Research Article doi: 10.12973/ijem.7.1. 119

International Journal of Educational Methodology
Volume 7, Issue 1, 119 - 136.
ISSN: 2469-9632
https://www.ijem.com/

A Comparative Examination of Relationship between Motivation Levels and Future Expectations of Preservice Mathematics and Science Teachers*

Rafet Aydin**
Mehmet Akif Ersoy University, TURKEY

Meray İşlek
Zonguldak Bülent Ecevit University, TURKEY

Received: October 27, 2020 ▪ Revised: January 4, 2021 ▪ Accepted: February 8, 2021

Abstract: The aim of this study is to examine the motivation levels and future expectations of preservice teachers studying in Mathematics and Science Teaching Departments comparatively. The population of study consisted of preservice teachers studying at Mathematics and Science Teaching Departments at Education Faculties of Mehmet Akif Ersoy University and Akdeniz University. The sample consisted of 470 preservice teachers. In research, the correlational survey model was used. Research data were collected with "Adult Motivation Scale" and "Future Expectations Scale". In data analyzing, statistics package program was used. Accordingly, t-test was used for variables with two categories and One Factor Analysis of Variance (ANOVA) was used for more than two categories. Sheffe multiple comparison test was used if it was significant. Pearson Correlation was used to determine whether there is a significant relationship between preservice teachers' motivation levels and future expectations. According to analysis results, motivation levels of preservice teachers were found to be high. Likewise, it was concluded that preservice teachers' expectations for future were highly positive. In preservice teachers' motivation levels and expectations for future, gender, major, type of high school they graduated and major satisfaction they study were found to be effective.

Keywords: *Expectation, future expectation, motivation, preservice teacher.*

To cite this article: Aydin, R., & İşlek, M. (2021). A comparative examination of relationship between motivation levels and future expectations of preservice mathematics and science teachers. *International Journal of Educational Methodology*, *7*(1), 119-136. https://doi.org/10.12973/ijem.7.1. 119

Introduction

Education is all of the efforts to develop a person's mental, physical, emotional, social abilities and behaviors in the most appropriate way or in a desired direction, and to gain him new abilities, behaviors and knowledge for certain purposes. In this respect, education is a process that begins with the birth of a person and continues throughout life (Akyüz, 2018). The education meant here is more planned, programmed and purposeful education. In terms of goals, it is possible for societies to achieve their economic, political, social and moral goals only through planned education (Aydın, 2009). Education is important not only because it is the driving force of the sufficient number and quality of manpower required by the phenomenon of development, but also because of its effect on the transfer of the elements that make a society a nation, called culture, to new generations and the adoption of the basic relations of a healthy, pluralistic democratic society (Aydın et al., 2008).

States consist of various systems and one of these systems is the education system. Although there are many elements of education system, three main elements that stand out from these elements are teacher, student and curriculum. The most important of these is undoubtedly the teacher. Because the person who will make this system functional and bring students to the targeted level with the education process is teacher. While educational activities that started with the birth of human beings are carried out by family and elders of family, after a certain period, schools undertake this education-training task. This activity is as old as human history. The teaching profession also started with this educational activity. Therefore, teaching profession can be considered as the oldest profession in the world.

There are great forward-looking expectations in every society from teachers who are responsible for preparing societies for future. There are many examples in history of Turkish Education regarding the expectations of society

* This study is a summarized and developed version of the research named "A Comparative Examination of Relationship between the Motivation Levels and Future Expectations of Preservice Mathematics and Science Teachers " supported by TÜBİTAK 2209 A Research Project Support Program

** **Corresponding author:**
Rafet Aydin, Mehmet Akif Ersoy University, Faculty of Education, Department of Educational Sciences, Burdur, Turkey.
✉ raydin@mehmetakif.edu.tr

from teachers. Statesmen and various educators have made many evaluations about the teaching profession, duties and responsibilities of teachers. Teaching has always been seen as an important profession and due to this importance, teachers have always had important duties and responsibilities. Teachers have always expected to fulfill these duties and responsibilities in the best way. Teaching is a profession that also has an artistic aspect that requires a special training (Aydın, 2009). According to Kavcar (2002), the most important element of an education system is teacher. The success of the education system mainly depends on qualifications of teachers and other education personnel who will operate and implement the system. No training model can produce service above the qualifications of personnel who will operate that model. Therefore, it can be said that a school is only as good as teachers in it.

In general, "profession" is defined as set of organized and regular activities that individuals acquire through education and continue to earn a living. “Teaching” is regarded as a profession with individual, social, cultural, scientific and technological professional status (Uygun, 2008). The choice of profession is important both individually and socially. Recently, at the stage of choosing a profession, it has become important to focus on the factors that affect the choice of profession due to the increasing number of professions and the need for expertise (Korkut- Owen et al., 2012). It can be said that an important factor that affects teachers' choice of profession and their productivity is their motivation to become a teacher. Therefore, it is necessary to train teachers who are beneficial to the society, who love their profession and who are highly motivated.

It is thought that determining the reasons for preference and expectations of candidates for teaching is also important in ensuring that the qualifications of preservice teachers trained by education faculties are at a high level (Tataroğlu et al., 2011). According to Akbaba (2006), motivation is one of the most important sources of power that determines the direction, intensity, determination of student behavior in school and speed in achieving the desired goal in educational environments. The source of a significant part of learning difficulties and disciplinary events observed in school and classroom is related to motivation.

Motivation is related to process of behavior towards meeting needs, and has characteristics that push people to behavior and determine direction of behavior. In short, motivation is about cause, emergence and conclusion of behavior related to meeting a need. In other words, a behavior with high motivation has a high performance and a low motivation behavior has a low performance. Again, motivation is not a situation that emerges and results at once, but is a process that includes reasons that push the organism to behavior, the shape and result of behavior (Sağır, 2020). According to Alver (2019); motivation is a psychological phenomenon that initiates, directs and maintains a behavior in an individual, and every person always needs motivation throughout his life. Because people want to have certain things in their lives. In order to achieve these, it must provide motivation from within and outside. Motivation and performance go hand in hand. High performance cannot be expected from individuals with low motivation. As Keblawi (2020) stated; there is no consensus on definition of motivation strategies, and researchers consider the concept in different ways. Motivation is considered as intrinsic and extrinsic motivation. According to Schunk (2009), motivation is conceptualized as a permanent environment; intrinsic and extrinsic motivation is anchored at both ends and in the middle originally, it is extrinsically motivated but internalized and now there are self-determining behaviors. Again, Schunk (2009) defines motivation in learning as an explanatory concept that helps us to understand why people act in certain ways, and that motivation in learning can be extracted from behavioral sequences such as verbalization, goal choices and goal-oriented activities. In literature, regardless of type of motivation, it is stated that both types are important. It has effects on behavior of individuals, pursuing goals and determining learning outcomes (Adedigba & Sulaiman, 2020).

Motivation, which is known to have significant effects on the individual, should be higher especially in teachers and preservice teachers who raise future generations. Because teachers have an important effect on an individual's learning. Again, the social-legal status, reputation, prestige and future expectations of profession are important as well as motivation in performance of teaching profession. Preservice teachers should also know and believe that profession has a reputation, prestige, social-legal status, and they should have positive expectations for future both themselves and profession.

Teacher training includes self-assessment of academic motivation, setting realistic goals, making plans to achieve goals, and evaluating goal process. Student motivation training integrated into academic content. This includes classroom activities, academic motivation and self-assessment, thought of achievement motivation, developing of self-concept, realistic goal setting, and personal responsibility training (Schunk, 2009). Motivation levels of individuals may change according to their communication with people around them; because motivation has power to influence others’ opinions (Castro & Villafuerte, 2019).

Another factor directly proportional to preservice teachers' motivation and attitudes towards teaching profession is their future expectations. Tuncer (2011) considers “future expectation” as situations that students hope to be realized in future. According to Atav and Altunoğlu (2013); investigating motivational factors that are effective in choosing teaching profession and deciding what the teaching field is, will be beneficial in making right profession choices by using the factors that emerge here effectively in directing people who are in selection stage to the teaching profession. Bringing right and suitable people to profession will contribute to acquisition of teachers satisfied with their

profession, love their job and satisfied with their work. The motivation of preservice teachers for teaching profession and field they study has power to affect their university education, quality of their future professional life and student success.

Expectation is defined as "what is expected to happen" or "an individual's prediction about the forms and situations to be taken or what is expected of him" (Turkish Language Society, 2011). Also, expectation is an important factor affecting a person's performance and motivation. For this reason, preservice teachers' high expectations for the future will increase their performance and motivation, thus increasing the possibility of becoming more useful educators for their students in future. Therefore, knowing and guiding students' expectations is a fact that should not be denied, especially for education faculties (Topuz et al., 2015).

