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Investigation of the Effects of Pre-Service Teachers' Socio-Economic Statuses and Personality Traits on Their Motivations

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Although self-regulated learning (SRL) in education is more often associated with student learning, recently it has been emphasized that teachers should be self-regulated individuals, as well. In this study focusing on motivation, one of the sub-dimensions of SRL, predictive power of socio-economic statuses and personality traits of pre-service teachers on their motivations was determined with hierarchical regression analysis. This study was conducted with survey model, which is one of the quantitative research methods. The study enrolled 712 pre-service teachers studying at various departments of the Faculty of Education in a state university in Ankara, Türkiye. The Big Five Inventory, was used to determine the personality traits of pre-service teachers, while the Socio-economic Status Form was used to determine their socio-economic status. The General Self-Efficacy Scale, 2x2 Achievement Goal Orientations Scale, Success/Failure Attributions Scale, and Scientific Epistemological Beliefs Survey were used to determine the motivation of pre-service teachers. The results of hierarchical regression analysis, which was conducted with the data obtained in the study, showed low-level significant effects of socio-economic status on some sub-dimensions of motivation. However, when personality traits were included in the analysis, it was found out that they have higher level significant effects on all sub-dimensions of motivation.

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In particular, the findings showed that motivation had a significant effect on self-efficacy and goal orientation sub-dimensions. The findings of the study are likely to provide useful information about the effect of upbringing environments of pre-service teachers, which shape their personality traits and personalities, on their motivations.

Introduction

As the focus of most contemporary learning and teaching theories in the education system, knowing how to manage one's own learning process has become an important survival tool (Michalsky, 2021). According to the point of view common in the literature that "we should teach students not knowledge but how to learn" (Çapa-Aydın & Kondakçı, 2014; Dembo, 2001; Ganda & Boruchovitch, 2018; James & McCormick, 2009), learning to learn is an individual's taking responsibility for learning. In other words, it is a situation where an individual arranges and re-interprets his or her experiences to use them in his or her new learning. When we look at learning to learn from the point of view of its historical development, we see that students were taught learning strategies intended to teach the way of learning before 1980. However, in later studies, it has been ascertained that the concept of learning to learn consists of the cognitive, metacognitive, and affective dimensions (McCormick, 2006). In addition, some of the students knowing the same learning strategies have been observed to be able to use these strategies while some others could not, and it has been suggested that the underlying reason for this situation might be caused by motivation, which is an affective dimension (Zimmerman, 2000). After that, the concept of learning to learn, which has different dimensions, began to be called "self-regulated learning (SRL)". The SRL process requires individuals to be cognitively, metacognitively, and motivationally active participants in their own learning (Boekaerts, Pintrich & Zeidner, 2000). Pintrich's (2000) SRL model is mainly motivational. According to this model, motivation is the basis of individuals' ability to self-regulate. In Zimmerman's (2000) model, motivation exists in all phases of self-regulation. It is of great importance to educate pre-service teachers, who are the teachers of the future, as self-regulated individuals, and to determine their motivation levels (Han & Yin, 2016). A self-regulated teacher is a teacher who can regulate his or her learning to enable students to learn a particular subject most efficiently (Chatzistamatiou & Dermitzaki, 2013; Uzuntiryaki-Kondakci, Demirdöğen, Akın, Tarkin & Aydın-Günbatar, 2017). Individual characteristics of the teacher, as well as behavioral and environmental factors, affect this ability (Çapa-Aydın & Kondakçı, 2014; Schunk & Usher, 2013).

Motivation can be defined as "the underlying causes of a behavior" (Guay, Chanal, Ratelle, Marsh, Larose & Boivin, 2010), or as "the thing that causes individuals to continue, stop and complete their performance" (Pintrich & Schunk, 2002). It cannot be explained simply why some students have higher motivations while some others at the same academic level have lower motivations. Although the literature contains many studies on the factors affecting motivation in this context, fewer studies are showing the effect of variables such as personality differences and socio-economic variables on motivation. Socio-economic statuses of students affect their motivations (Ali & Razzak, 2019; Bektas-Cetinkaya & Oruc, 2011; Kala & Shirlin, 2017; Li, Peng, Yang & Chen, 2020; Turcinskaite-Balciuniene, Balciunas & Merkys, 2015). When we say socio-economic status, we mean characteristics such as the type of family, family attitude, family's income level, and parental educational level. In addition to socio-economic status, another factor affecting motivation is personality traits (Parker, 2013; Sorić, Penezić & Burić, 2017). Many factors influence the development of personality. The social status factor and family factor are among these factors (Burger, 2006; Caspi & Roberts, 2001; Topçu, 2017;

Uzun, 2020). The social-status factor, i.e., the educational opportunities, lifestyle, way of thinking, and consumption habits of the social class, to which the individual belongs, affect his or her personality traits (Gürüz & Eğinli, 2012). Regarding the effect of the family factor on the development of personality traits, Gürüz and Eğinli (2012) state that the basic knowledge that an individual should acquire for behavior and relationships is primarily obtained from the family, and as the individual grows, traces of the family continue to be seen in the formation of his/her personality. Individuals may adopt what they see in their families and may behave accordingly in their social lives (Gürüz & Eğinli, 2012). Studies on motivation emphasize the necessity of investigating how the development and structuring of motivation are affected by culture, family, and learning environment motivation in the context (Jarvela & Jarvenoja, 2011). Although the literature contains studies suggesting that socio-economic status can affect motivation (Clemons, 2005), there are fewer studies suggesting that personality traits may affect motivation (Komarraju, Karau, & Schmeck, 2009; Sorić et al., 2017). Despite the fact that many factors affecting motivation have been covered extensively in the literature, the fact that the relationship between motivation and factors such as socio-economic status and personality traits has been examined relatively less has played an important role in determining the need for this study. Considering this gap seen in the literature, this study discussed the effect of personality traits on motivation. However, since personality traits are likely to be affected by socio-economic status, the effect of both socio-economic status and personality traits on motivation was examined. It is thought that the findings of the study will reveal the relationship of motivation with socio-economic status and personality traits. In this way, educational institutions based on training self-regulated teachers are expected to reconsider their teacher education curriculum, taking these variables into account.

