim of preparing students motivationally and cognitively for the profession of teaching is taken into account, it can be concluded that this aim is not supported by the finding. This finding goes paralel with the research findings by Eraslan and Çakıcı (2011) and Şimşek (2005). In the context of the fact that there are so many types of high schools, it might be a good idea to review the status of teacher training high schools.

It is observed that there is no difference between the teaching attitudes of pre-service mathematics teachers enrolled in the senior grade of the program of Primary Mathematics Education and those who are about to complete teaching formation courses. Besides, pre-service teachers who are graduates- to-be of Primary Mathematics Education had higher mean scores than those who take teaching formation courses in the sub-dimension of harmony. According to the research study by Şimşek (2005) students enrolled in the Faculty of Education had a more positive attitude towards teaching and professional requirements than the students of the Faculty of Science and Letters, which supports this finding. Moreover, Sürücü (1997) concludes that pre-service teachers who are going to be employed in elementary education have a more positive attitude than the others (cited in Bulut and Doğar, 2006). When the target group of elementary students is taken into consideration, this finding can be evaluated as positive.

Suggestions

In line with the research findings, the following suggestions can be provided for further research and researchers.

- This research study is limited to pre-service mathematics teachers enrolled in the senior grade of Primary Mathematics Education in the Faculty of Education and the graduates of Mathematics in the Faculty of Science and Letters who take teaching formation courses at a university in Istanbul. Therefore, further research studies to be conducted with similar samples in Turkey would provide more explicit findings for pre-service mathematics teachers.
- Whether pre-service mathematics teachers' attitudes towards teaching differ or not in terms of gender can be explored with further qualitative research studies.
- Whether pre-service teachers' attitudes towards the profession of teaching are influenced or not by the type of high school and parents' level of education can be explored with wider samples and with a qualitative study in depth.
- The teaching attitudes of pre-service mathematics teachers in the sample can be investigated with other variables in addition to the variables used in this study.
- According to this research study, there were significant differences in favor of the graduates of the Education faculty and teacher training high schools in the sub-dimension of harmony. Since the

students of the Education faculty are also the graduates of teacher training high schools, it is not certain whether the difference is due to high school or faculty. Therefore, the students of the Education faculty who are not graduates of teacher training high schools can be compared to the graduates of the Faculty of Science and Letters to test the result. Thus, the role of teacher training high schools can be made more explicit.

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