It is important for preservice teachers to have a professional education, make appropriate professional choices, and have positive expectations for their future (Tuncer, 2011). In studies on future expectation, plans for success and interpersonal relationships usually become prominent (Şimşek, 2012). Youth's expectations for future in a society are one of the important factors that determine the development line and dynamics of that society (Güleri, 1998). Individuals' expectations differ according to their developmental period. For individuals in the middle school age who are in the middle of adolescence, gaining identity as a result of the search for independence and individual identity, independence from the family, relationships with the opposite sex, etc. including individual expectations are important. Social issues, philosophy of life, and social problems are beginning to gain importance for higher education youth in their last adolescence period (Yavuzer et al., 2005).

The future is a part of life that has not yet been realized but individuals want to live in line with their desires, and that always directs people forward. Life purpose is like a target or a guiding light in front of a person. The expectations of youth in the society for future are among the important factors that determine the development line and dynamics of the society. Because youth is a potential power for society. In this respect, it can be said that faculties should develop strategies to understand expectations and attitudes of students for future and their psychological well-being in the theoretical principles of faculties (Ehtiyar et al., 2017). According to Armağan (2004), it does not seem possible for young people to contribute to social development in cases where the social system does not guarantee the future of young people and they have concerns about their future. Also, according to him, youth should see their future safely, adopt social values and norms, and realize that they contribute to the process of social change.

As Cevik et al. (2012) stated, it is especially noteworthy to investigate the opinions of individuals regarding what they expect from their profession in their future professional life. Because the importance of a teacher believing in the requirements of his profession, being successful and being satisfied with his profession is an undeniable fact. Individuals, from the moment they choose the education of a profession, create expectations in relation to profession they choose. These expectations formed as a student, the levels at which they think their expectations would come true, have a great impact on their morale in the first years of their profession. According to Zembylas and Papanastasiou (2004); teachers' intrinsic or extrinsic motivation is related to job satisfaction as well as conditions such as salary, working hours and holidays. It has been observed that the higher the extrinsic motivation of teachers such as salary and working conditions, the more satisfied they are with their profession.

It is seen that some research has been done on the subject. Some of them can be stated as; Ayık and Ataş (2014), Bursal and Buldur (2013), Buldur and Bursal (2015), Bursal and Buldur (2016), Gençay and Gençay (2007), Gömleksiz and Serhatlıoğlu (2013), Kuzu and Çalışkan (2018), Marjon Bruinsma and Ellen P.W.A. Jansen (2010), Nursi (2019), Recepoğlu and İbret (2019), Schunk (2009), Uyulgan and Akkuzu (2014), Yorgancı Altıngül (2011) and Zembylas and Papanastasiou (2004).

It is seen that researches on determining the motivations and future expectations of preservice teachers are done separately, but the two elements are not done together and comparatively. It should be known whether there is a relationship between preservice teachers' motivations and future expectations.

The Purpose and Importance of Research

The aim of this study is to examine the motivation levels and future expectations of preservice teachers studying in Mathematics and Science Teaching Departments comparatively. This research is important, new and original since it makes comparisons as well as examining motivation levels and future expectations of preservice teachers together.

Since the adaptation of individuals to society and their social position can be ensured by the education of teachers, it was deemed important to examine the motivations of preservice teachers and their future expectations, and therefore the study was considered to have particular importance and this constituted the starting point of study.

Problem of Research

The main problem of this study is “What are the motivation levels and future expectations of preservice teachers studying in Mathematics and Science Teaching departments?” In order to reach this basic problem, the following questions were sought:

1. What are the motivation levels of preservice teachers?

2. Is there a significant difference in the motivation levels of preservice teachers studying in departments of Mathematics and Science teaching between the variables of gender, department where they study, type of high school they graduated from, major, university, perception of democracy and the order of preference of the teaching profession?

3. What are the future expectations of preservice teachers?

4. Is there a significant difference in the future expectations of preservice teachers studying in departments of Mathematics and Science teaching between the variables of gender, department where they study, type of high school they graduated from, major, university, perception of democracy and the order of preference of the teaching profession?

5. What is the relationship between the motivation levels and future expectations of preservice teachers?

Methodology

Research Model

In this study, which was conducted to determine preservice teachers' motivation levels and future expectations and to examine whether there is a relationship between them; correlational survey model, one of the scientific research models, was used. Survey models are research approaches that aim to describe a past or present situation as it exists (Karasar, 2012). Also, the survey model consists of "studies aiming to collect data to determine certain characteristics of a group" (Büyüköztürk et al., 2018, p.14). The correlational survey model, on the other hand, is explained as studies that try to find the relationship between variables and degree of connections (Balcı, 2018). Also, correlational survey models are research models that aim to determine the presence and/or degree of change between two or multiple variables (Karasar, 2012).

Population and Sample

The population of this research consists of 964 preservice teachers studying at Departments of Mathematics and Science Teaching at MAKU and AU Education Faculties in spring term of 2019-2020 academic year. In research, population is a large group of living or non-living beings from which the data (measurements) needed to answer the questions are obtained. In another way, the population can be defined as the group in which the results obtained by analyzing the data to be collected in the research will be valid and interpreted (Büyüköztürk et al., 2018).

The sample of the research consisted of a total of 470 preservice teachers, 382 women and 88 men who responded to the scales used to collect data. 229 of the preservice teachers who make up the sample are from MAKU and 241 from AU Faculty of Education.

Sampling is the process of taking samples from the population. There are certain and known rules for sampling. Only then, it can be accepted that the sample taken can represent the population (Karasar, 2012). Again, 'Convenience Sampling' method was used to determine the sample of study. Convenience Sampling, it is also called accidental sampling and it is the easy selection of individuals and groups to be researched. The researcher may prefer individuals and groups from whom the data can be easily collected (Sönmez & Alacapınar, 2011). In this study, student groups that research will be carried out were selected by accident and students who volunteered to fill out the questionnaires were included in sample.

Data Collection Tools

In the study, the "Personal Information Form" prepared by the researcher for the personal information of the preservice teachers, the "Adult Motivation Scale" developed by Ateş and İhtiyaroğlu (2019) to determine the preservice teachers' motivations, and "Future Expectations Scale" (FES) developed by Bursal and Buldur (2013) to determine preservice teachers' expectations for the future were used. Adult motivation scale consists of a total of 21 items, 13 items in intrinsic motivation dimension and 8 items in extrinsic motivation dimension. The scale is a five-point likert type: "strongly disagree", "disagree", "moderately agree", "agree" "strongly agree".

"Adult Motivation Scale" consists of two factors and 21 items. It was revealed that the Cronbach's alpha reliability coefficient of scale was 0.94 and two components together explained 47.95% of the total variance. As a result of confirmatory factor analysis of scale, the fit indices of the model were calculated as GFI (0.85), CFI (0.96), NFI (0.91), RMSEA (0.06), AGFI (0.82) and SRMR (0.06). Higher score obtained from Adult Motivation Scale means that motivation level is high.

"Future Expectations Scale" (FES) consists of a single factor and 10 items. Cronbach's α reliability coefficient of scale was found as α =.82. As a result of confirmatory factor analysis of scale, the fit indices of model were calculated as GFI (0.93), AGFI (0.90), NNFI (0.94), RMSEA (0.08), CFI (0.95) and SRMR (0.05). Scale was scored according to four-point

likert type; "Strongly Disagree", "Disagree", "Agree", and "Strongly Agree". While calculating FES scale score, the scores of negative items are reverse coded, and increase in total score of FES indicates that the participants' expectations for future have shifted towards more positive.

In Table 1 and Table 2, information about reliability of Adult Motivation Scale and Future Expectations Scale applied to research group is given.

Table 1. Reliability of Research Group in which Adult Motivation Scale was applied

Dimension	N	$\bar{X}$	SD	KS	Cronbach's alpha
Intrinsic Motivation	469	4.32	.43	.072*	.858
Extrinsic Motivation	469	3.93	.52	.065*	.753
Scale	469	4.17	.38	.052*	.851

*p<.05

Table 2. Reliability of Future Expectations Scale applied to Research Group

Dimension	N	$\bar{X}$	SD	KS	Cronbach's alpha
Scale	469	3.17	.47	.076	.871

*p<.05

Cronbach's alpha analysis was carried out for reliability of the data obtained from the scales and it was revealed that Adult Motivation Scale was α=.85 in scale overall, α=.85 in Intrinsic Motivation dimension and α=.75 in Extrinsic Motivation dimension. Reliability of Future Expectations Scale [FES] was α=.87 in scale overall. According to Özdamar (2015), Cronbach's alpha value is between .60 and .70, indicating that the scale has sufficient reliability; a value between .70 and .90 indicates that the scale has high reliability. Based on these results, it can be said that both scales have high reliability.