The research question that led this study is, “What are the effects of pre-service teachers' socio-economic statuses and personality traits on their motivations?”

Theoretical Framework

Educating individuals who are aware of their skills and how they learn, who structure knowledge, and who actively play a role in the learning process is one of the most basic goals of today's education system (Bembenutty, 2011; Malik, 2018; National Ministry of Education, 2018). Educating individuals who regulate their learning and take responsibility for learning constitutes the basis of SRL. There are many models related to SRL in the educational literature (see Boekaerts & Niemivirta, 2000; Borkowski, 1996; Pintrich, 2000; Schraw, Crippen & Hartley, 2006; Winne & Hadwin, 1998; Zimmerman, 2000). In many of these models, motivation is considered to be a sub-dimension of SRL. Among these models, the SRL models suggested by Zimmerman (2000) and Pintrich (2000) are the most used models (Sirazieva, Zamaletdinov, Fahrutdinova & Fahrutdinov, 2018). Also, the SRL model proposed by Schraw et al., (2006) is the model that contributes to research-in-practice and is more suitable for science education (de Blume, 2021). It is seen that Pintrich tried to analyze the role of motivation in self-regulation, in his SRL model. Zimmerman's SRL model emphasizes that motivation has an effect on self-regulation and that in cases where individuals who monitor and evaluate themselves throughout the learning process achieve favorable outcomes, they also improve their motivation and develop learning methods. In another SRL model developed by Schraw et al. (2006), self-regulation is considered to be the combination of cognition, metacognitive control, and motivational beliefs.

Motivation which is a basic psychological concept with a long research history is also a force that pushes the learner into a learning condition in the learning process. (Liu, Wang & Ryan,

2016). In the historical development of motivation, drive theory, conditioning theory, cognitive consistency theory, and humanistic theory are of great importance (Schunk, 2012). However, since theories deal with motivation by considering its certain characteristics, they are insufficient to explain the learning process and the behaviors of the individual (Schunk, 2012). Contemporary motivation theories, such as the expectancy-value theory, self-worth theory, social cognitive theory, and goal theory, explain the basic processes related to motivation and reveal the relationship of motivation with success and learning. These theories alone, without depending on other theories in the field of education, can contribute to the outcome of the learning process (Gopalan, Bakar, Zulkifli, Alwi, & Mat, 2017). Among these theories, the social cognitive theory is used in many fields such as education, psychology, and communication. Social cognitive theory refers to that knowledge is acquired through the interaction of personal factors, environmental variables, and behaviors. However, within this theoretical framework, studies linking students' personality traits with different components of SRL are considerably insufficient (Sorić et al, 2017).

The current study is based on the expectancy-value theory, one of the motivation theories. According to this theory, motivation has three important components. These are i) expectancy components, ii) value components and iii) affective components.

The sub-dimensions discussed, in the context of motivation in this study are self-efficacy, goal orientation, attributions, and epistemological beliefs. Among these sub-dimensions, self-efficacy is in the expectancy component of the expectancy-value theory, goal orientation is in the value component, and attributions and epistemological beliefs are in the affective component. In addition, self-efficacy, goal orientation, and attributions are some of the prominent dimensions related to motivation in the models developed by Zimmerman (2000) and Pintrich (2000), which are the SRL models taken as a basis for this study. Self-efficacy and goal orientation are the most determining motivational beliefs in displaying SRL behavior (Sakız & Yetkin Özdemir, 2014). What the individual attributes an achieved outcome (such as intelligence, social environment, or luck) to is of quite an importance for the development of self-regulation behavior (Schunk, 2001). Unlike the other two models, the SRL model developed by Schraw et al. (2006) includes epistemological beliefs in the context of motivation. Self-regulated individuals use various strategies flexibly, and they increase these strategies together with various motivational beliefs such as self-efficacy, goal orientation, and epistemological beliefs. Therefore, among the sub-dimensions of motivation, self-efficacy, goal orientation, attributions, and epistemological beliefs were included in the current study. As a result, the expectancy-value theory, one of the motivation theories, was taken as the basis for the current study, and motivation was evaluated in terms of the self-efficacy, goal orientation, and attributions in the models developed by Zimmerman (2000) and Pintrich (2000), and in terms of the epistemological beliefs in the model developed by Schraw et al. (2006).

Literature Review

Studies on motivation in the literature can be classified under three headings as the theoretical foundations of motivation, the development of motivation, and the analysis of the factors affecting motivation. When we look at the studies related to the factors affecting motivation, it is seen that these are mainly the studies that examine the relationship between motivation and academic performance or success. Studies on socio-economic status and personality, which are thought to affect motivation, have been reviewed under the headings of self-efficacy, goal orientation, attributions, and epistemological beliefs, which are the four important components of motivation.

A study conducted by Yuet (2008) reported that the socio-economic status of students affected their motivations, and a study conducted by Bozanoglu and Sapancı (2015) with university students found a significant relationship between personality traits and motivation. Another study found students with high motivation to be more extroverted, agreeable, conscientious, and open to new experiences (Kaufman, Agars & Lopez-Wagner, 2008). Phillips, Abraham and Bond (2003) found a positive relationship between motivation and conscientiousness, one of the personality traits. Komarraju and Karau (2005) found significant relationships between motivation and personality traits.

