



Academic Motivation Types and Learning Styles of Students in a Faculty of Education

Eğitim Fakültesi Öğrencilerinin Akademik Güdülenmesi ve Öğrenme Stilleri

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ABSTRACT: This paper aimed to report the results of a descriptive correlational study that examined the relationship between academic motivation and learning styles of pre-service teachers. The study's participants were 574 pre-service teachers at the Faculty of Education, University of Alanya Alaaddin Keykubat. Two research instruments (Academic Motivation Scale and Learning Styles Inventory) were used for collecting the data. Keeping the aim in mind, three hypotheses were formulated and the pearson's chi-square test was run in SPSS so as to test the possible relationships in the hypotheses. According to the analysis of the data, the first hypothesis was confirmed while the second and third hypotheses were rejected. Thus, the dominant academic motivation type of converger and accommodator pre-service teachers was external regulation while the preservice teachers with assimilating learning styles were more likely to have knowing motivation. Besides, diverger pre-service teachers preferred either "knowing" or "external regulation" academic motivation type. Last, departments of the pre-service teachers did not determine their academic motivation types and learning styles.

Keywords: Pre-service teachers, academic motivation, learning style, self-determination theory, experiential learning theory

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ÖZ: Bu çalışmanın amacı öğretmen adaylarının akademik güdülenme türü ve öğrenme stili arasındaki ilişkiyi incelemektir. Araştırma tanımlayıcı ilişki modelde tasarlanmıştır. Araştırmanın katılımcılarını Alanya Alaaddin Keykubat Üniversitesi Eğitim Fakültesi'nde 9 farklı bölümde öğrenim gören 574 öğretmen adayı oluşturmaktadır. Verilerin toplanmasında iki araştırma aracı (Akademik Güdülenme Ölçeği ve Öğrenme Stilleri Envanteri) kullanılmıştır. Araştırma amacı doğrultusunda üç hipotez oluşturulmuştur ve hipotezlerde sunulan olası ilişkileri test etmek için SPSS programında pearson ki-kare bağımsızlık testi yapılmıştır. Sonuç olarak, ayrıştırılan ve yerleştiren öğrenme stiline sahip öğretmen adaylarının baskın akademik güdülenme türü dışsal düzenleme iken, özümseyen öğrenme stiline sahip öğretmen adaylarının “bilme” güdülenme türüne sahip olma olasılıkları daha yüksektir. Ayrıca, değiştiren öğrenme stiline sahip öğretmen adayları “bilme” ya da “dışsal düzenleme” akademik güdülenme türünü tercih etmişlerdir. Son olarak, öğretmen adaylarının bölümleri ile akademik güdülenme türleri arasında anlamlı bir ilişki bulunamamıştır. Benzer şekilde öğretmen adaylarının bölümleri ve öğrenme stilleri arasında anlamlı bir ilişki bulunamamıştır.

Anahtar sözcükler: Öğretmen adayları, öğrenme stili, akademik güdülenme, öz-düzenleme teorisi, deneysel öğrenme modeli

1. INTRODUCTION

Studies in the related body of literature give evidence on the fact that both academic motivation types and learning styles impact on various skills of pre-service teachers. Research examining learning styles of pre-service teachers in relation to different variables prove that the learning style has an effect on self-efficacy beliefs (Baltaoğlu & Güven, 2019; Gencel & Köse, 2011), critical thinking skills (Güven & Kürüm, 2008), metacognitive skills (Bozkurt, 2013), problem solving skills (Gencel, 2015; Özgür et al., 2012), and academic achievement (Elban, 2018). Likewise, the studies that investigated the effect of preservice teachers' academic motivation types on various variables gave evidence that motivation type is a determinant of self-efficacy (Kaldi & Xafakos, 2017), academic achievement and academic gains during preservice training (Özder & Motorcan, 2013), mastery goals (Malmberg, 2006), and sense of belonging and connectedness (Kaldi & Xafakos, 2017; Niemiec & Ryan, 2009). In conclusion, existing studies proved that learning styles and academic motivation have an effect on some variables that have an effect on effective teaching skills of pre-service teachers. Additionally, academic achievement and self-efficacy are the two variables that affect academic motivation and learning styles of pre-service teachers.

As a result, a significant relationship between academic motivation types and learning styles of pre-service teachers is expected. On the other hand, there is a scarce body of literature that explored this expected relationship. In a study that investigated the relationship between teacher candidates' academic motivation types defined by Self-determination Theory and learning styles defined by Kolb's Experiential Learning Model, academic motivation of pre-service teachers was proved to have an effect on their learning styles (Uysal, 2022). However, participants of this study were limited to only ELT students in a faculty of education. The potential relationship needs to be confirmed by further studies conducted with pre-service teachers in various departments in the faculty of education. Therefore, this paper investigated the possible relationship between pre-service teachers' academic motivation types and learning styles.