The data in study were collected with "Adult Motivation Scale" and " Future Expectations Scale". Besides purpose of both scales being different from each other, items of scale are also different from each other in terms of content. In addition, there are negative statements that are reverse coded in scale items. Therefore, in this study, it was tried to prevent systematic errors that may arise from Common Method Bias.

Data Analysis

The data collected with the relevant scales were encoded and a statistical package program was used in analysis of data. Accordingly, independent samples t-test was used for variables with two categories and One Factor Analysis of Variance (ANOVA) for Independent Samples for variables with more than two categories. If Variance Analysis was significant, Sheffe multiple comparison test was used to determine which groups differ. Pearson Correlation was used to examine whether there is a significant relationship between preservice teachers' motivation levels and future expectations.

In order to make appropriate statistical analysis of data obtained with the "Adult Motivation Scale", coefficient of skewness, arithmetic mean, median and mode were checked, and then (K-S) Kolmogorov-Smirnov normality test was carried out because the number of participants in research group was more than 50. Accordingly, the arithmetic mean of scale was 4.17, median was 4.19, mode was 4.19, the kurtosis was .397, and skewness was .258. When the sub-dimensions of scale are examined; arithmetic mean is 4.32, the median is 4.30, the mode is 4.23, kurtosis is 080, skewness is 358 in intrinsic motivation dimension; it was observed that the arithmetic mean was 3.93, the median was 3.87, the mode was 3.75, the kurtosis was 374, the skewness was 264 in extrinsic motivation dimension. The significance value of p=.00 (p <.05) as a result of the K-S test indicates that scores in scale do not have a normal distribution. The fact that skewness and kurtosis values are within ±1 values is interpreted as scores do not deviate significantly from the normal distribution (Büyüköztürk, 2009). When the skewness and kurtosis values were examined, it was found to be in ±1 interval. In addition, homogeneity of variances was examined. It was observed that variances were homogeneous and normally distributed in all sub-problems with data obtained from two or more samples. Therefore, it was decided to use parametric statistical tests in analysis of data. Tests such as descriptive statistics, independent samples t-test and one-way-ANOVA test were used according to independent variables. In ANOVA tests carried out, LSD test was used in homogeneous variance distributions in order to determine between which variables the difference is, and Dunnett's T3 test was used in those that did not show homogeneous distribution. The obtained data were interpreted in tables, and the difference between independent variables was tested at level of p=.05 (Büyüköztürk, 2009).

In study, "Future Expectations Scale" was applied and data were collected in order to determine preservice teachers' expectations for future. In order to make appropriate statistical analysis of data obtained from scale, the coefficient of skewness, arithmetic mean, median and mode were examined, and then the (K-S)Kolmogorov-Smirnov normality test

was performed because number of participants in study group was more than 50. Accordingly, the arithmetic mean of scale was 3.17, median was 3.10, mode was 3.00, kurtosis was .508, and skewness was .439. The significance value of p=.00 (p<.05) as a result of the K-S test indicates that the scores in the scale do not have a normal distribution. The fact that skewness and kurtosis values are within ±1 values is interpreted as that the scores do not deviate significantly from the normal distribution (Büyüköztürk, 2009). When the skewness and kurtosis values were examined, it was found to be in the ±1 interval. In addition, the homogeneity of variances was examined. It was observed that the variances in all sub-problems with data from two or more samples were homogeneous and normally distributed. Therefore, it was decided to use parametric statistical tests in analysis of data. Tests such as descriptive statistics, independent samples t-test and one-way-ANOVA test were used according to independent variables. In ANOVA tests carried out, LSD test was used in homogeneous variance distributions in order to determine between which variables the difference is, and Dunnett's T3 test was used in those that did not show homogeneous distribution. The obtained data were interpreted in tables, and the difference between independent variables was tested at level of p=.05 (Büyüköztürk, 2009).

Findings

In this section, findings and interpretation regarding the problem and sub-problems of the research are included.

Table 3. Frequency and Percentage Distribution of Preservice Teachers' Motivation Levels

	Strongly Disagree		**Disagree**		**Moderately Disagree**		**Agree**		**Strongly Agree**		**X̄**
	f	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	
Item 1	5	1.1	6	1.3	77	16.4	218	46.5	163	34,8	4.12
Item 2	4	.9	15	3.2	87	18.6	233	49.7	130	27.7	4.00
Item 3	12	2.6	30	6.4	168	35.8	181	38.6	78	16.6	3.60
Item 4			5	1.1	46	9.8	209	44.6	209	44.6	4.32
Item 5	11	2.3	24	5.1	112	23.9	188	40.1	134	28.6	3.87
Item 6	2	.4	1	.2	17	3.6	226	48.2	223	47.5	4.42
Item 7	2	.4	10	2.1	84	17.9	185	39.4	188	40.1	4.16
Item 8			3	.6	41	8.7	215	45.8	210	44.8	4.34
Item 9	2	.4	11	2.3	95	20.3	228	48.6	133	28.4	4.02
Item 10			1	.2	36	7.7	228	48.6	204	43.5	4.35
Item 11	9	1.9	31	6.6	119	25.4	196	41.8	114	24.3	3.79
Item 12	2	.4	10	2.1	23	4.9	186	39.7	248	52.9	4.42
Item 13	4	.9	10	2.1	90	19.2	201	42.9	164	35.0	4.08
Item 14	2	.4	4	.9	22	4.7	177	37.7	264	56.3	4.48
Item 15	3	.6	3	.6	28	6.0	18	38.8	253	53.9	4.44
Item 16	10	2.1	13	2.8	124	26.4	198	42.2	124	26.4	3.88
Item 17	1	.2	15	3.2	114	24.3	215	45.8	124	26.4	3.95
Item 18	7	1.5	23	4.9	143	30.5	178	38.0	118	25.2	3.80
Item 19			4	.9	10	2.1	134	28.6	321	68.4	4.64
Item 20			4	.9	27	5.8	203	43.3	235	50.1	4.42
Item 21			3	.6	20	4.3	192	40.9	254	54.2	4.48
TOTAL											4.17

In Table 3, the percentage and frequency values of responses of preservice teachers to the items of the adult motivation scale are given. It was revealed that the scale applied to determine the adult motivation levels of preservice teachers was "I agree" with the general average (X̄=4.17). From this result, it can be said that the motivation levels of preservice teachers are high and positive.

When the scale items are examined, it is seen that Item 19 "It is important for me not to lose my self-esteem" has the highest average (X̄=4.64) at "Strongly Agree" level. When the opinions about the item were examined, it was found that 99.1% of preservice teachers had positive opinions, Item 3 "I give importance to the opinions of others when making decisions" has the lowest average (X̄=3.60) at "I agree" level, and 91% of the preservice teachers' seems to have positive opinions.

When the items of the intrinsic motivation dimension of the scale are examined, it is seen that the highest average (X̄=4.64) is at item 19 "It is important for me not to lose my self-esteem" at "Strongly Agree" level. When the opinions about item are examined, it is seen that 99.1% of the preservice teachers have positive opinions, and the lowest average is at item 17 "I like to push my limits while doing things" (X̄=3.95) with the level of "I agree". When the opinions on the item are examined, it is seen that 96.5% of the preservice teachers have positive opinions.

When the extrinsic motivation dimension items of the scale are examined, it is seen that item 6 "What I will achieve as a result of what I do is important to me" has the highest average ($\bar{X}$=4.42) at "Strongly Agree" level. When the opinions about the item are examined, it is observed that 99.3% of the preservice teachers have positive opinions, item 11 "I try to earn reputation" has the lowest average ($\bar{X}$=3.79) at "I agree" level and that 91.5% of the preservice teachers have positive opinions.

Table 4. Statistical Distribution of Preservice Teachers' Adult Motivations by Gender

Dimension	Gender	N	$\bar{X}$	SD	df	t	p	η2
IM	Women	382	4.3377	.40415	1.763	467	.079	
	Men	87	4.2476	.53092				
EM	Women	382	3.9562	.51459	1.485	467	.138	
	Men	87	3.8635	.56920				
SCALE	Women	382	4.1923	.36030	1.982	467	.048*	0.008
	Men	87	4.1013	.48762				

p<.05

In Table 4, when the adult motivations and sub-dimensions of preservice teachers are examined according to the gender variable, there is not a significant difference between the intrinsic motivation dimension [t(467)=1,76, p>.05] and the extrinsic motivation dimension [t(467)=1,48, p>.05] and there is a significant difference [t(467)=1,98, p<.05] scale overall. In the scale, female preservice teachers ($\bar{X}$=4.19) have higher motivation than male preservice teachers ($\bar{X}$=4.10). Since the eta squared value is found to be 0.008, it can be concluded that gender has a low effect on preservice teachers' adult motivation.