Self-efficacy, socio-economic status, and personality traits

Among the dimensions of motivation, self-efficacy is reported to be related to the socio-economic status of students, as it is higher in students with a better socio-economic status (Artelt, Baumert, Julius-McElvaney & Peschar, 2003). Analyses conducted within the scope of the PISA 2012 program emphasized that the differentiation in the socio-economic status influenced self-efficacy. Contrary to this, some studies found that self-efficacy does not change depending on socio-economic status (See. Adal & Yavuz, 2017). In some cross-sectional studies, it has been stated that there is a relationship between self-efficacy and personality traits (Ebstrup, Eplov, Pisinger & Jørgensen, 2011; Judge, Jackson, Shaw, Scott & Rich, 2007). The study conducted by Bahar and Kağan (2018) with pre-service teachers showed that the extroversion, openness to experience, and conscientiousness variables predicted self-efficacy positively, while the neuroticism variable predicted self-efficacy negatively; and found the compatibleness variable to be an insignificant predictor.

Goal orientation, socio-economic status, and personality traits

Türkçapar's (2015) study investigating the goal orientations of students in terms of various variables found the goal orientations of students to be associated with their socio-economic statuses. The study conducted by Koutsoulis and Campbell (2001) found a direct relationship between the goal orientation of students and their socio-economic statuses. The study also showed whether having low or high-income families affected students' ability to have learning goal orientation or performance goal orientation (Ch, Malik, Fatima & Abid, 2017; Kaliski, Finney & Horst, 2006). Goal orientation is also associated with personality traits. Studies stated that individuals with learning goal orientation are more conscientious, and more open to experience (Colquitt & Simmering, 1998; Vermetten, Lodewijks & Vermunt, 2001). However, studies also reported these individuals to be less neurotic (Day, Radosevich & Chasteen, 2003). Although there are few studies investigating the relationship of personality traits with performance goal orientation, individuals with such a goal orientation are reported to be more neurotic, less extroverted, and less open to experience (Day et. al, 2003).

Attributions, socio-economic status, and personality traits

Individual differences such as age, gender, and cultural characteristics have a relationship with success and failure. It is stated that the characteristics of the environment where individual lives are likely to have an impact on success and failure, as well (Erten & Burden, 2014). The influence of causal attributions on academic success differs in a variety of socio-economic groups because the pattern of formation of causal attributions may differ depending on the culture. The opinions of individuals about the reasons for their success and failure differ depending on the cultural characteristics of the social environment and family they

live in (Williams, Burden & Al-Baharna, 2001). According to the results of the study conducted by Gobel, Mori, Thang, Kan and Lee (2011) on different groups including Thai, Japanese and Malaysian participants, Thai and Malaysian participants attribute their successes and failures to personal and controllable features such as getting more attention and pleasure. Japanese participants were found to attribute their failures mostly to lack of effort, while Malaysian participants attributed their failures to a lack of talent. However, there are also studies, which have concluded that failure is attributed to luck and the difficulty of the task (Kurman, 2004). It can be seen from here that things to what individuals attribute their success and failure differ to differ depending on both individual characteristics and socio-cultural environment.

Epistemological beliefs, socio-economic status, and personality traits

It is stated that social and individual characteristics such as mental development, age, family and educational level, and culture are among the factors that affect the formation of epistemological beliefs (Deryakulu, 2017). In his research on the relationship of students' characteristics and their family environment with epistemological beliefs, Schommer (1990) emphasized that epistemological beliefs could take shape depending on socio-economic statuses. Accordingly, parental educational level affects the expectations about their children's taking responsibility and their perspective on knowledge (Schommer, 1993). In addition, increased parental educational levels, and sufficient opportunities provided by parents to their children, with the intent to enable them to become more independent individuals, will lead their children to develop a sophisticated system of epistemological beliefs, as well (Özkan & Tekkaya, 2011). It is stated that students with a weaker socio-economic status are more inclined to believe in the certainty of scientific knowledge and believe that the changeability of scientific knowledge is quite limited (Conley, Pintrich, Vekiri & Harrison, 2004; Ozkal, Tekkaya, Sungur & Cakiroglu, 2010).

Above, studies showing the relationship between socio-economic status and personality traits with motivational components were mentioned. In this sense, it is thought that this research will offer a different perspective to better understand the motivation that affects human behavior and will guide future researchers.

Methodology

Design of the study

This is a survey study with a quantitative approach. Among the survey models, the cross-sectional survey model was used in this study. A cross-sectional survey collects data from a sample that has been drawn from a predetermined population. A survey model is a type of research model intended to determine whether there is a relationship between two or more variables, and/or the extent of the relationship (Fraenkel & Wallen, 2000).

Sample

The sample of the study consists of 712 pre-service teachers studying in the mathematics and science departments of the faculty of education in a public university in Ankara. They were selected using convenience sampling. Patton (2015) defines convenience sampling as doing what is fast in terms of time, low in cost, and easy to perform. The study enrolled 712 pre-service teachers studying in the departments of Science, Mathematics, Elementary Mathematics, Physics and Chemistry, and Biology in the Faculty of Education, of which 596 (83.7%) were female and 116 (16.3%) were male. Among pre-service teachers enrolled in the

study, 46.7% of mother's educational status and 71.6% of father's educational status were secondary and higher education; 87.6% of monthly household income was above the minimum wage; 53.5% of family structures were modern; 46.5% of the family structures were traditional; 60.3% of family attitudes were positive, and 39.7% of family attitudes were negative.

Ethical Considerations

The obligatory permissions were obtained from the people who developed or adapted the scales to be used for data collection. Approval for the conduct of the study was obtained from the University Ethics Committee. Data collection tools were implemented on 712 pre-service teachers by one of the researchers. Before the implementation, pre-service teachers were given information about the study, and then they signed a Voluntary Consent Form containing explanations about the study, a copy of which was given to each of them. The practices carried out with pre-service teachers took 20 to 30 minutes on average.

