Identification of the Predicator Variables

of Candidate Teacher Teaching Motivations

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Abstract

The purpose of this study was to determine whether the internal and external teaching motivations of 3rd and 4th year students of the Faculty of Education of Cumhuriyet University are predicted by the variables of gender, department, year level, conscious preference of department they are studying in, whether there is a teacher in their family, their attitude toward the teaching profession and their overall academic performances. The study sample comprised 476 candidate teachers from the 3rd and 4th years, studying in seven different departments within the Faculty of Education of Cumhuriyet University. For this study, the Teaching Motivation Scale and the Attitude toward Teaching Profession Scale were used as data collection tools. In the study, which used a relational screening model, a Binary Logistic Regression Analysis was used to analyze the data. The scores obtained from the Teaching Motivation Scale, as the dependent variable, were defined as binary variables, comprising the internal motivation sub-dimensions of low and high internal teaching motivations and low and high external teaching motivations for the external motivation sub-dimensions. Findings showed that attitudes toward the teaching profession were significant for both the internal and external motivations of candidate teachers. With regard to the department variable, Classroom Education, Social Studies Education, Science Education, Primary Mathematics Education and Turkish Language Education variables were significant for the internal motivation of candidate teachers in comparison with the Psychological Counseling and Guidance Department variable and only the Primary Mathematics Education variable was significant for the external motivation of candidate teachers. Furthermore, it was found that the variable of making a conscious decision to study in a particular Department had a predictive impact on the external motivation of candidate teachers.

Keywords: Teaching motivation, Internal motivation, External motivation, Candidate teacher

1. Introduction

Health, happiness and productivity in a society relates to the high satisfaction level experienced by all workers in their profession (Akşit Aşık, 2010). A vocation is defined as work determined rules undertaken in order to provide a service or produce a product that is useful for humans and to earn a living which is based on a system of knowledge and skills gained by means of a specific education (Turkish Language Institution, 2015). As one of the most revered vocations, the teaching vocation requires not only cognitive competencies, such as knowledge and skills in the related field, but also effective competencies, such as attitudes, responsibilities, dedication and sensitivity. Teachers can reach vocational satisfaction through the sensitivity they display towards their students and vocation. One of the effective factors is motivation; this is the catalyst that ensures vocational satisfaction, or in other words, what guides and strengthens human behavior and ensures that the behavior is sustainable (Wright & Wiediger, 2007).

Motivation is one of the most studied topics in the field of social sciences, especially in the fields of education psychology and organisational behavior (Akioka & Gilmore, 2013; Ryan & Deci, 2000; Stover, Iglesia, Boubeta & Liporace, 2012). Derived from the Latin word *Movere*, meaning to activate (Mobrand, Turns & Mobrand, 2013), motivation is defined by the Turkish Language Institute (2015) as 'the attribution of incentive'. Motivation is thought to be a concept concerning the behavior of individuals that is the total sum of the efforts that guide the individual to meet their identified objectives (Büyükses, 2010; Inceli, 2015). Similarly, various scientists have defined motivation as the driving force that guides students towards their objectives (Küçük, 2008; Littlejohn, 2008; Millette and Gagne, 2008). According to Fidan (1996), motivation is the most important source of energy that

determines the direction, degree and decisiveness of a particular behavior. The effective and correct use of this energy effects individuals in reaching their objective.