Table 5. Statistical Distribution of Preservice Teachers' Motivation Levels According to Major They Study

Dimension	Department	N	$\bar{X}$	SD	df	t	p
IM	Science	223	4.3598	.45633	1.860	467	.064
	Maths	246	4.2858	.40496			
EM	Science	223	3.9473	.53904	.327	467	.744
	Maths	246	3.9314	.51439			
SCALE	Science	223	4.2026	.41529	1.447	467	.149
	Maths	246	4.1508	.36082			

In Table 5, when the motivations and sub-dimensions of preservice teachers according to variable of major they study are examined, there were found to be no significant difference in intrinsic motivation dimension [t(467)=1,860, p>.05], in extrinsic motivation dimension [t(467)=,327, p>.05] and [t(467)=1,447, p>.05] scale overall. According to this finding, it can be said that the type of major in Science and Mathematics Teaching has no significance or effect on motivation of preservice teachers.

Table 6. Motivation Levels of Preservice Teachers for the Type of High School Graduation Variable

Dimension	Graduation	N	$\bar{X}$	SD
IM	Anatolian High School(1)	329	4.3117	.42960
	Anatolian Teacher Training High School (2)	61	4.2888	.44758
	Science High School (3)	25	4.3108	.42043
	High School (4)	26	4.4556	.44104
	Vocational High School (5)	28	4.3846	.41767
EM	Anatolian High School(1)	329	3.9460	.48759
	Anatolian Teacher Training High School (2)	61	3.9180	.61783
	Science High School (3)	25	3.8650	.69683
	High School (4)	26	3.8365	.48960
	Vocational High School (5)	28	4.0625	.60715
SCALE	Anatolian High School (1)	329	4.1724	.38357
	Anatolian Teacher Training High School (2)	61	4.1475	.39838
	Science High School (3)	25	4.1410	.40813
	High School (4)	26	4.2198	.38168
	Vocational High School (5)	28	4.2619	.41886

Table 7. Statistical Distribution of Preservice Teachers' Motivation Levels According to Type of High School Graduation between Groups

Dimension	Source of variance	Sum of squares	df	Mean of squares	F	p
IM	between groups	.679	4	.170	.912	.457
	In groups	86.368	464	.186		
	Total	87.047	468			
EM	between groups	.880	4	.220	.795	.529
	In groups	128.482	464	.277		
	Total	129.362	468			
SCALE	between groups	.341	4	.085	.563	.689
	In groups	70.157	464	.151		
	Total	70.497	468			

In Table 7, according to variable of type of high school graduated from, no significant difference was found in motivation levels and sub-dimensions of preservice teachers in general

[F(4-64)=,563, p>.05], in intrinsic motivation dimension [F(4-464)=,912, p>.05] and in extrinsic motivation dimension [F(4-464)=,795, p>.05]. Accordingly, it can be said that type of high school graduation has no effect on the level of motivation.

Table 8. Motivation Levels of Preservice Teachers According to Major Satisfaction Variable

Dimension	Department Satisfaction	N	$\bar{X}$	SD
IM	No (1)	28	4.1429	.63595
	Partly (2)	121	4.2359	.46428
	Yes (3)	320	4.3688	.38696
EM	No (1)	28	3.7857	.64805
	Partly (2)	121	3.8884	.49075
	Yes (3)	320	3.9715	.52468
SCALE	No (1)	28	4.0068	.55845
	Partly (2)	121	4.1035	.40344
	Yes (3)	320	4.2174	.35657

Table 9. Statistical Distribution of Preservice Teachers' Motivation Levels According to Major Satisfaction Variable

Dimension	Source of variance	Sum of squares	*df*	Mean of squares	*F*	*p*	Significant Difference	η2
IM	between groups	2.495	2	1.248	6.877	.001		
	In groups	84.552	466	.181			2-3	0.028
	Total	87.047	468					
EM	between groups	1.305	2	.653	2.374	.094		
	In groups	128.057	466	.275				
	Total	129.362	468					
SCALE	between groups	1.986	2	.993	6.755	.001		
	In groups	68.511	466	.147			2-3	0.028
	Total	70.497	468					

In Table 9, there is no significant difference in extrinsic motivation dimension [F(2-466)=2,274, p>.05] in motivation levels and sub-dimensions of preservice teachers according to variable of major satisfaction. Significant differences were found in intrinsic motivation dimension [F(2-466)=6,877, p<.05] and in overall scale [F(2-466)=6,755, p<.05]. The homogeneity of the variances was examined to determine between in which groups the differences were. Since the variances are not homogeneous, Dunnetts T3 test, one of the multiple comparison tests, was carried out. According to test result, preservice teachers who are satisfied with major they study in intrinsic motivation dimension have higher intrinsic motivation levels ($\bar{X}$=4.36) than the preservice teachers who are partially satisfied (X=4.23) with the major they study. Since the eta squared value is found to be 0.028, it can be said that the major satisfaction has a low effect on the adult motivation of the preservice teachers.

In general, it is seen that preservice teachers who are satisfied with their major ($\bar{X}$=4.21) have higher levels of motivation than those who are partially satisfied with their major ($\bar{X}$=4.10). Accordingly, in predicting intrinsic motivation, major satisfaction has a significant effect in favor of those who are satisfied with their major. Since the eta

squared value is found to be 0.028, it can be said that the major satisfaction has a low effect on the adult motivation of the preservice teachers.

Table 10. Motivation Levels of Preservice Teachers According to Democratic Preferences Variable

Dimension	Democracy	N	$\bar{X}$	SD
IM	Always (1)	109	4.4926	.47627
	Usually (2)	289	4.2696	.39308
	Sometimes (3)	71	4.2665	.44510
EM	Always (1)	109	3.9690	.59174
	Usually (2)	289	3.9278	.50639
	Sometimes (3)	71	3.9384	.50084
SCALE	Always (1)	109	4.2931	.44450
	Usually (2)	289	4.1394	.36382
	Always (1)	71	4.1415	.35996

Table 11. Statistical Distribution of Preservice Teachers' Motivation Levels According to the Democratic Preferences Variable

Dimension	Source of variance	Sum of squares	df	Mean of squares	F	p	Significant Difference	η2
IM	between groups	4.183	2	2.091	11.761	.000	1-2	0.048
	In groups	82.865	466	.178			1-3	
	Total	87.047	468					
EM	between groups	.135	2	.067	.243	.784		
	In groups	129.227	466	.277				
	Total	129.362	468					
SCALE	between groups	1.967	2	.984	6.688	.001	1-2	
	In groups	68.530	466	.147			1-3	0.027
	Total	70.497	468					

In Table 11, there is no significant difference in motivation levels and sub-dimensions of preservice teachers according to democratic preferences variable, in extrinsic motivation dimension [F(2-466)=,243, p>.05]; significant differences were found in intrinsic motivation dimension [F(2-466)=11,761, p<.05] and in overall scale [F(2-466)=6,688, p<.05]. The homogeneity of the variances was examined to determine between in which groups the differences were. Since the variances are not homogeneous, Dunnetts T3 test, one of the multiple comparison tests, was carried out. According to test results, preservice teachers whose democratic preference is "Always" ($\bar{X}$=4.49) have a higher level of intrinsic motivation than preservice teachers whose democratic preference is "Mostly" ($\bar{X}$=4.29) and those with "Sometimes" (X=4,29) in intrinsic motivation dimension. Since the eta squared value is found to be 0.048, it is possible to say that democratic preferences have a low effect on preservice teachers' motivation.

Overall scale, it is seen that preservice teachers whose democratic preference is "Always" ($\bar{X}$=4.29) has a higher level of intrinsic motivation than "Mostly" ($\bar{X}$=4.14) and "Sometimes" ($\bar{X}$=4.13). Since the eta squared value is determined as 0.027, it can be said that democratic preferences have a low effect on preservice teachers' motivation.

Table 12. The Motivation Levels of Preservice Teachers According to Preference Order of Teaching Variable

Dimension	Preference Order	N	$\bar{X}$	SD
IM	1-10 (1)	383	4.3400	.41284
	11-19 (2)	60	4.2359	.47033
	20-24 (3)	26	4.2367	.57024
EM	1-10 (1)	383	3.9426	.51939
	11-19 (2)	60	3.9396	.53058
	20-24 (3)	26	3.8846	.62041
SCALE	1-10 (1)	383	4.1886	.36374
	11-19 (2)	60	4.1230	.45694
	20-24 (3)	26	4.1026	.53920

Table 13. Statistical Distribution of Preservice Teachers' Motivation Levels According to Variable of Preference Order of Teaching

Dimension	Source of variance	Sum of squares	df	Mean of squares	F	p
IM	between groups	.758	2	.379	2.047	.130
	In groups	86.289	466	.185		
	Total	87.047	468			
EM	between groups	.082	2	.041	.147	.863
	In groups	129.281	466	.277		
	Total	129.362	468			
SCALE	between groups	.369	2	.185	1.227	.294
	In groups	70.128	466	.150		
	Total	70.497	468			

In Table 13, according to variable of preference order of teacher profession, in motivation levels and sub-dimensions; there is no significant difference in intrinsic motivation dimension [F(2-466)=2.047, p<.05], in extrinsic motivation dimension [F(2-466)=,14, p<.05] and in the overall scale [F(2-466)=1.227, p<.05]. According to results of this variance analysis, the order in which students prefer the major is not effective in explaining their motivation.