Data Collection Tools

The Big Five Inventory, Socio-Economic Level Form, Scientific Epistemological Beliefs Survey, Success/Failure Attributions Scale, General Self-Efficacy Scale, and 2x2 Achievement Goal Orientations Scale were used to investigate the effects of socio-economic status and personality traits of pre-service teachers on their motivation.

The Big Five Inventory: It was developed by John, Donahue and Kentle (1991) as a 5-point Likert scale, and it was adapted to Turkish by Alkan (2007). The scale containing 44 items consists of 5 sub-dimensions: extroversion, agreeableness, conscientiousness, openness to experience, and neuroticism. For the scale, Cronbach's alpha internal consistency coefficient was reported to be 0.87, while internal consistency coefficients of the sub-factors were reported to be 0.89 for extroversion; 0.67 for agreeableness; 0.79 for conscientiousness; 0.79 for neuroticism; and 0.79 for openness to experience. Cronbach's alpha value of the scale in this study was found to be 0.71, while the Cronbach alpha values of the sub-factors were 0.86, 0.60, 0.76, 0.68, and 0.77, respectively.

Socio-Economic Status Form: This study involved the use of the "personal information form" developed by Güngör (2012), which measured the socio-economic status, family type, and family attitudes of pre-service teachers. This form classified family types of pre-service teachers as modern and traditional, while it classified family attitudes as positive and negative.

General Self-Efficacy Scale: The Turkish adaptation, validity, and reliability studies of the General Self-Efficacy Scale developed by Sherer, Maddux, Mercandante, Dunn, Jacobs and Rogers (1982) were conducted by Yıldırım and İlhan (2010). The 5-point Likert scale containing 17 items consists of three sub-dimensions: starting, continue, and persistence. The three-factor structure explained 41.5% of the variance, and the reliability of the scale was found to be the Cronbach's alpha value of 0.80. The Cronbach's alpha value of the scale in this study was calculated to be 0.88.

2x2 Achievement Goal Orientations Scale: The scale developed by Akın (2014) as a 5-point Likert scale consists of a total of 26 items and has a 4-factor structure. The sub-dimensions of this scale are learning-approach, learning-avoidance, performance-approach, and performance-avoidance. As a result of the exploratory factor analysis, it was reported to explain 67.25% of the total variance, and Cronbach's alpha value was found to range from 0.92 to 0.97 for the

sub-dimensions. Cronbach's alpha value of the scale in this study was found to be 0.79, while the Cronbach alpha values of the sub-dimensions were 0.78; 0.68; 0.84, and 0.74, respectively.

Success/Failure Attributions Scale: The scales developed by Baltaoğlu, Sucuoğlu, and Yurdabakan (2015) were used to determine the success and failure attributions of pre-service teachers. Both success attributions and failure attributions scales consist of three-factor structures: attribution to the teacher and the course, attribution to the family, and attribution to himself/herself. The results of the exploratory factor analysis of the success attributions scale that consisted of 30 items, conducted within the scope of the validation study, showed a three-factor structure with an eigenvalue greater than 1, which explained 58.79% of the total variance, and the reliability of the scale was found to be 0.95 as a Cronbach's alpha value. The Cronbach's alpha value of the scale in this study was calculated to be 0.90. The results of the exploratory factor analysis of the success attributions scale that consisted of 30 items, conducted within the scope of the validity study, showed a three-factor structure with an eigenvalue greater than 1, which explained 58.79% of the total variance, and the reliability of the scale was found to be 0.95 as a Cronbach's alpha value. The Cronbach's alpha value of the scale in this study was calculated to be 0.91.

Scientific Epistemological Beliefs Survey: The survey developed by Pomeroy (1993) as a 5-point Likert scale was adapted to Turkish by Deryakulu and Bıkmaz (2003). A high score obtained from the scale indicates a strong belief in the understanding of traditional science, and a low score indicates a strong belief in the understanding of non-traditional science. The factor analysis conducted to determine the validity of the scale consisting of 30 items, identified a single-factor structure. The reliability of the scale was found to be the Cronbach's alpha value of 0.91. The Cronbach's alpha value of the scale in this study was found to be 0.84.

Data Analysis

The data obtained from the study were analyzed using SPSS 25.0 and AMOS 24.0 statistical programs. Whether the research data were distributed normally was evaluated based on whether the skewness and kurtosis values were in the range of ±3 (Pituch & Stevens, 2012). In the study, descriptive results were given with numbers, percentages, means, standard deviations, medians, quarters, and minimum and maximum values. The effects of independent variables on the dependent variable were investigated by conducting a linear regression analysis. The analyses considered $p<0.05$ to be statistically significant.

In line with the objective of the study, the data obtained were analyzed by conducting the hierarchical regression analysis, to investigate whether socio-economic status and personality traits made a significant contribution to the prediction of motivation. The first stage of the hierarchical regression analysis involved socio-economic variables, which were followed by personality traits.

In the first step, socio-economic characteristics of pre-service teachers were included in the regression analysis model as a control variable with the "enter" method. In the second step of the analysis, personality traits were included in the regression model using the "enter" method (the extroversion, agreeableness, conscientiousness, neuroticism, and openness to experience variables).

According to the results of the regression analysis, the variance inflation factor was less than 10 (VIF<10), the tolerance values were above 0.2 (tolerance>0.2), there was no linear multicollinearity problem between independent variables, Durbin-Watson values were between

1.5 and 2.5, and there was no autocorrelation problem (Akdi, 2011; Büyüköztürk, 2014).