1.1. Literature Review

1.1.1. *Experiential Learning Theory and Learning Styles*

Some learning principles underlie Kolb's (1999) Experiential Learning Theory. According to him, learning is process-oriented and constructive. During this process, the learner constructs his or her own knowledge by interacting with the environment. Additionally, he or she should be provided with feedback constantly. Learners use both their existing knowledge and the one gained after interacting with the environment, so first, learners' existing knowledge should be uncovered to allow them to construct the new knowledge. Another learning principle is that learning is the process of resolving conflicts between the external world and new knowledge. While resolving conflicts, learners need to reflect and self-evaluate. Last, the major focus of learning should be holistic development. In addition to cognitive development, feelings, beliefs and behaviors of a learner should be developed (Kolb & Kolb, 2009).

These learning principles underlie four learning styles that emerge as a result of interaction among four different learning modes which are Abstract conceptualization (AC), Active experimentation (AE), Reflective observation (RO), and Concrete experience (CE) (Figure 1).

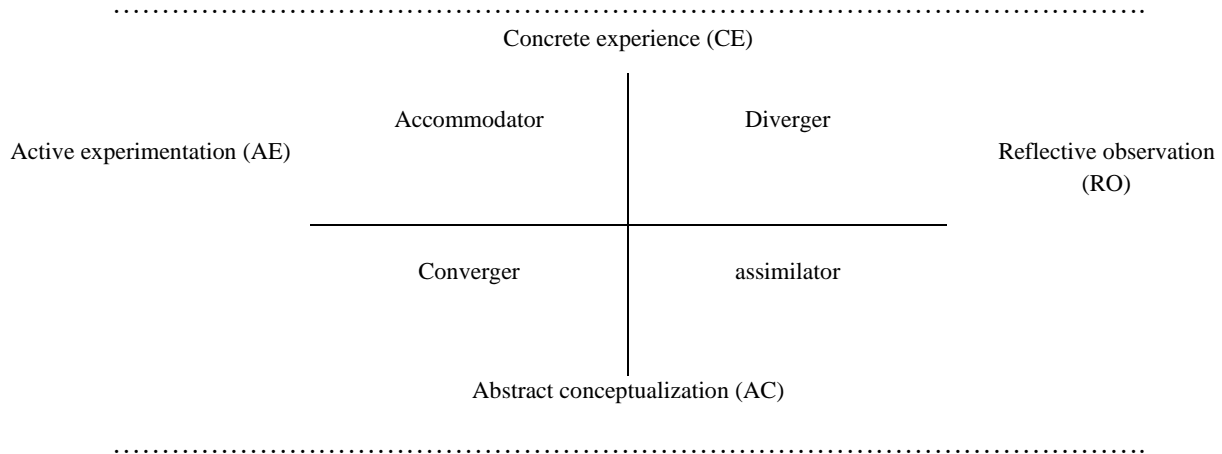


Figure 1: Kolb's Experiential Learning Cycle

As depicted in figure 1, the first learning style, diverger, is the result of interaction between concrete experience and reflective observation. Divergers have a tendency to get a different perspective on events, people and relationships. They need to observe before reacting. Artists, musicians, and people interested in fine arts have a diverging learning style. They are emotional people valuing feelings, so they are good at interpersonal relationships. They are creative and have an original approach. Assimilator, the second learning style, is the result of interaction between reflective observation and abstract conceptualization. Assimilators are good observers and analysts, so they are interested in abstract concepts. Their strengths are assessing experiences as a whole, reasoning, and reviewing facts. However, they are weak at using abstract concepts in real life. Third, converger is the result of interaction between abstract conceptualization and active experimentation. Convergers are rather good at abstract thinking and they prefer situations in which there is a single and correct answer. They tend to be unemotional and they are weak at interpersonal skills. Last, accommodator is the result of interaction between active experimentation and concrete experience. “Do” and “try” are the two words that describe people with an accommodating learning style. They are good at benefiting from past experiences of people, performing experiments, and growing plants in nature. They easily get into interaction with people because they are sociable people (Kolb,1999).

Regarding the relationship of learning styles with various variables, existing studies proved the relationship between learning styles and self-efficacy levels of pre-service teachers. For example, in a study carried out with prospective teachers at Anadolu University Faculty of Education, self-efficacy level was a variable that determined learning styles of the participants (Baltaoğlu & Güven, 2019). Similarly, in another study conducted with prospective science teachers, it was proved that learning styles of the participants affected their self-efficacy beliefs (Gencil & Köse, 2011). In both studies, preservice teachers with a converging learning style had a higher level of self-efficacy.