Table 14. Statistical Distribution of Preservice Teachers' Motivation Levels by Variable of University They Study

Dimension	University	N	$\bar{X}$	SD	df	t	p	η2
IM	MAKÜ	230	4.3378	.42774	.828	467	.408	
	AÜ	239	4.3048	.43493				
EM	MAKÜ	230	4.0098	.56125	2.884	467	.004*	
	AÜ	239	3.8708	.48057				0.017
SCALE	MAKÜ	230	4.2128	.40674	2.054	467	.041*	0.008
	AÜ	239	4.1395	.36657				

*p<.05

In Table 14, it is seen that there is no significant difference in motivation levels and sub-dimensions of preservice teachers according to university variable they study in intrinsic motivation dimension [t(467)=,828, p>.05], whereas there is a significant difference in extrinsic motivation dimension [t(467)=2,884, p<.05] and overall scale [t(467)=2,054, p<.05]. It is seen that MAKU students ($\bar{X}$=4.00) have a higher level of extrinsic motivation than Akdeniz University students ($\bar{X}$=3.87) in extrinsic motivation dimension. Since the eta squared value was found to be 0.017, it can be said that university variable they studied had a low effect on motivation of preservice teachers. Similarly, it was observed that MAKU students have a higher level of motivation ($\bar{X}$=4.21) than students of Akdeniz University ($\bar{X}$=4.13) in whole scale. Since the eta squared value is found to be 0.008, it can be stated that the university variable they study at has a low effect on the motivation of preservice teachers.

Independent samples t-test was used to test whether the sub-problems of the study differed significantly from each other in the data obtained from two independent samples, and one-way analysis of variance (ANOVA) was used to test whether the data obtained from more than two independent samples differ significantly from each other. Since there was a significant difference between the groups as a result of this test, the homogeneity of variances was primarily examined. Therefore, in the ANOVA tests carried out, LSD test was used in homogeneous variance distributions in order to determine the variables among which the difference is, and Dunnett's T3 test was applied in distributions that do not show homogeneous distribution. The obtained data were interpreted in tables, and the difference between independent variables was tested at the level of p=.05 (Büyüköztürk, 2009).

Table 15. Preservice Teachers' Levels of Future Expectations

	Strongly Disagree		Disagree		Agree		Strongly Agree		
	f	%	f	%	f	%	f	%	$\bar{X}$
Item 1	20	4.3	86	18.3	234	49.9	129	27.5	3.00
Item 2	7	1.5	27	5.8	251	53.5	184	39.2	3.30
Item 3	11	2.3	34	7.2	210	44.8	214	45.6	3.33
Item 4	3	0.6	7	1.5	233	49.7	226	48.2	3.45
Item 5	3	0.3	14	3.0	227	48.4	225	48.0	3.43
Item 6	29	6.2	100	21.3	245	52.2	95	20.3	2.86
Item 7	15	3.2	8	1.7	249	53.1	197	42.0	3.33
Item 8	44	9.4	119	25.4	243	51.8	63	13.4	2.69
Item 9	22	4.7	47	10.0	275	58.6	135	26.7	3.07
Item 10	4	0.9	41	8.7	258	55.0	166	35.4	3.24
SCALE									3.17

In Table 15, the percentage and frequency values of responses of preservice teachers to items of the future expectations scale are given. It was revealed that the scale, which was applied to determine the future expectations of preservice teachers, was at the level of "I agree" with the general average ($\bar{X}$=3.17). From this result, it can be said that preservice teachers' expectations about future are highly positive. When the scale items are examined, it is seen that item 4 "I believe that I will be a good teacher in the future" has the highest average ($\bar{X}$=3.45) at "Strongly Agree" level. When the opinions on the item are examined, 97.9% of the preservice teachers have positive opinions, and it is seen that item 8, "If I have an opportunity to move to another profession in the future, I will quit teaching" has the lowest average ($\bar{X}$=2.69) at "I agree" level, and that 65.2% of the preservice teachers have a positive opinion.

Table 16. Statistical Distributions of Preservice Teachers' Future Expectations by Gender Variable

Dimension	Gender	N	$\bar{X}$	SD	df	t	p
SCALE	Women	382	3.1895	.48239	1.291	467	.197
	Men	87	3.1161	.46227			

In Table 16, when the expectations of the preservice teachers regarding the future according to gender variable were examined [t(467)=1,291, p>.05], it was found that there was no significant difference. Therefore, it can be said that the gender variable has no effect on future expectations.

Table 17. Statistical Distribution of Preservice Teachers' Future Expectations According to Variable of Major They Study

Dimension	Department	N	$\bar{X}$	SD	df	t	p
SCALE	Science	223	3.2013	.51118	1.095	467	.274
	Maths	246	3.1528	.44782			

In Table 17, it is seen that there is no significant difference in the future expectations [t(467)=1,095, p>.05] of preservice teachers according to variable of major they study.

Table 18. Future Expectations of Preservice Teachers According to Type of High School Graduation Variable

Dimension	Graduation	N	$\bar{X}$	SD
SCALE	Anatolian High School(1)	329	3.1687	.48930
	Anatolian Teacher Training High School (2)	61	3.2098	.46787
	Science High School (3)	25	3.2000	.40825
	High School (4)	26	3.1769	.51014
	Vocational High School (5)	28	3.1643	.43650

Table 19. Statistical Distribution of Preservice Teachers' Future Expectations According to Type of High School Graduation Variable

Dimension	Source of variance	Sum of squares	df	Mean of squares	F	p
SCALE	between groups	.106	4	.026	.114	.977
	In groups	107.312	464	.231		
	Total	107.418	468			

In Table 19, it is seen that there is no significant difference in future expectations [F(4-464)=,114, p>.05] according to variable of high school graduation.

Table 20. Future Expectations of Preservice Teachers According to Major Variable

Dimension	Department Satisfaction	N	$\bar{X}$	SD
SCALE	No (1)	28	2.6500	.75987
	Partly (2)	121	2.9388	.43328
	Yes (3)	320	3.3116	.39139

Table 21. Statistical Distribution of Future Expectations of Preservice Teachers According to Major Satisfaction Variable

Dimension	Source of variance	Sum of squares	df	Mean of squares	F	p	Significant Difference	η2
SCALE	between groups	20.433	2	10.217	54.733	.000	1-3	0.190
	In groups	86.985	466	.187			2-3	
	Total	107.418	468					

In Table 21, it is seen that there is a significant difference in preservice teachers' future expectations [F(2-466)=54,733, p<.05] according to variable of major satisfaction they study. Dunnets T3 test, one of the multiple comparison tests, was applied because the variances were not homogeneous. As a result of analysis, it is found out that preservice teachers ($\bar{X}$=3.31) who are satisfied with their major will be more positive than preservice teachers ($\bar{X}$=2.65) who are not satisfied with the major they study and ($\bar{X}$=2.93) who are partially satisfied with their major. If ANOVA result is interpreted, major satisfaction has a positive effect in shaping future expectations. Since the eta squared value is found to be 0.190, it can be said that the satisfaction of their major they study has greatly influenced the preservice teachers' thoughts about the future.

Table 22. Statistical Distribution of Preservice Teachers' Future Expectations According to Democratic Preferences

Dimension	Source of variance	Sum of squares	*df*	Mean of squares	*F*	*p*	Significant Difference	η2
	between groups	1.887	2	.944	4.166	.016	1-2	
SCALE	In groups	105.531	466	.226				0.017
	Total	107.418	468					

In Table 22, it is revealed that there is a significant difference [F(2-466)=4.166, p<.05] in preservice teachers' future expectations according to democratic variable. Dunnett's T3 test, one of the Multiple Comparison tests, was performed because the variances were not homogeneous. As a result of analysis, it is seen that the preservice teachers whose democratic preference is "Always" (X=3.26) have more positive future expectations than the preservice teachers who define themselves as "Mostly" ($\bar{X}$=3.12). Since the eta squared value is found to be 0.017, it can be said that variable of democratic preferences has a low impact on preservice teachers' thoughts for future. Accordingly, if we want to raise positive preservice teachers, we must try to make them individuals with more democratic beliefs.