One of the most important factors, and one that positively or adversely affect teachers' teaching-learning processes, is the level of their motivation concerning their vocation (De Jesus & Lens, 2005; Yavuz & Karadeniz, 2009; Yazıcı, 2009). An individual's vocational performance and the teacher's sustained successful performance are connected with the high level of motivation they have for their vocation. A study by De Jesus and Lens (2005) claims that teachers with a high motivation level are more open to innovations and can better adapt. Thus, the motivation level of teachers is important in terms of educational reforms. The teaching profession is a vocation where the sources of internal and external motivation are important (Başaran & Dedeoğlu Orhun, 2013). These internal impulses and stimuli are the root of internal motivation (Yücel & Gülveren, 2011). Internal motivation can be interpreted as the point of reaching internal motivation without an external expectation other than the individuals own self (Kauffman, Yılmaz Soylu & Duke, 2011). In other words, the enthusiasm and desire for the work to be done are important components for internal motivation (Joo & Lim, 2009). The source of internal motivation may be the feeling of curiosity, interest, knowing, understanding, competence and development within an individual (Akbaba, 2006; Ergün, 2011). Internal motivation can be described as the pleasure and satisfaction gained as a result of carrying out an activity, without the need for a further external reward (Gagne et al., 2010). An example of internal motivation may be the pleasure experienced by a teacher in the development of a student, the interest of a student in a subject or willingness for self-improvement. That is, when they gain pleasure from the work that they do, the work itself that is the driving force with regards to internal motivation for the individual (Cooman et al, 2007; Littlejohn, 2008; Millette & Gagne, 2008). The source of external motivation is from external stimuli (Akbaba, 2006). When compared with internal motivation, the aim of external motivation is to use a specific behavior as a tool to reach the desired objective, rather than to display the behavior for the sake of the attitude itself. In contrast to internal motivation, external motivation is dependent on punishment and reward (Goodridge, 2006; Hoy & Miskel, 2010; Littlejohn, 2008). The individual reacts towards objectives, such as having a good career, position, or receiving a promotion, getting high grades or passing a year level. In other words, the individual is interested, not in the behavior per say, but in the attainment made as a result of the behavior. Examples of external motivation include, a family forcing their child to go to school or a teacher focusing on financial reward (Ayık, Ataş Akdemir & Seçer, 2015). In short, examples including success in a task, independence, responsibility, professional development, contribution to the workplace promote internal motivation, while external factors, such as working conditions, salary, job security ensure external motivation (Hall & Quinn, 2014; Mahaney & Lederer, 2006). Studies emphasize that both internal and external motivation is important for the teaching profession and that internal motivation is more effective than external motivation (Ayık & Ataş, 2014; Kaya, Yıldız & Yıldız, 2013; Yazıcı, 2009; Büyükgöz, 2008). In order for individuals to continue their efforts and endeavors, they need to be externally and internally motivated (Vatansever Bayraktar, 2015).

Lindner (1998) states that individuals with higher levels of motivation are more productive and successful in their professions. Similarly, a study by Aypay (2011) argues that motivation is among the conditions required to be a good teacher. It is stated that individuals with a high level of motivation are more decisive in pursuing the objectives they want to reach and have a high probability of realizing their objectives (Jonett, 2009). The motivation of teachers to teach is considered to be as important as their teaching skills (Güzel Candan & Evin Gencel, 2015). The efforts teachers expends for their vocational/professional development is related to their teaching motivation (Dereli & Acat, 2010; Yavuz & Karadeniz, 2009; Kocabaş & Karaköse, 2005). This being the case, as the level of teaching motivations of individuals increases, their interest and desire towards their vocation will also increase. As it is for teachers, we might assume that motivation of candidate teachers will also increase their interest, dedication and performance. It is highly important for candidate teachers, as teachers of the future, to also have an increased teaching motivation. In this context, identifying the variables that may be effective on the level of internal and external motivation of candidate teachers will contribute to the subject.

The purpose of this study is to determine whether the internal and external teaching motivations of 3rd and 4th year students of the Faculty of Education of Cumhuriyet University can be predicted by the variables of gender, department, year level, a conscious preference for the department in which they are studying, whether there is a teacher in their family, their attitude toward the teaching profession and their overall academic performances.

2. Method

In this research study the relational screening model was used. In the analysis of the data, logistic regression analysis, which is a statistical method used in relational screening models, was utilized. The main aim of logistic regression

analysis is to establish an acceptable model, which can define the relationship between the predictor and predicted variables, by aiming for the best conformity by using the least variables (Atasoy, 2001). Logistic regression analysis is a form of analysis, which ensures the establishment of a regression model that does not require assumptions, such as normality, continuity, homoscedasticity and multi-variable normality (Tabachnick & Fidell, 2007).

2.1 Population and Sample

The study population comprised 1,459 candidate teachers from the 3rd and 4th year levels, in seven different departments at the Cumhuriyet University Faculty of Education in the Fall Semester of the 2015-2016 academic year. The study sample comprised 476, 3rd and 4th year candidate teachers, studying in seven departments at the Faculty of Education of the Cumhuriyet University. The following deviation formula was used to determine the sample size from the known population (Yazıcıoğlu & Erdoğan, 2004; Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz & Demirel, 2010).

$$\frac{Nt^2pq}{(N-1)d^2 + t^2pq}$$

*For the sample of this study, the significance level was determined as 0.05, the sample error is d= ±0.03, p=0.5 and q=0.5.

The minimum number of the sample was determined as 305 candidate teachers. A simple random sampling method was used to determine the sample. 613 students were included in the sample; however, the final sample size comprised 476 candidate teachers due to incomplete or wrongly completed forms by those in the sample.

In this regard, the distribution of gender, department of study and year level of the candidate teachers included in the sample of the study can be seen in Table 1.