Results

In this part of the study, results obtained as a result of hierarchical regression analysis are presented in stages. The results were given as the sub-dimensions of motivation including self-efficacy, goal orientation, success-failure attributions, and epistemological beliefs. First, the effect of socio-economic status on the sub-dimensions of motivation was explained, and then the personality traits were added to the model, and the effects detected on the sub-dimensions were explained.

Results of the Hierarchical Regression Analysis on the Prediction of Self-Efficacy Sub-Dimensions by Socio-Economic Variables and Personality Traits

Results on the starting sub-dimension of self-efficacy were given in Table 1. According to these results, socio-economic status alone explained 1.6% of the variance in the onset sub-dimension of self-efficacy and that when personality traits were added to the model, it explained 36.5% of the variance in the onset sub-dimension.

Table 1. Results of the Hierarchical Regression Analysis on the Prediction of the Starting Sub-Dimensions of Self-Efficacy by Socio-Economic Variables and Personality Traits

Variables	β	R	R^2	R^2 Change	F Change	F Change Significance (p)
First Block						
Family Structure	-0.026					
Family Attitude[b]	0.118*					
Income[c]	-0.005	0.126	0.016	0.016	2.267	0.046
Mother's Education	-0.029					
Father's Education	0.038					
Second Block						
Extroversion	0.131*					
Agreeableness	0.068*					
Conscientiousness	0.388*	0.604	0.365	0.349	77.223	0.000
Neuroticism	-0.224*					
Openness to experience	0.106*					

*a: Reference: Traditional, b: Reference: Negative, c: Reference: Below Minimum Wage, *:p<0.05*

This result in Table 1 shows that personality traits have a significant contribution not only to socio-economic status but also to the onset sub-dimension of self-efficacy. According to the results, family attitudes among the socio-economic variables as well as extroversion, agreeableness, conscientiousness, and openness to experience among the personality traits had a positive effect on the starting sub-dimension of self-efficacy, while neuroticism personality traits had a negative effect on it.

Results about hierarchical regression analysis on the prediction of the continue sub-dimension of self-efficacy by socio-economic variables and personality traits were given in Table 2.

Table 2. Results of the Hierarchical Regression Analysis on the Prediction of the Continue Sub-Dimensions of Self-Efficacy by Socio-Economic Variables and Personality Traits

Variables	β	R	R^2	R^2 Change	F Change	F Change Significance (p)
First Block						
Family Structure[a]	-0.047					
Family Attitude[b]	0.081					
Income[c]	-0.013	0.090	0.008	0.008	1.147	0.334
Mother's Education	0.013					
Father's Education	-0.006					
Second Block						
Extroversion	0.167*					
Agreeableness	-0.018					
Conscientiousness	0.353*	0.645	0.415	0.407	97.687	0.000
Neuroticism	-0.218*					
Openness to experience	0.235*					

*a: Reference: Traditional, b: Reference: Negative, c: Reference: Below Minimum Wage, *:p<0.05*

Table 2 shows that socio-economic status alone explained 0.8% of the variance in the continued sub-dimension of self-efficacy, that this change in variance is not statistically significant, and that when personality traits were added to the model, it explained 41.5% of the variance in the continue sub-dimension. This result shows that personality traits have significant contribution not only to socio-economic status but also to the continue sub-dimension of self-efficacy. According to the results, the extroversion, conscientiousness, and openness to experience have significant positive effect on continue sub-dimension of personality traits, while neuroticism personality traits has a significant negative effect on it.

Results regarding the persistent sub-dimension of self-efficacy by socio-economic variables and personality traits were given in Table 3. According to this table, socio-economic status alone explained 0.5% of the variance in the persistence sub-dimension of self-efficacy, that this change in variance is not statistically significant, and that when personality traits were added to the model, it explained 35.8% of the variance in the persistence sub-dimension.

Table 3. Results of the Hierarchical Regression Analysis on the Prediction of the Persistence Sub-Dimensions of Self-Efficacy by Socio-Economic Variables and Personality Traits

Variables	β	R	R^2	R^2 Change	F Change	F Change Significance (p)
First Block						
Family Structure[a]	-0.061					
Family Attitude[b]	0.024					
Income[c]	-0.017	0.070	0.005	0.005	0.693	0.628
Mother's Education	0.038					
Father's Education	-0.006					
Second Block						
Extroversion	0.039					
Agreeableness	-0.044					
Conscientiousness	0.545*	0.598	0.358	0.353	77.032	0.000
Neuroticism	-0.074*					
Openness to experience	0.097*					

*a: Reference: Traditional, b: Reference: Negative, c: Reference: Below Minimum Wage, *:p<0.05*

Table 3 shows that personality traits have significant contribution to the persistence sub-dimension of self-efficacy. According to the results; conscientiousness and openness to experience have significant positive effects on the persistence sub-dimension of personality traits, while neuroticism personality traits has significant negative effect on it.

Results of the Hierarchical Regression Analysis on the Prediction of the Sub-Dimensions of Goal Orientation by Socio-Economic Variables and Personality Traits

Results about the learning-approach sub-dimensions of goal orientation were given in Table 4. According to the results on this table, socio-economic status alone explained 0.3% of the variance in the learning-approach sub-dimension of goal orientation, that this change in variance is not statistically significant, and that when personality traits were added to the model, it explained 20.4% of the variance in the learning-approach sub-dimension.