Table 23. Future Expectations of Preservice Teachers According to Variable of Teaching Preference Order

Dimension	Preference Order	N	$\bar{X}$	SD
SCALE	1-10 (1)	383	3.2138	.46019
	11-19 (2)	60	3.0283	.52886
	20-24 (3)	26	2.9577	.52625

Table 24. Statistical Distributions of Preservice Teachers' Future Expectations According to Teaching Preference Order Variable

Dimension	Source of variance	Sum of squares	df	Mean of squares	F	p	Significant Difference	η2
SCALE	between groups	3.096	2	1.548	6.914	.001	1-3	0.028
	In groups	104.322	466	.224			1-2	
	Total	107.418	468					

In Table 24, it is seen that there is a significant difference [F(2-466)=6,914, p<.05] in preservice teachers' future expectations according to teaching preference order variable. Since the variances are homogeneous, LSD test, one of the multiple comparison tests, was applied. As a result of analysis, the preservice teachers who preferred teaching profession in "1-10" rank have more positive future expectations ($\bar{X}$=3.21) than the preservice teachers who preferred teaching in "11-19" rank ($\bar{X}$=3.02) and the preservice teachers who preferred teaching in "20-24" rank ($\bar{X}$=2.95). Since the eta squared value is found to be 0.028, it can be stated that the teacher preference variable has a low effect on preservice teachers' expectations for future. Accordingly, individuals whose primary preference is major they study are more positive towards the future.

Table 25. Statistical Distribution of Preservice Teachers' Future Expectations According to Variable of University They Study

Dimension	University	N	X̄	SD	df	t	p	η2
SCALE	MAKU	230	3.2291	.51202	2.372	467	.018*	0.001
	AU	239	3.1247	.44013				

*p<.05

In Table 25, it is seen that there is a significant difference [t(467)=2,372, p<.05] in future expectations of preservice teachers according to variable of university they study. According to this, MAKU students (X̄=3.22) are seen to have more positive expectations about the future than Akdeniz University students (X̄=3.12). The university where they study also has an effect that will enable preservice teachers to see the future in a more positive or negative way. Since the eta squared value was found to be 0.001, it can be said that university variable they study at had a low effect on preservice teachers' thoughts about the future.

Table 26. Statistical Distributions of Relationship between Preservice Teachers' Motivations and Their Future Expectations

		Total GYDA
Total YMO	Pearson Correlation	.389**
	Sig. (2-tailed)	.000
	N	469
Total YMO intrinsic	Pearson Correlation	.278**
	Sig. (2-tailed)	.000
	N	469
Total YMO extrinsic	Pearson Correlation	.411**
	Sig. (2-tailed)	.000
	N	469

In Table 26, it is seen that there is a medium-level, positive and significant relationship between preservice teachers' future expectations and motivations (r=,389; p<.01). Accordingly, it can be said that as motivation of students increase in a positive way, their expectations about the future also increase positively. Therefore, the motivation of preservice teachers should be kept high in order to train teachers who are more positive about the future.

Discussion

It was concluded that the motivation levels of the preservice teachers were high and positive. The results of Ateş and İhtiyaroğlu (2019), Dereli and Acat (2010), Gömleksiz and Serhatlıoğlu (2013), Uyulgan and Akkuzu (2014), Özsarı et al. (2018), Kuzu and Çalışkan (2018), Yavuz Eroğlu et al. (2019), Recepoğlu and İbret (2019), seem to match with the results of this research. Also, this result matches with the study of Bishay (1996). Job satisfaction and motivation correlated significantly with responsibility levels, gender, subject, age, years of teaching experience, and activity. For this group of teachers who work in a school with a selective student body, overall motivation and job satisfaction levels were high.

It has been revealed that women preservice teachers have higher motivation than men. This result matches with the studies' results of Çakır and Akkaya (2017), Gençay and Gençay (2007), Gömleksiz and Serhatlıoğlu (2013), Kuzu and Çalışkan (2018) and Recepoğlu and İbret (2019). Also, in study of Özder and Motorcan (2013), motivation levels of female students were found higher in the research than those of male students. But, it does not coincide with the result that the motivation of male preservice teachers is higher in study of Özsarı et al. (2018). On the other hand, in study of Chuan (2013), motivation to choose teaching as a career was not significantly related to gender, age and group. It is seen that there are different results regarding effects of preservice teachers' gender on their motivation.

Also, it was concluded that other variables of research; the major they studied, type of high school graduated and order of preference teaching profession had no effect on motivation. This result coincided with the study of Özsarı et al. (2018), but did not match the study results of Gömleksiz and Serhatlıoğlu (2013), and differences were found in terms of major and type of high school graduated. On the other hand, in the research of Zembylas and Papanastasiou (2004); it was observed that conditions such as salary, working hours and holidays of teachers were also effective in choosing this profession, as well as intrinsic or extrinsic teacher motivation was related to job satisfaction.

In their motivation, according to satisfaction of major where preservice teachers are educated; there was no significant difference in extrinsic motivation dimension, but there was a significant difference in intrinsic motivation dimension and the overall scale. In other words, it has been seen that major satisfaction has an effect on motivation. This result coincides with results of Topuz et al. (2015), Uyulgan and Akkuzu (2014). It is seen that motivation increases according to satisfaction of major. In these researches, it was observed that their motivation increased according to satisfaction of

major they study, and similarly in Zembylas and Papanastasiou (2004), teachers chose this profession for internal reasons, and most of them always wanted to be teachers. Also, in study of Chuan (2013), pre-service teachers were more motivated by intrinsic motivating factors than extrinsic factors.

It was concluded that preservice teachers' expectations about the future were generally high and positive. There was no significant difference in terms of gender, type of high school graduated, major, university variables. It was observed that this result coincided with results of Buldur and Bursal (2015), but there was a significant difference in favor of female preservice teachers in the study of Bursal and Buldur (2016) and in the study of Topuz et al. (2015) according to variable of high school graduated.

Finally, it can be said that as motivation of preservice teachers increases in a positive way, their thoughts about future also increase in a positive way. In study conducted by Nursi (2019) effect of future expectations on student motivation, the findings of the study show that as future expectations increase, students' motivation to learn increases.

Conclusion

It is concluded that the motivation levels of preservice teachers are high and positive. In motivation levels of preservice teachers, there is no significant difference in intrinsic and extrinsic motivation sub-dimensions according to gender; but overall scale, it has been observed that women have higher motivation than men according to gender. There was no significant difference in motivation of preservice teachers for variables such as the major they study, the type of high school they graduated and the order of preference teaching profession. It can be said that the order in which preservice teachers preferred the major is not effective in explaining their motivation.

According to satisfaction of major where preservice teachers study, there was no significant difference in extrinsic motivation dimension, but there was a significant difference in intrinsic motivation dimension and the overall scale. According to this, the preservice teachers who were satisfied with major they were educated had higher motivation than the partially satisfied ones. In other words, major satisfaction is effective on preservice teachers' motivation. Accordingly, it can be thought that being satisfied with major will affect the motivation of preservice teachers as well as their being more interested in lesson activities, resources and research areas.

According to the democratic preferences of preservice teachers; it was revealed that there was no significant difference in the extrinsic motivation dimension, but there was a significant difference in intrinsic motivation dimension and the overall scale. It was concluded that the democratic choices of the preservice teachers had an effect on their motivation; it was determined that preservice teachers, whose democratic preferences are “always” have a higher level of motivation than those whose preferences are "mostly" and "sometimes". When democratism is accepted as an internal process related to the moral and conscience of individual, it can be thought that it affects the intrinsic motivation positively.

According to university where the preservice teachers study; there was no significant difference in intrinsic motivation dimension, but there was a significant difference in extrinsic motivation dimension and the overall scale. In terms of extrinsic motivation dimension and scale in general; it was concluded that MAKU students have a higher level of motivation than AU students.

It was concluded that preservice teachers’ expectations about the future were generally high and positive. On the other hand, it has been observed that preservice teachers' expectations about the future, those who are satisfied with their major are more positive than those who are dissatisfied and partially satisfied. Accordingly, it can be said that major satisfaction has a positive effect on future expectations.

Democratic preferences turned out to be effective in preservice teachers' future expectations. Accordingly, the choice of democracy; It is observed that preservice teachers whose democratic preferences are “always” have more positive expectations about the future than those who describe themselves “mostly”. Also, it was concluded that preservice teachers’ preference order of teaching was effective in their expectations about the future. It was observed that the preservice teachers who chose “1-10” during the preference had more positive expectations about the future than those who chose “11-19” and “20-24”. Therefore; it can be said that democracy and the order of preference have an effect on preservice teachers' expectations about the future.