Table 1. Information regarding candidate teachers included in the sample

	Population		Sample	
Gender	f	%	f	%
Female	1052	72.10	344	72.27
Male	407	27.90	132	27.73
Departments				
Pre-school Education	407	27.90	76	15.97
Classroom Education	215	14.74	89	18.70
Social Studies Education	212	14.53	69	14.50
Science Education	205	14.05	59	12.39
Primary Mathematics Education	97	6.65	44	9.24
Turkish Language Education	123	8.43	66	13.87
Psychological Counseling and Guidance Education	200	13.71	73	15.34
Year Level				
3rd Year	754	51.68	234	49.16
4th Year	705	48.32	242	50.84
Total	1459	100.00	476	100.00

A review of Table 1 shows that of the candidate teachers in the sample, 72.27% (f: 344) were female and 27.73% (f: 132) were male. With regard to the distribution of year level, there is almost a 50% distribution for each year level. From an examination of the department of study distribution, it can be seen that there are students from each department in the sample.

2.2 Data Collection Tools

In order to determine the teaching motivations of candidate teachers, the Teaching Motivation Scale, devised by Ayık, Ataş Akdemir and Seçer (2015) was used and the Attitude Toward Teaching Profession Scale developed by Üstüner (2006) was used to identify attitudes toward the teaching profession as data collection tools of the study.

2.2.1 The Teaching Motivation Scale

The Teaching Motivation Scale devised by Ayık, Ataş Akdemir and Seçer (2015) comprises 12 items and two dimensions (internal and external motivation). The 5 point Likert Type scale was categorized as follows: *Completely Agree=5; Mostly Agree=4; Somewhat Agree=3; Partially Agree=2* and *Do Not Agree=1.* The results of the reliability analysis for the scale showed that the internal consistency coefficient was α=.84 and the test-retest reliability was found to be .92. The results of the exploratory factor analysis showed a 52.41% variance for other dimensions of the scale and the confirmatory factor analysis showed that the two dimensional structure at the second level of the CFA has a good fit value (RMSEA= .064, RMR= .010, NFI= .95, NNFI= .96, CFI= .97, IFI= .97, RFI= .93, AGFI= .90, GFI= .94). In addition, when the internal consistency coefficient for the Teaching Motivation Scale was re-calculated for the sample of this study, the result was found to be .79.

2.2.2 The Attitude Toward Teaching Profession Scale

The Attitude Toward Teaching Profession Scale comprises 34 items. Of the items, 24 were positive and 10 were negative. The 5 point Likert Type scale was categorized as follows: *Completely Agree=5; Mostly Agree=4; Somewhat Agree=3; Partially Agree=2* and *Do Not Agree=1.* The results of the exploratory factor analysis showed a 37.80% variance for the scale and the confirmatory factor analysis showed that the CFA has a good fit value (RMSEA= .072, SRMR= .073, NFI= .93, NNFI= .94, CFI= .94, IFI= .94, RFI= .92, GFI= .88) for the sample of this study. The internal consistency of the scale (Cronbach's Alpha) was .93. Further, when the internal consistency coefficient for the Attitude Toward Teaching Profession Scale was re-calculated for the sample of this study, the result was found to be .95.

2.3 Data Analysis

In logistic regression analysis, the dependent variables are titled according to the logic transformation that is administered. If the dependent variable is a categorical binary variable, it is called Binary Logistic Regression Analysis (Çokluk, 2010). In this study, the teaching motivation consisted of two sub-dimensions: *internal* and *external.* A Binary Logistic Regression Analysis was preferred for the logistic regression analysis, because the categorical dependent variable of teaching motivation was transformed to two categories, as internal and external motivation.

It was decided to conduct a Two Stage Cluster Analysis and to establish homogeneous sub-groups from individuals, based on the probability that individuals of the heterogeneous data-set come from different populations. A two-stage cluster analysis was carried out on the scores of 3rd and 4th year candidate teachers studying at the faculty of education, obtained from the sub-dimensions of the Teaching Motivation Scale. Bayes çi Information Criteria (BIC) was used to determine the number of sub-clusters the population divided into. When the BIC values were examined for the internal motivation sub-dimension, it was decided to have two clusters. Kayri (2007) states that a two-stage cluster analysis is a better option for continuous and categorical data clustering and that better statistical results can be obtained after the heterogeneous data sets are divided into homogenous sub-clusters (Kayri, 2007).

As a result, the scores obtained from the Teaching Motivation Scale, as a dependent variable, were defined as binary variables so that the internal motivation sub-dimensions were low and high internal teaching motivations and the external motivation sub-dimensions were low and high external teaching motivation variables. Table 2 shows the two stage cluster analysis results regarding the dependent variables of the study.