Table 4. Results of the Hierarchical Regression Analysis on the Prediction of the Learning-Approach Sub-Dimensions of Goal Orientation by Socio-Economic Variables and Personality Traits

Variables	β	R	R^2	R^2 Change	F Change	F Change Significance (p)
First Block						
Family Structure[a]	0.011					
Family Attitude[b]	-0.010					
Income[c]	0.007	0.052	0.003	0.003	0.382	0.861
Mother's Education	-0.020					
Father's Education	-0.040					
Second Block						
Extroversion	0.098*					
Agreeableness	0.005					
Conscientiousness	0.317*	0.451	0.204	0.201	35.370	0.000
Neuroticism	0.028					
Openness to experience	0.201*					

*a: Reference: Traditional, b: Reference: Negative, c: Reference: Below Minimum Wage, *:p<0.05*

Table 4 shows that personality traits have a significant contribution to the learning-approach sub-dimension of goal orientation. According to the results; the extroversion, conscientiousness, and openness to experience personality traits have a significant positive effect on learning-avoidance sub-dimension of goal orientation.

Results about hierarchical regression analysis on the prediction of the learning-avoidance sub-dimensions of goal orientation by socio-economic variables and personality traits were given in Table 5.

Table 5. Results of the Hierarchical Regression Analysis on the Prediction of the Learning-Avoidance Sub-Dimensions of Goal Orientation by Socio-Economic Variables and Personality Traits

Variables	β	R	R^2	R^2 Change	F Change	F Change Significance (p)
First Block						
Family Structure[a]	0.029					
Family Attitude[b]	-0.052					
Income[c]	0.103	0.122	0.015	0.015	2.136	0.059
Mother's Education	0.008					
Father's Education	-0.065					
Second Block						
Extroversion	-0.049					
Agreeableness	-0.076					
Conscientiousness	0.071	0.366	0.134	0.119	19.239	0.000
Neuroticism	0.333*					
Openness to experience	0.032					

*a: Reference: Traditional, b: Reference: Negative, c: Reference: Below Minimum Wage, *:p<0.05*

Table 5 shows that socio-economic status alone explained 1.5% of the variance in the learning-avoidance sub-dimension of goal orientation, that this change in variance is not statistically significant, and that when personality traits were added to the model, it explained 13.4% of the variance in the learning-avoidance sub-dimension. This result shows that personality traits have a significant contribution to the learning-avoidance sub-dimension of goal orientation. According to the results, neuroticism personality trait has a significant positive effect on the "learning-avoidance" sub-dimension of goal orientation.

Results regarding the performance-approach sub-dimensions of goal orientation by socio-economic variables and personality traits were given in Table 6. According to these results, socio-economic status alone explained 1.2% of the variance in the performance-approach sub-dimension of goal orientation, that this change in variance is not statistically significant, and that when personality traits were added to the model, it explained 7.2% of the variance in the performance-approach sub-dimension.

Table 6. Results of the Hierarchical Regression Analysis on the Prediction of the Performance-Approach Sub-Dimensions of Goal Orientation by Socio-Economic Variables and Personality Traits

Variables	β	R	R^2	R^2 Change	F Change	F Change Significance (p)
First Block						
Family Structure[a]	-0.017					
Family Attitude[b]	-0.084					
Income[c]	0.011	0.113	0.012	0.012	1.818	0.107
Mother's Education	0.079					
Father's Education	-0.031					
Second Block						
Extroversion	0.093*					
Agreeableness	-0.162*					
Conscientiousness	-0.012	0.269	0.072	0.060	9.014	0.000
Neuroticism	0.141*					
Openness to experience	0.027					

*a: Reference: Traditional, b: Reference: Negative, c: Reference: Below Minimum Wage, *:p<0.05*

The results on Table 6 show that personality traits have a significant contribution to the performance-approach sub-dimension of goal orientation. According to the results, the extroversion and neuroticism personality traits have a significant positive effect on the performance-approach sub-dimension of goal orientation, while the agreeableness personality trait has a significant negative effect on it.

Results about hierarchical regression analysis on the prediction of the performance-avoidance approach sub-dimensions of goal orientation by socio-economic variables and personality traits were given in Table 7.

Table 7. Results of the Hierarchical Regression Analysis on the Prediction of the Performance-Avoidance Sub-Dimensions of Goal Orientation by Socio-Economic Variables and Personality Traits

Variables	β	R	R^2	R^2 Change	F Change	F Change Significance (p)
First Block						
Family Structure[a]	-0.084					
Family Attitude[b]	-0.032					
Income[c]	0.039	0.098	0.009	0.009	1.368	0.234
Mother's Education	0.007					
Father's Education	-0.011					
Second Block						
Extroversion	-0.090*					
Agreeableness	-0.046					
Conscientiousness	-0.075	0.368	0.135	0.126	20.365	0.000
Neuroticism	0.264*					
Openness to experience	-0.065					

*a: Reference: Traditional, b: Reference: Negative, c: Reference: Below Minimum Wage, *:p<0.05*

According to Table 7, socio-economic status alone explained 0.9% of the variance in the performance-avoidance sub-dimension of goal orientation, that this change in variance is not statistically significant, and that when personality traits were added to the model, it explained 13.5% of the variance in the performance-avoidance sub-dimension. This result shows that personality traits have a significant contribution to the performance-avoidance sub-dimension of goal orientation. According to the results; extroversion personality trait had a significant negative effect on the "performance-avoidance" sub-dimension of goal orientation, while the neuroticism personality trait had a significant positive effect on it.