Finally, the university where preservice teachers study has a significant effect on his future expectations. According to this, MAKU students have more positive thinking about the future than AU students. Along with these, it was observed that there was a medium- level, positive and significant relationship between preservice teachers' expectations about the future and their motivation. It can be said that as the motivation of preservice teachers increases in a positive way, their expectations about the future also increase in a positive way.

Finally, it was observed that there was a moderate, positive and significant relationship between preservice teachers' ideas about the future and their motivation. It can be said that as motivation of preservice teachers increases in a positive way, their thoughts about future also increase in a positive way.

Recommendations

Recommendations based on research results.

It has been observed that motivation of preservice teachers is high and positive, but female preservice teachers have higher motivation than male preservice teachers. Based on this result, the reasons for low motivation of male preservice teachers should be investigated and it may be suggested to take necessary measures to increase their motivation and to rearrange the curriculum accordingly.

It has been revealed that major satisfaction of preservice teachers' has a positive effect on their motivation. For this, studies should be carried out to increase preservice teachers' degree of satisfaction.

It has been revealed that there is a significant difference across some sub-dimensions and scales according to pre-service teachers' democratic preferences. For this reason, in order to raise the perceptions of democracy and democracy, preservice teachers should focus on courses including democracy and democratic education in training programs.

It has been observed that satisfaction of preservice teachers in their majors is more effective and positive in their future expectations. Therefore, it may be suggested that the preservice teachers' expectations should be improved positively, and necessary studies should be carried out to improve the dignity, prestige, status and working conditions of teaching profession.

It has been observed that the democratic status of the preservice teachers and their preferences of major are effective on their future expectations. Therefore, those who prefer the teaching profession in the first should be given advantages such as scholarships and priority in appointment, and talented students should be encouraged and encouraged to choose the profession.

Suggestions for researchers.

In this study, motivation and future expectations of preservice teachers in Mathematics and Science Departments were examined. It can be suggested to be done with other researches with all preservice teachers and teachers.

With this research, motivations and future expectations of prospective teachers in mathematics and science departments were quantitatively made. Subsequent research can be done with different sample groups and qualitative methods.

In this study, it has been revealed that there is a positive relationship between preservice teachers' motivations and future expectations. Researches can be conducted on motivation levels of academicians who prepare preservice teachers for the profession, model them and prepare them for life.

Based on the same result, it may be suggested to investigate the motivation and future expectations of students, educators and their families studying at other educational levels.

Limitations

This research is limited with preservice teachers studying at Mehmet Akif Ersoy University and Akdeniz University Education Faculties, Mathematics and Science Teaching Departments and spring term of 2019-2020 academic year. It could be done in all departments of education faculties and in other universities to eliminate this limitation. Conducting such studies with more and other sample groups may remove the limitation.

Acknowledgements

This study consists of a summarized and developed version of the research named "A Comparative Examination of Relationship between Motivation Levels and Future Expectations of Preservice Mathematics and Science Teachers (Mehmet Akif Ersoy University and Akdeniz University Sample)" supported by TÜBİTAK 2209A Research Projects Support Program. We thank TÜBİTAK Directorate of Science Fellowships and Grant Programmes (BİDEB) supporting this study and MAKU and Akdeniz Universities for their permission to collect data.

References

Adedigba, O., & Sulaiman, F. R. (2020). Influence of teachers' classroom management style on pupils' motivation for learning and academic achievement in Kwara State. *International Journal of Educational Methodology*, *6*(2), 471-480.

Akbaba, S. (2006). Eğitimde motivasyon [Motivation in education]. *Kazım Karabekir Journal of Education Faculty/ Kazım Karabekir Eğitim Fakültesi Dergisi,* (13), 343-361.

Akyüz, Y. (2018). *Türk eğitim tarihi (M.Ö. 1000-M.S. 2018)* [Turkish education history (M.Ö. 1000-M.S. 2018)]. PegemA Publishing.

Alver, E. (2019). Yönetim ve psikoloji [Management and psychology]. In M. Akif Özer (Ed.), *Yönetim* [Management], (pp.391-396). Gazi.

Armağan, I. (2004). *Gençlik gözüyle gençlik: 21. Yüzyıl eşiğinde Türkiye gençliği* [Youth through the thought of youth: Youth in Turkey on the verge of the 21st Century]. Kırkısraklılar Social Solidarity and Culture Foundation/ Kırkısraklılar Sosyal Yardımlaşma ve Kültür Vakfı.

Atav, E., & Altunoğlu, B. D. (2013). Meslek ve alan seçiminde motivasyon ölçeğinin Türkçe formunun geçerlik ve güvenirlik çalışması [The validity and reliability study of Turkish form of motivation scale in profession and field selection]. Hacettepe University Journal of Education Faculty/ *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 28*(2), 58–70.

Ateş, Ö. T., & İhtiyaroğlu, N. (2019). Yetişkin motivasyon ölçeği: Bir ölçek geliştirme çalışması [Adult motivation scale: a scale development study]. *Kastamonu Journal of Education/ Kastamonu Eğitim Dergisi*, *27*(2), 611-620.

Aydın, R. (2009). Türkiye'de öğretmen sorunları açısından milli eğitim şûralarının değerlendirilmesi (1980–2000) [Evaluation of the National Education Council in terms of teacher issues in Turkey (1980–2000)]. *Ankara University Journal of Educational Sciences/ Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi*, *42*(2), 199-238.

Aydın, R., Şahin, H., & Temel, T. (2008). Türkiye'de ilköğretime sınıf öğretmeni yetiştirmede nitelik arayışları [Seeking quality in primary school teacher training in Turkey]. *Turkey Social Studies Journal/ Türkiye Sosyal Araştırmalar Dergisi,* (2), 119-142.

Ayık, A., & Ataş, A. (2014). Öğretmen adaylarının öğretmenlik mesleğine yönelik tutumları ile öğretme motivasyonları arasındaki ilişki [The relationship between preservice teachers' attitudes towards the teaching profession and their motivation to teach]. *Journal of Educational Sciences Research/ Eğitim Bilimleri Araştırmaları Dergisi, 4*(1), 25-43.

Balcı, A. (2018). Sosyal bilimlerde araştırma yöntem, teknik ve ilkeler [Research methods, techniques and principles in social sciences]. PegemA.

Bishay, A. (1996). Teacher motivation and job satisfaction: A study employing the experience sampling method. *Journal of Undergraduate Sciences*, *3*(3), 147-155.

Buldur, S., & Bursal, M. (2015). Fen bilgisi öğretmen adaylarının meslek tercih nedenlerinin etki düzeyleri ve mesleki geleceklerine yönelik beklentileri [The effect levels of pre-service science teachers' reasons for career preference and their expectations for their professional future]. *Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education/ Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi, 9*(1), 81-107.

Bursal, M., & Buldur, S. (2013). Fen bilgisi öğretmen adayları için öğretmenlik tercih nedenlerini derecelendirme ve geleceğe yönelik beklentiler ölçekleri geliştirme çalışması [The study of grading the reasons for teaching preference and developing future expectations scales for pre-service science teachers]. *Turkish Journal of Teacher Education*, *2*(1), 47-64.

Bursal, M., & Buldur, S. (2016). İlköğretim öğretmen adaylarının meslek tercih nedenleri ve geleceklerine yönelik beklentileri karşılaştırmalı bir analiz [A comparative analysis of primary school preservice teachers' reasons for choosing profession and their future expectations]. *Abant İzzet Baysal University Journal of Education Faculty/ Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi*, *16*(2), 351-376.

Büyüköztürk, Ş. (2009). *Sosyal bilimler için veri analizi el kitabı: İstatistik, araştırma deseni SPSS uygulamaları ve yorum* [*Data analysis handbook for social sciences: Statistics, research design SPSS applications and interpretation].* Pegem Akademi.

Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2018). *Bilimsel araştırma yöntemleri* [Scientific research methods] (24th ed.). Pegem Akademi.

Castro, L., & Villafuerte, J. (2019). Strengthening English language teaching in rural schools through the role-playing: Teachers' motivations. *International Journal of Educational Methodology, 5*(2), 289-303.

Chuan, C. L. (2013). Pre-service teachers' motivation for choosing teaching as a career. *KBL IPG Research Journal/ Jurnal Penyelidikan IPG KBL, 11,* 1-18.

Çakır, S., & Akkaya, R. (2017). İlköğretim matematik öğretmen adaylarının öğretmenlik mesleğini tercih etme nedenleri ve öğretmenlik eğitimi ile ilgili beklentileri [The reasons for preservice primary mathematics teachers to choose the teaching profession and their expectations about their teaching training]. *Abant İzzet Baysal University Journal of Education Faculty/ Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi, 17*(1), 78-98.

Çevik, D. B., Perkmen, S., & Alkan, M. (2012). Müzik öğretmeni adaylarının mesleklerinden beklentileri [Expectations of music preservice teachers from their profession]. *Journal of Education and Training Research/ Eğitim ve Öğretim Araştırmaları Dergisi, 1*(1), 41-45.