Table 2. Results of the two stage cluster analysis for dependent variables

Dependent Variable	Cluster	f	%	Mean	Standard Deviation
Internal Motivation	1	147	30.9	12.62	2.85
	2	329	69.1	20.87	2.59
External Motivation	1	255	53.6	12.87	2.59
	2	221	46.4	19.78	2.38

As can be seen from Table 2, as a result of the two stage cluster analysis for the internal motivation sub-dimension, the internal motivation score for 147 (30.9%) candidate teachers in the first cluster was 12.62 and the standard deviation was 2.85, while the internal motivation score for 329 (69.1%) candidate teachers in the second cluster was 20.87 and the standard deviation was 2.59. Based on this, the internal motivation of the first cluster can be stated as *low* while the internal motivation of the second cluster can be considered *high.* According to the results of the two stage cluster analysis for the external motivation sub-dimension, the external motivation score for 255 (53.6%)

candidate teachers in the first cluster was 12.87 and the standard deviation was 2.59, while the external motivation score for 221 (46.4%) candidate teachers in the second cluster was 19.78 and the standard deviation was 2.38. Based on this result, the external motivation of the first cluster can be stated as *low*, while the external motivation of the candidate teachers in the second cluster can be considered *high*. Thus, the binary dependent variables were obtained for these sub-dimensions.

The dependent variables of the research study are the internal and external motivations, which are the sub-dimensions of the *teaching motivation* of candidate teachers and independent variables and attitudes toward the teaching profession, gender, department, year level, their overall academic performances, a conscious preference for department in which they are studying and whether there is a teacher in their family.

The *internal motivation* and *external motivation* dependent variables were subject to two separate stage cluster analyses, and have been defined as variables in two categories consisting of *low* and *high* levels. In regards to the independent variables, gender, department, year level, a conscious preference for department in which they are studying and whether there is a teacher in their family are non-continuous variables. Attitudes toward the teaching profession and overall academic performance are continuous variables.

As the dependent variables were binary and a Binary Logistic Regression Analysis was used in this study, the coding of the groups was determined as 0 and 1. The zero coded category was taken as the reference code. For each of the two sub-dimensions in this study, the high level was taken as the reference code. In accordance with this, the coefficients show that the effect of the probability of internal motivation of candidate teachers being of a high level and the external motivation has the probability of being of a high level.

2.3.1 Preparation of the Data

Before beginning the logistic regression analysis, an extreme value and missing value analysis was conducted. The results of the missing value analysis excluded the missing values (131 forms) from the analysis. As a result of the extreme value analysis, the data lying outside the observation values [-3,+3] was identified (six forms) and was excluded from the analysis. Following the results of the extreme value and missing data analysis, the model was tested on a total of 476 data.

In the logistic regression analysis, as the high correlation between the independent variables was highly sensitive, there was no likelihood of their being a multicollinearity problem among the variables. A multicollinearity problem is seen in cases when the correlation between the variables is high (r >0.90) (Tabachnick & Fidell, 2007). As the correlation values in this study were r <0.90, multicollinearity problem was not experienced.

One other hypothesis was that there would be no multicollinearity problem among the independent variables for the dependent variable. In order to test this hypothesis, the Tolerance and VIF values were calculated. It was expected that the Tolerance value should be larger than 0.02, and the VIF value to be smaller than 10 (Kalaycı, 2010; Field, 2009). An assessment of whether there is a multicollinearity problem among the independent variables for the dependent variable showed that the hypothesis is met. The Tolerance and VIF values, regarding this assumption, is given in Table 3.

Table 3. Results of multicollinearity hypothesis between independent variables

Dependent Variables / Independent Variables	Internal Motivation		External Motivation	
	TOLERANCE	VIF	TOLERANCE	VIF
Gender	0.832	1.201	0.832	1.201
Department	0.929	1.076	0.929	1.076
Year	0.945	1.059	0.945	1.059
Overall academic performance	0.871	1.148	0.871	1.148
Conscious preference of department	0.758	1.320	0.758	1.320
Whether there is a teacher in the family	0.987	1.013	0.987	1.013
Attitude toward the teaching profession	0.665	1.503	0.665	1.503

A review of Table 3 shows that the related hypotheses were met. Overall, it was decided to conduct a logistic regression analysis to test all the hypotheses.

3. Findings and Interpretation

The model in the logistical regression analysis is to ensure that the comparison is the baseline model. No independent variable is included in this model. The -2LL value for the baseline model can be seen in Table 4.

Table 4. Iteration information of the baseline model

Dependent Variables		Iteration	-2 Log likelihood (-2LL)	Coefficients
				Constant
Internal motivation	Step 0	1	588.656	0.765
		2	588.485	0.805
		3	588.485	0.806
External motivation	Step 0	1	657.445	-0.143
		2	657.445	-0.143

A perfect fit for -2LL should be a value of zero (Şenel & Alatlı, 2014). Here, the -2LL value for both internal motivation (-2LL= 588.485) and external motivation (-2LL= 657.445) shows that the model begins with a significantly high value.