Results of the Hierarchical Regression Analysis on the Prediction of Attribution Sub-Dimensions by Socio-Economic Variables and Personality Traits

It was found that socio-economic status alone explained a minimum of 0.2% and a maximum of 1.1% of the variance in all sub-dimensions of success attributions including attribution to the teacher and the course, attribution to the family, and attribution to himself/herself; that this change invariance was not statistically significant ($p>0.05$); that when personality traits were added to the model, it explained 7.6% ($R^2=0.076$, $F=10.448$, $p=0.00$) of the variance in the attribution to teacher and the course sub-dimension; that it explained 6.3% ($R^2=0.063$, $F=7.744$, $p=0.00$) of the variance in the attribution to the family sub-dimension; and that it explained 2.4% of the variance in the attribution to himself/herself-sub-dimension ($R^2=0.024$, $F=3.093$, $p=0.009$). These results show that personality traits have a significant contribution to all sub-dimensions of success attributions ($p<0.05$). According to the results, extraversion ($\beta=0.192$; $p<0.05$), agreeableness ($\beta=0.092$; $p<0.05$), neuroticism ($\beta=0.102$; $p<0.05$), and openness to experience ($\beta=0.115$; $p<0.05$) personality traits had a significant positive effect on the "attribution to teacher and the course" sub-dimension of success attributions; extraversion ($\beta=0.088$; $p<0.05$), neuroticism ($\beta=0.174$; $p<0.05$) and openness to experience ($\beta=0.146$; $p<0.05$) personality traits had a significant positive effect on the "attribution to the family" sub-dimension; and conscientiousness ($\beta=-0.092$; $p<0.05$) personality trait had a significant negative effect on the "attribution to himself/herself" sub-dimension of success attributions while openness to experience ($\beta=0.092$; $p<0.05$) personality trait had a significant positive effect on it.

It was found that socio-economic status alone explained 0.5% of the variance in the attribution to teacher and the course sub-dimensions of failure attributions, while it explained 0.4% of the variance in the attribution to himself/herself sub-dimensions and this change invariance was not statistically significant ($p>0.05$); that it explained 1.5 of the variance in the "attribution to the family" sub-dimension ($R^2=0.015$) and this change in variance was statistically significant ($F=2.233$, $p=0.049$); and when personality traits were added to the model, it explained 5% ($R^2=0.050$, $F=6.603$, $p=0.00$) of the variance in the attribution to teacher and the course sub-dimension, while it explained 7.9% ($R^2=0.079$, $F=9.694$, $p=0.00$) of the variance in the attribution to the family sub-dimension, and 5.1% of the variance in the attribution to himself/herself-sub-dimension ($R^2=0.051$, $F=6.871$, $p=0.00$). These results show that personality traits have a significant contribution to all sub-dimensions of failure attributions ($p=0.000$, $p<0.05$). According to the results, extroversion ($\beta=0.094$; $p<0.05$), neuroticism ($\beta=0.137$; $p<0.05$), and openness to experience ($\beta=0.121$; $p<0.05$) personality traits had a positive effect on the "attribution to teacher and the course" sub-dimension of failure attributions; income among socio-economic variables ($\beta=-0.087$; $p<0.05$) had a negative effect on the "attribution to the family" sub-dimension, while neuroticism ($\beta=0.221$; $p<0.05$) and openness to experience ($\beta=0.098$; $p<0.05$) personality traits had a positive effect on it; and conscientiousness ($\beta=-0.080$; $p<0.05$) personality trait had a negative effect on the "attribution

to himself/herself" sub-dimension, while neuroticism (β=0.198; p<0.05) personality trait had a positive effect on it.

Results of the Hierarchical Regression Analysis on the Prediction of Scientific Epistemological Beliefs Variable by Socio-Economic Variables and Personality Traits

It was found that socio-economic status alone explained 0.4% of the variance in the scientific epistemological belief of pre-service teachers (R^2=0.004), that this change in the variance was not statistically significant (F=0.546; p=0.742); and that when personality traits were added to the model, it explained 8.6% of the variance in the scientific epistemological belief (R^2=0.086, F=12.568, p=0.00). This result shows that personality traits have significant contribution to scientific epistemological beliefs (p=0.000, p<0.05). According to the results; the extroversion (β=0.128; p<0.05), neuroticism (β=0.101; p<0.05), and openness to experience (β=0.200; p<0.05) personality traits had a significant positive effect on scientific epistemological belief.

Discussion and Conclusion

The effects of pre-service teachers' socio-economic statuses and personality traits on their motivations were examined in this study. The study was designed based on the importance of pre-service teachers being self-regulated teachers. In the current study, the motivation component of the SRL was taken as a basis and different sub-dimensions of motivation were examined in terms of individual differences such as socio-economic status and personality traits of pre-service teachers.

This study focusing on the motivation dimension of SRL revealed how variables such as socio-economic status and personality traits affected some sub-dimensions related to motivation. Therefore, this study contributes to a better understanding of the predictors of motivation by revealing the effect of socio-economic status and personality traits on motivation. In this study, it was concluded that the socio-economic status of pre-service teachers alone insignificantly affected motivation, but when taken into account together with personality traits; it explains much more of the variance in motivation. Although how socio-economic status and personality traits predict motivation separately is discussed in the literature, how socio-economic status and personality traits together predict motivation together has not been significantly discussed in the literature. In the literature, it has been suggested that hierarchical designs may be among the more appropriate methods for determining the effect of different structures on some conditions (Şahin & Çetin, 2017), but there were a limited number of examples of this. Therefore, it is thought that the use of hierarchical designs in the analysis of the data of this study will make an important contribution to the literature.

The results of this study show that when studied for self-efficacy, socio-economic status explains 1.6%, 0.8%, and 0.5% of the variances in the starting, continue, and persistence sub-dimensions of self-efficacy, respectively. According to Güven (2008), the absence of a significant relationship between self-efficacy and socio-economic status variables such as parental education supports these results. However, when personality traits were added to the analysis, the percentage of explanation of the variance in the sub-dimensions of self-efficacy was observed to increase significantly (36.5%, 41.5%, and 35.8%). In other words, personality traits explain the variance in self-efficacy to a considerable extent, and big five personality traits influence self-efficacy (Asendorpf & van Aken, 2003; Chen, Casper & Cortina, 2001; Judge & Ilies, 2002). According to Hoyle (2006), Judge and Ilies (2002), and Judge et al. (2007) there is a positive relationship between self-efficacy and extroversion and conscientiousness, while

there is a negative relationship between self-efficacy and neuroticism.