Dereli, E., & Acat, M. B. (2010). Okul öncesi eğitim öğretmenliği bölümü öğrencilerinin motivasyon kaynakları ve sorunları [Motivation sources and problems of pre-school education teaching department students]. *Selçuk University Journal of Social Sciences Institute/ Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *24*, 173-187.

Ehtiyar, R. V., Ersoy, A., Akgün, A., & Karapınar, E. (2017). Üniversite öğrencilerinin geleceğe yönelik tutum ve olumlu gelecek beklentilerinin psikolojik iyilik halleri üzerindeki etkisi [The impact of university students' attitude towards the future and positive future expectations on their psychological well-being]. *Mediterranean Journal of Humanities*, *7*(2), 251-262.

Gençay, Ö. A., & Gençay, S. (2007). Beden eğitimi ve spor yüksekokulu öğrencilerinin öğretmenlik mesleğine ilişkin motivasyon düzeylerinin bazı değişkenler açısından incelenmesi [An Investigation of the Motivation Levels of the School of Physical Education and Sports Students Regarding the Teaching Profession in Terms of Some Variables]. *Selçuk University Journal of Social Sciences Institute/ Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *1*(17), 241-253.

Gömleksiz, M. N., & Serhatlıoğlu, B. (2013). Öğretmen adaylarının akademik motivasyon düzeylerine ilişkin görüşleri [Preservice teachers' opinions on their academic motivation]. *Turkish Journal of Social Research/ Turkiye Sosyal Araştirmalar Dergisi*, *17*(3), 99-128.

Güleri, M. (1998). Üniversiteli ve işçi gençliğin gelecek beklentileri ve kötümserlik-iyimserlik düzeyleri [Future expectations and pessimism-optimism levels of university students and working youth]. *Crisis Journal/ Kriz Dergisi*, *6*(1), 55-65.

Kavcar, C. (2002). Cumhuriyet döneminde dal öğretmeni yetiştirme [Raising branch teachers in the Republic period]. *Ankara University Journal of Educational Sciences/ Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi, 35*(1-2), 1-14.

Karasar, N. (2012). *Bilimsel araştırma yöntemi* [Scientific research method]. Nobel.

Keblawi, F. (2020). Motivational strategies in the English classroom: The case of Arab learners in Israel. *International Journal of Educational Methodology*, *6*(3), 579-586.

Korkut-Owen, F., D. Kepir, D., Özdemir, S., Ulaş, Ö., & Yılmaz, O. (2012). Üniversite öğrencilerinin bölüm seçme nedenleri [University students' reasons to choose their departments]. *Mersin University Journal of Education Faculty\Üniversitesi Eğitim Fakültesi Dergisi, 8*(3), 135-151.

Kuzu, O., & Çalışkan, N. (2018). Öğretmen adaylarının motivasyon ve matematik kaygı düzeylerinin çeşitli değişkenler açısından incelenmesi [Investigation of preservice teachers' motivation and mathematics anxiety levels in terms of various variables]. In C. Arslan, E. Hamarta, S. Çiftçi, M. Uslu & O. Köksal (Eds.), *Eğitim bilimleri çalışmaları* [Educational sciences studies] (pp. 5–11). Çizgi.

Nursi, M. (2019). The effect of future expectations on student motivation in Pancasila and citizenship education study program at higher education in the city of Padang, West Sumatera. *Advances in Social Science, Education and Humanities Research*, *373*, 32-35.

Özdamar, K. (2015). *Paket programlar ile istatistiksel veri analizi-1* [Statistical data analysis with package programs -1]. Nisan.

Özder, H., & Motorcan, A. (2013). An analysis of teacher candidates' academic motivation levels with respect to several variables. *British Journal of Arts and Social Sciences*, *15*(1), 42-53.

Özsarı, A., Görücü, A., Altın, M., & Boyalı, E. (2018). Üniversitelerin spor bilimleri bölümü özel yetenek sınavlarına hazırlanan bireylerin gelecek beklentileri [Future expectations of individuals preparing for the special talent exams of universities' sports sciences department]. *Gaziantep University Journal of Sport Sciences/ Gaziantep Üniversitesi Spor Bilimleri Dergisi*, *3*(1), 10-22.

Recepoğlu, S., & İbret, B. Ü. (2019). Sosyal bilgiler öğretmen adaylarının öğretmenlik mesleğine yönelik motivasyonlarının incelenmesi[Investigation of social studies prospective teachers' motivation for teaching profession]. *Journal of History Culture and Art Research/Tarih, Kültür ve Sanat Araştırmaları Dergisi*, *8*(1), 320-331.

Sağır, M. (2020). Sınıf yönetimi [Classroom Management]. In T. Argon & Ş.S. Nartgün (Eds.), *Sınıfta motivasyon süreci* [Motivation Process in Classroom] (pp. 115-126). Pegem Akademi.

Schunk, D. H. (2009). Learning theories an educational perspective. In M. Şahin (Ed.), *Motivasyon* (E. Üzümcü, Trans.). (pp.452-511). Nobel.

Sönmez, V., & Alacapınar, F. G. (2011). *Örneklendirilmiş bilimsel araştırma yöntemleri* [Exemplified scientific research methods] (7th ed.). Anı.

Şimşek, H. (2012) Güneydoğu Anadolu bölgesindeki lise öğrencilerinin gelecek beklentileri ve gelecek beklentilerini etkileyen faktörler [Future expectations and factors affecting the future expectations of high school students in the Southeastern Anatolia region]. *Journal of Theoretical Educational Science/ Kuramsal Eğitimbilim Dergisi*, *5*(1), 90-109.

Tataroğlu, B., Özgen, K., & Alkan, H. (2011, 27-29 Nisan). *Matematik öğretmen adaylarının öğretmenliği tercih nedenleri ve beklentileri* [Reasons for preference and expectations of preservice mathematics teachers as teaching] [Paper presentation]. 2nd International Conference on New Trends in Education and Their Implications, Antalya, Turkey.

Topuz, Y., Kulaksız, T., & Geriş, A. G. A. (2015). *Bilişim teknolojileri öğretmen adaylarının lisans eğitimlerine ilişkin memnuniyet düzeylerinin gelecek beklentilerine etkisi* [The effect of information technology preservice teachers' satisfaction levels with their undergraduate education on their future expectations] [Paper presentation]. VII. Turkey International Congress of Educational Research/ VII. Uluslararası Türkiye Eğitim Araştırmaları Kongresi, Muğla, Turkey.

Tuncer, M. (2011). Yükseköğretim gençliğinin gelecek beklentileri üzerine bir araştırma [A research on the future expectations of higher education youth]. *Electronic Turkish Studies, 6*(2), 935-948.

Uygun, S. (2008). Ortaöğretim sosyal alanlar bölümünde okuyan öğretmen adaylarının mesleğe yönelik duyarlılıkları [The sensitivities of preservice teachers studying in social areas department of secondary education towards the profession][Paper presentation]. *International Institute of Social Sciences Symposium/ Uluslararası Sosyal Bilimler Enstitüsü Sempozyumu*, Çanakkale, Turkey.

Uyulgan, M. A., & Akkuzu, N. (2014). Öğretmen adaylarının akademik içsel motivasyonlarına bir bakış [An overview of preservice teachers' academic intrinsic motivation]. *Educational Sciences: Theory and Practice/ Kuram ve Uygulamada Eğitim Bilimleri Dergisi, 14*(1), 7-32.

Yavuzer, H., Demir, İ., Meşeci, F., & Sertelin, Ç. (2005). Günümüz gençliğinin gelecek beklentileri [Future expectations of today's youth]. *Journal of Hasan Ali Yücel Faculty of Education/ Hasan Ali Yücel Eğitim Fakültesi Dergisi*, *2*(2), 93-103.

Eroğlu, S. Y., Eroğlu, E., & Ekinci, V. (2019). Beden eğitimi ve spor yüksekokulu öğrencilerinin akademik motivasyon düzeylerinin bölüm ve sınıf değişkenlerine göre incelenmesi [Examining academic motivation levels of Physical education and sports school students according to major and grade variables]. *Uluslararası Spor Bilimleri Öğrenci Çalışmaları/ International Sport Science Student Studies*, *1*(1), 1-7.

Yorgancı Altıngül, B. (2011). *Öğretmenlerin, öğretmen adaylarının ve öğrencilerin motivasyonu algılama farklılıkları* [Differences in perception of motivation of teachers, preservice teachers and students] [Unpublished master's thesis]. Balıkesir University.

Zembylas, M., & Papanastasiou, E. (2004). Job satisfaction among school teachers in Cyprus. *Journal of Educational Administration*, *42*(3), 357-374.