The findings regarding the initial classification situation result of the logistic regression analysis can be seen in Table 5.

Table 5. Initial classification situation as a result of the logistic regression analysis

Actual/Observed Situation	Expected Situation		
	Low internal motivation	High internal motivation	Correct Classification Percentage
Low internal motivation	0	147	0.0
High internal motivation	0	329	100.0
Total Correct Classification Percentage			69.1
Actual/Observed Situation	Low external motivation	High external motivation	Correct Classification Percentage
Low external motivation	255	0	100
High external motivation	221	0	0.0
Total Correct Classification Percentage			53.6

As can be seen in Table 5, candidate teachers were classified in the internal motivation sub-dimension in the high internal motivation category and the correct classification was observed as 69.1%. For the external motivation sub-dimension, candidate teachers were classified in the low external motivation category and the correct classification percentage was 53.6%.

Table 6 shows the findings related to the variables not included in the equivalency.

Table 6. Variables not included in the baseline model/equivalency

Dependent variables		Independent Variables	Score	df	p
Internal motivation	Step 0	Gender	4.189	1	0.041
		Department	22.574	6	0.001
		Pre-school Education	2.243	1	0.134
		Classroom Education	8.541	1	0.003
		Social Studies Education	0.423	1	0.515
		Science Education	0.940	1	0.332
		Primary Mathematics Education	1.366	1	0.243
		Turkish Language Education	1.583	1	0.208
		Year	10.418	1	0.001
		Overall academic performance	1.655	1	0.198
		Conscious preference of department	41.330	1	0.000
		Whether there is a teacher in the family	0.483	1	0.487
		Attitude toward the teaching profession	132.377	1	0.000
		Chi-square Statistic $(x^2_{\beta0})$	150.901	12	0.000
External motivation	Step 0	Gender	2.893	1	0.089
		Department	11.852	6	0.065
		Pre-school Education	0.185	1	0.667
		Classroom Education	7.578	1	0.006
		Social Studies Education	0.282	1	0.595
		Science Education	4.251	1	0.039
		Primary Mathematics Education	0.249	1	0.618
		Turkish Language Education	0.029	1	0.864
		Year	0.062	1	0.803
		Overall academic performance	7.282	1	0.007
		Conscious preference of department	30.464	1	0.000
		Whether there is a teacher in the family	2.572	1	0.109
		Attitude toward the teaching profession	50.813	1	0.000
		Chi-square Statistic $(x^2_{\beta0})$	69.520	12	0.000

The chi-square statistics given in Table 6 shows that both the internal motivation sub-dimension ($x^2_{\beta0}$=150.901, p<.05) and the external motivation sub-dimension ($x^2_{\beta0}$=69.520, p<.05) are significant. This significant value shows that the coefficients of the predictor variables not included in the model significantly differ from zero. In other words, to include one or more of these variables in the model would increase the predictive power of both models (Field, 2009). In such cases, it can be stated that models regarding the sub-dimensions of all predictor variables would ensure a significant contribution. The score values in Table 6 are Roa's efficient score statistics. This value is a value that shows whether each variable will make a significant contribution to the model (Field, 2009). In this case, it was found that the internal motivation dependent variable was significant for gender, department (classroom education department), year level, conscious preference for a department and attitude toward the teaching profession and that from these variables, the variable that had the highest score statistic was the attitude toward the teaching profession (132.377). Whilst for the external motivation, it can be seen that the departments of classroom education

and Science education, overall academic performance, conscious preference of a department and attitude toward the teaching profession variables are significant and that from among these variables, the variable that has the highest score statistic is the attitude toward the teaching profession (50.813).

The Omnibus test results for the model coefficients can be seen in Table 7. The chi-square statistics were calculated separately for the step, block and model. The chi-square calculated for the model represents the difference between the baseline model (which includes the constant term) and the expected model.

Table 7. Omnibus test for the model coefficient

Dependent Variables			Chi-square	df	p
Internal motivation	Step 1	Step	166.969	12	0.000
		Block	166.969	12	0.000
		Model	166.969	12	0.000
External motivation	Step 1	Step	78.086	12	0.000
		Block	78.086	12	0.000
		Model	78.086	12	0.000

The chi-square value for the model given in Table 7 shows that both the internal motivation (x^2=166.969, p<0.05) and the external motivation (x^2=78.086, p<0.05) is significant. Based on this, it can be seen that the relationship between the predictor and predicted variables are supported.