However, according to Şahin and Çetin (2017), only neuroticism and extroversion among personality traits had significantly positive relationships with self-efficacy; openness, agreeableness, and conscientiousness had no significant relationships with self-efficacy. This study showed that extroversion, conscientiousness, and openness to experience among personality traits had a significant positive effect on self-efficacy, while neuroticism had a significant negative effect on self-efficacy. According to these results, pre-service teachers with extroversion, conscientiousness, and openness to experience among personality traits had higher self-efficacy, while-service teachers with neuroticism had lower self-efficacy.

When the results were reviewed for goal orientation, which was one of the sub-dimensions of motivation, socio-economic status alone influenced 0.3%, 1.5%, 1.2%, and 0.9% of the variance in the learning-approach, learning-avoidance, performance-approach, and performance-avoidance sub-dimensions of goal orientation, respectively. When personality traits were added, it was found to explain 20.4%, 13.4%, 7.2%, and 13.5% of the variance in these sub-dimensions, respectively. Since personality traits determine the emotions, behaviors, and motives of individuals at a basic level, it is reasonable to suggest that goal orientation can be affected by differences in personality traits (Vermetten et al., 2001). Very few studies (e.g., Vermetten et al., 2001; McKinney & Carlson, 2002) have investigated the relationship between personality traits and goal orientation (Payne, Youngcourt, & Beaubien, 2007). A meta-analysis study investigating this suggested that goal orientation should be conceptualized as a trait that may be affected by the big five personality traits (Beaubien & Payne, 1999). According to the results of this part of our study, extroversion and neuroticism among personality traits had a significant positive effect on goal orientation. This result of our study was an expected result because extroverts tend to set high-performance goals and achieve such goals and because extrovert individuals were more likely to set active learning goals (Wang & Erdheim, 2007). This result is similar to the results of some studies in the literature (Elliot & Thrash, 2002; Zweig & Webster, 2004). It is stated that neurotic individuals usually show avoidance tendencies (Elliot & Church, 1997). By their nature, individuals with high neuroticism are anxious, and they tend to question their own ideas and behaviors (Digman, 1990). Therefore, they try to avoid failure rather than directly achieving a goal. In this sense, the result of our study has a nature supporting this information.

When the results are reviewed for success/failure attribution, which is another sub-dimension of motivation, it was found that socio-economic status alone explained a minimum of 0.2% and a maximum of 1.1% of the variance in all sub-dimensions of success attributions including attribution to teacher and the course, attribution to the family, and attribution to himself/herself; that this change in variance was not statistically significant; that when personality traits were added to the model, it explained 7.6%, 6.3% and 2.4% of the variance in these sub-dimensions. In addition, it was ascertained that socio-economic status alone explained a maximum 1.5% of the variance in these sub-dimensions of failure attributions and that when personality traits were added, they explained 5%, 7.9%, and 5.1% of the variance in these sub-dimensions, respectively. Attributions are constructive perspectives of individuals. Therefore, different perspectives, i.e., the way individuals perceive themselves and the world, depend on their personality traits (Fatemi, Pishghadam & Asghari, 2012).

When the results of the study were analyzed for scientific epistemological belief, which is another sub-dimension of motivation, socio-economic status alone was observed to explain 0.4% of the variance in scientific epistemological beliefs of pre-service teachers; and when

personality traits were added, it explained 8.6% of the variance in scientific epistemological beliefs. In other words, socio-economic status and personality traits explained a very small part of the variance in the scientific epistemological beliefs of pre-service teachers. Although Deryakulu (2017) state that epistemological beliefs can be affected by socio-economic status, we found no study suggesting that they can be affected by personality traits. Although socio-economic status and personality traits have no significant effect on scientific epistemological beliefs, our study is thought to be likely to contribute to the literature, in terms of revealing this effect.

As a result, it was seen that individual differences more explained the variance in self-efficacy and goal orientation, which are the sub-dimensions related to motivation, while the percentage of variance in attributions and epistemological beliefs were much less. In conclusion, this research showed that socio-economic status and personality traits can explain some of the changes related to motivation. In particular, personality traits explain the variance in motivation at a higher level. Personality traits are generally considered hard to change. Therefore, instead of trying to change this, it seems reasonable to direct our education intervention towards improving student motivation, which can be considered relatively more changeable. From this point of view, it is very important to include teaching methods such as learning styles that take into account the personality traits of the pre-service teachers in the teacher education curriculum.

Limitations

As with all research, this study has limitations that should be considered. One of the limitations is that the data were cross-sectional, and this limitation precludes any causal inference. Therefore, longitudinal research is necessary to understand the causality that may exist between variables. In addition, the collection of our data from a sample of pre-service teachers is another limitation of the study. It is therefore difficult to generalize our results. For this, examining the relationships between the variables in our study at different levels and with a larger sample will enable future researchers to reach more in-depth and generalizable results.

Recommendations

Considering the results of our study, integrating individual differences into current motivational models can be suggested as a clear area for future research. Also, other sub-dimensions of motivation such as academic emotions, and empathy which are not within the scope of this research but are thought to be important, can be examined and provide a different perspective in better understanding the motivations that affect behaviors. An additional direction for future research may be the conceptual role of motivation in predicting academic achievement. Because it is frequently encountered that academic achievement is associated with motivational constructs such as self-efficacy, goal orientation, causal attributions, and epistemological beliefs. For this reason, it is thought that examining the relationship between the variable of academic achievement and socio-economic status and personality traits in addition to the variables related to motivation in our study may contribute to the literature.

Note

This study has been developed from the doctoral thesis conducted by the first author under the supervision of the third and last author.

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