The summary regarding the statistics of fit for the expected model can be seen in Table 8.

Table 8. Summary of the expected model

Dependent variables	Step	(-2 LL)	Cox & Snell R^2	Nagelkerke R^2
Internal motivation	1	421.516 [a]	0.296	0.417
External motivation	1	579.359 [a]	0.151	0.202

This is the regression model that includes predictor variables. As the fit is improved in the expected model, the -2LL value is lower (Şenel & Alatlı, 2014). When the -2LL is compared for the baseline model and the new model for the internal motivation sub-dimension, that is when only the predictor variables with the constant term is included, the difference of -2LL is 166.959 (588.485-421.526). When this calculated value is compared with the chi-square table according to 12 degrees of freedom, it can be seen that it is significant. When the -2LL is compared for the baseline model and the new model for the external motivation sub-dimension, that is when only the predictor variables with the constant term is included, the difference of -2LL is 78.086 (657.445-579.359). When this calculated value is compared with the chi-square table according to 12 degrees of freedom, it can be seen as significant. That is, the change in the fit of the model is significant. A review of the Nagelkerke R^2 value, given in Table 8, shows that when the predictor variables are included and they explain 42% of the internal motivation sub-dimension and 20% of the external motivation sub-dimension.

The findings of the Hosmer and Lemeshow test can be seen in Table 9.

Table 9. Hosmer and Lemeshow test

Dependent variables	Step	Chi-square	sd	p
Internal motivation	1	8.802	8	.359
External motivation	1	5.930	8	.655

Table 9 provides data concerning the model-data fit with the Hosmer and Lemeshow test values. The significance test result of p>.05 shows that the logistic regression model is fitting to the model (Garson, 2012). A review of the results show that a model-data fit is obtained for both the internal motivation (x^2= 8.802, p>.05) and external motivation (x^2=5.930, p>0.05) sub-dimension.

Table 10 shows the regression model produced to predict the group memberships.

Table 10. Classification table

Actual/Observed Situation	Expected Situation		
	Low internal motivation	High internal motivation	Correct Classification Percentage
Low internal motivation	77	70	52.4
High internal motivation	32	297	90.3
Total Correct Classification Percentage			78.6
Actual/Observed Situation	Low external motivation	High external motivation	Correct Classification Percentage
Low external motivation	173	82	67.8
High external motivation	76	145	65.6
Total Correct Classification Percentage			66.8

According to Table 10, 297 of the candidate teachers were correctly classified with regard to high internal motivation, while 32 were not correctly classified and the correct classification percentage was 90.3%. In regards to low external motivation, 77 of the candidate teachers were correctly classified, while 70 were not and the correct classification percentage was 52.4%. The total correct classification was 78.6%. In order to gain information about model adequacy, the correct classification percentage was calculated from the classification table of the baseline model and compared to the correct classification percentage of the final classification table (Field, 2009). A comparison of the percentage obtained from the final classification table (78.6%) and the classification percentage for the baseline model (69.1%) showed that the final classification percentage was higher that the classification percentage for the baseline model. That is, the predictor variables included in the model increased the classification percentage of the internal motivation sub-dimension.

For the external motivation sub-dimension, in regards to the low external motivation, while 173 candidate teachers were correctly classified, while 72 were not and the correct classification percentage was 67.8%. For the high external motivation, 145 candidate teachers were correctly classified, while 76 were not correctly classified and the correct classification percentage was 65.6%. The total correct classification was 66.8%. When the correct classification percentage was calculated from the classification table of the baseline model (53.6%) and compared with the correct classification percentage (66.8%) of the final classification table to obtain information about the model adequacy, it was seen that the final classification percentage was higher than the classification percentage for the baseline model. That is, the predictor variables included in the model increased the classification percentage of the external motivation sub-dimension.

The inclusion of predictor variables to the model and the information regarding the changes in internal and external motivation of candidate teachers are given in Table 11.

Table 11. Estimated coefficients for expected model variables

Dependent variables		Independent Variables	B	S.E.	Wald	sd	p	Exp (B)
Internal motivation	Step 1	Gender	0.080	0.308	0.068	1	0.794	1.084
		Department			20.624	6	0.002	
		Pre-school Education	-0.107	0.405	0.070	1	0.792	0.898
		Classroom Education	1.272	0.450	7.978	1	0.005	3.569
		Social Studies Education	0.876	0.435	4.052	1	0.044	2.401
		Science Education	0.989	0.472	4.385	1	0.036	2.689
		Primary Mathematics Education	1.056	0.507	4.343	1	0.037	2.876
		Turkish Language Education	1.407	0.459	9.395	1	0.002	4.082
		Year	0.295	0.255	1.342	1	0.247	1.343
		Overall academic performance	-0.002	0.306	0.000	1	0.994	0.998
		Conscious preference of department	0.475	0.324	2.141	1	0.143	1.607
		Whether there is a teacher in the family	-0.006	0.253	0.001	1	0.980	0.994
		Attitude toward the teaching profession	0.059	0.007	63.433	1	0.000	1.061
		Constant	-8.238	1.330	38.347	1	0.000	0.000
External motivation	Step 1	Gender	0.217	0.259	0.702	1	0.402	1.243
		Department			9.257	6	0.160	
		Pre-school Education	0.118	0.367	0.104	1	0.747	1.125
		Classroom Education	0.580	0.360	2.594	1	0.107	1.787
		Social Studies Education	0.058	0.371	0.025	1	0.875	1.060
		Science Education	-0.209	0.407	0.263	1	0.608	0.812
		Primary Mathematics Education	0.867	0.441	3.868	1	0.049	2.380
		Turkish Language Education	0.178	0.375	0.224	1	0.636	1.194
		Year	-0.112	0.210	0.287	1	0.592	0.894
		Overall academic performance	0.409	0.257	2.530	1	0.112	1.505
		Conscious preference of department	0.770	0.316	5.951	1	0.015	2.160
		Whether there is a teacher in the family	0.312	0.206	2.301	1	0.129	1.367
		Attitude toward the teaching profession	0.029	0.006	24.376	1	0.000	1.029
		Constant	-6.259	1.116	31.435	1	0.000	0.002

The Wald Test is commonly used to test the significance of the logistic regression coefficient for each independent (predictor) variable (Field, 2009). According to the results of the Wald test, the predictors of internal motivation sub-dimensions of departments of study (p=.002 <.05), Classroom education (p=.005 <.05), Social Studies Education (p=.044 <.05), Science Education (p=.036 <.05), Primary Mathematics Education (p=.037 <.05), Turkish Language Education (p=.002 <.05) and attitude toward the teaching profession (p=.000 <.05) were found to be significant.

According to Table 11, a one-unit increase in the variable of attitude toward the teaching profession increases the possibility of high internal motivation 1.06 times (high internal motivation is coded as 1). In regards to the variable of Department (of study), compared with the candidate teachers of the Department of Psychological Counseling and Guidance Education, the probability of high internal motivation for candidate teachers of Classroom Education is 3.57 times higher, the probability of high internal motivation for candidate teachers of Social Studies Education is 2.40 times higher, the probability of high internal motivation for candidate teachers of Science Education is 2.69 times higher, the probability of high internal motivation for candidate teachers of primary Mathematics Education is 2.88 times higher and the probability of high internal motivation for candidate teachers of Turkish Language Education is 4.08 times higher. The determination of the increase occurring is due to the positive B coefficient related to the variable (Çokluk, 2010). That is, the increase in the attitude predicting variables of Department and attitude toward teaching profession leads to a high positive opinion of the high internal motivation.

According to the results of the Wald test, it was found that the predictors for the external motivation sub-dimensions of Primary Mathematics Education (p=.049 <.05), conscious preference of a Department (p=.015 <.05) and attitude towards teaching profession (p=.000 <.05) were significant. As seen in Table 11, compared with the candidate teachers of the Department of Psychological Counseling and Guidance Education, the probability of high external motivation for candidate teachers of Primary Mathematics Education is 2.38 times higher. Candidate teachers who make a conscious decision to study in a particular department have 1.16 times higher probability of high external motivation when compared with those preferring to study in the particular department (high external motivation is coded as 1). With regard to the variable of attitude toward the teaching profession, a one-unit increase in the variable increases the possibility of high external motivation 1.02 times. That is, the increase in the attitude predicting variables of Primary Mathematics Education, conscious preference for a department and attitude toward teaching profession leads to a high level positive opinion of the high external motivation.

4. Discussion and Conclusion

The purpose of this study was to determine whether the internal and external teaching motivations of 3rd and 4th year students at the Faculty of Education of Cumhuriyet University could be predicted by variables including gender, department, year level, a conscious preference for the department in which they are studying, whether there is a teacher in their family, their attitude toward the teaching profession and their overall academic performances.

In light of the logistic regression analysis, it was found that the variable of attitudes toward the teaching profession is significant for both the internal and external motivation of candidate teachers. A review of the literature shows that there are many studies examining the relationship between motivations and attitudes of students, teachers and candidate teachers (Büyükses, 2010; Csizer, Kormos & Sarkadi, 2010; Djigunovic, 2012; Emmett, 2013; Erdem & Gözüküçük, 2013; Kocabaş & Karaköse, 2005; Sougari & Hovhannisyan, 2013; Uçgun, 2013; Yazıcı, 2009). However, there were a few studies undertaking the teaching motivations and attitudes toward the teaching profession of candidate teachers (Ayık and Ataş, 2014; Ayık, Ataş Akdemir, Seçer, 2015; Başaran & Dedeoğlu Orhun, 2013; Ömür & Nartgün, 2013; Öztürk & Uzunkol, 2013). Of the findings that support the results of this study, in a study by Ayık and Ataş (2014) on candidate teachers it was found that there was a moderate significant positive correlation between the participants' attitudes toward the teaching profession and not only internal but also external motivation. As a result, it was found that the internal and external motivation is a significant predictor of the variable of the attitude toward the teaching profession. Kara (2010) claims that motivation for work and responsibilities are triggered by positive attitudes, is also supported by the findings that variations in attitudes toward the teaching profession have an impact on internal and external motivation. A study by Ömür and Nartgün (2013) found that there was a medium level, positive and significant relationship between the attitudes towards the teaching profession and motivation in students of the faculty of education. As a result of a simple linear regression analysis regarding how the level of student motivation levels predict the attitude toward the teaching profession demonstrated that motivation levels of students were a significant predictor of the attitude towards the teaching profession. Contrary to study of Ömür and Nartgün (2013), the results of this study found that the attitude toward the teaching profession is a significant predictor for motivation. The findings of both studies show that the two variables are two-way variables and can be in a symbiotic relationship.

Another variable that had a significant effect on the teaching motivation of candidate teachers is the department in which they study. In regards to the department variable, findings reached showed that the departments of Classroom Education, Social Studies Education, Science Education, Primary Mathematics Education and Turkish Language Education were significant variables for internal motivation in comparison to Psychological Counseling and Guidance Education, while for external motivation significance was found for only the Primary Mathematics

Education variable. Regarding the dimension of internal motivation it may be possible to state that, in comparison to the Psychological Counseling and Guidance teachers, the subject areas where teachers are more active in the classroom and more often in communication with students have a higher impact on the internal motivation due to the pleasure and vocational satisfaction gained as a return of their efforts and as a reward of their teaching function. The results of Gömleksiz and Serhatlıoğlu (2013) indicate that the level of internal motivation for success of pre-school candidate teachers was of a lower level compared to other teacher candidates of other departments. This finding is supported by results of our study as a result of significant variables for departments expect for pre-school education, in comparison to Psychological Counseling and Guidance Education. In regard to the external motivation dimension, the only significant variable was found for Primary Mathematics Education. The level of hopelessness experienced primary mathematicss teacher candidates in comparison with those in other fields is low (Şengül and Güner, 2012); this mainly supports that this variable is influential on external motivation. This because there is a higher need for primary education level mathematics teachers both in state or private educational institutions and also in the private tutoring sector, and these teachers not only have a better chance of meeting their expectation of finding employment (Şengül and Güner, 2012).

Another variable, which was found to have a predictive impact on the external motivation of candidate teachers in the logistic regression analysis, was the variable for consciously preferring a particular department of study. It is possible to state that, as the teaching profession is respected in society, there are possibilities for finding employment and such factors have an effect on selecting the profession and are among the variables which effect the external motivation of students. In a study by Gömleksiz and Serhatlıoğlu (2013) with candidate teachers concerning the external motivation-external organization levels dimensions, they found that candidate teachers make a conscious decision to enter and continue studying with the external motivation of gaining a reputable profession, to have a good standard of living and better salary conditions. Yalçın and Korkmaz (2013) came to the conclusion that the teachers who willingly chose the department of study had a higher level of motivation.

5. Recommendations

The attitude toward the teaching profession is a significant predictor of internal and external motivation. In this regard, activities should be conducted to increase both the internal and external motivation of candidate teachers (such as screening of videos or films about teaching, interviews with experienced teachers, etc.). Seminars should be organised by teaching staff for candidate teachers, regarding the importance of the teaching profession, its place in society and its benefits. Projects should be conducted more often with schools of the Ministry of National Education so that candidate teachers can meet with students before they are assigned as teachers in the profession. To increase the rate of those electing to become teachers, studies should be carried out to improve conditions for teachers. It is recommended that studies be undertaken to determine whether various other variables are affective on the teaching motivation of candidate teachers. Studies should be undertaken with candidate teachers of other departments of various universities in order to be able to make comparative studies concerning the identified variables that have an impact on the teaching motivation of candidate teachers. In addition to quantitative data to determine which internal and external teaching motivations effect students, mixed models that make use of both quantitative and qualitative data can be used to provide a multi-dimensional evaluation opportunity.

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