Concerning the correlation between thinking skills and learning styles, in an existing study conducted with students in Anadolu University Faculty of Education, it was confirmed that prospective teachers' learning style was a variable that determined their critical thinking skills. Findings of the research confirmed that the students that have a diverging learning style tended to be more curious and self-confident (Güven & Kürüm, 2008). In another study that investigated the correlation between prospective teachers' metacognitive thinking skills, academic achievement, and learning styles, the

results demonstrated that pre-service teachers with participatory learning style reached a higher academic achievement level (Bozkurt, 2013).

Regarding the correlation between academic achievement and learning styles of candidate teachers, results of the study by Tulbure (2012) shed a light on that in case instructional method was accommodated to learning styles of the prospective teachers, they obtained a higher achievement level. Likewise, in another study by Elban (2018), the competitive and participatory learning styles of candidate history teachers predicted their academic achievement.

Additionally, findings of two exiting studies (Gencil, 2015; Özgür et al., 2012) demonstrated that learning styles of candidate teachers determined their problem solving skills. The findings reached by these studies proved that converger pre-service teachers had better problem solving skills compared to the ones with other learning styles. Finally, in an existing research conducted with pre-service classroom teachers, the findings gave evidence that converger pre-service teachers tended to display more positive attitudes towards mathematics skills compared to the ones with an assimilating learning style (Peker & Mirasyedioğlu, 2008).

1.1.2. Self-determination theory and academic motivation

Self-determination theory argues that three different needs should be met in order for people to be intrinsically motivated towards an action (Deci & Ryan, 1985). These needs are autonomy, relatedness, and competence. Fulfilment of these needs is necessary for individuals to develop autonomous motivation against an action. Unless these three needs are fulfilled, controlled motivation is developed against the same action. In other words, the fulfilment of these three needs has an influence on the academic motivation type an individual has towards an action. Deci and Ryan (2000) and Ryan and Deci (2000) defined motivation as a continuum, and academic motivation types are placed along this continuum (Figure 2).

Behaviour	Non-self-determined	Extrinsic motivation				Self-determined
Type of motivation	Amotivation					Intrinsic motivation
Type of regulation	Non regulation	External regulation	Introjected regulation	Identified regulation	Integrated regulation	Intrinsic regulation
Locus of causality	Impersonal	External	Somewhat external	Somewhat internal	Internal	Internal

Figure 2: Academic Motivation Continuum

As illustrated in Figure 2, in case behavior of the individual is nonself-determined, he or she adopts non-regulated amotivation, so the place of the amotivation is the left extreme of the continuum. Extrinsic

motivation is placed next to the amotivation on the continuum and it is divided into four categories. First, external motivation appears when an individual's behavior is externally regulated via reward and punishment. Behavior is also hardly self-determined and it is controlled by external factors. Second, introjected motivation appears when an individual's behavior is moderately controlled by an external factor. In case an individual feels guilty, ashamed, or proud, he or she has introjected motivation towards an action. Individuals with an introjected motivation desire to perceive themselves competent and successful in the tasks assigned to them. Identified regulation, the third category, appears in case an individual's behavior is moderately autonomous. It is viewed as a relatively self-determined form of motivation and it is estimated to encourage desirable attitudes and outcomes. The fourth category is the integrated regulation which is autonomous, but appears, in case of coherence between goals, values, and regulation. Intrinsic motivation, which is placed along the right extreme of the continuum, appears when an individual's behavior is self-determined and it is regulated intrinsically, so intrinsic motivation represents inherently autonomous regulation. It appears in case individuals get pleasure in tasks they are involved in (Deci & Ryan, 2000; Ryan & Deci, 2000).

When studies investigating academic motivation types and teaching skills are examined, it could be stated that pre-service teachers that are intrinsically motivated towards the teaching profession have greater academic achievement during their pre-service training and they benefit from the pre-service training better. To exemplify, according to the results of a study (Kaldi & Xafakos, 2017) conducted with primary school prospective teachers, intrinsic motivation and self-efficacy were positively correlated. Additionally, the same study shed a light on the fact that student teachers' introjected regulation positively correlated with their instructional competence. Since pre-service teachers felt responsible when they could not successfully display elements of instructional competences, they made an effort to gain skills that improved their instructional competence (Kaldi & Xafakos, 2017). Also, according to the results of the study by Fernet et al. (2012), teachers with a lower level of intrinsic motivation experienced feelings of stress, exhaustion and burn-out as they felt less efficacious in accomplishing tasks required by the teaching profession.

Additionally, existing studies shed a light on the fact that pre-service teachers' adopting intrinsic motivation yielded in positive behaviors. For example, in an existing study, the findings gave evidence that intrinsically motivated pre-service teachers took more pleasure from the activities offered during the pre-service training compared to the ones with extrinsic motivation and they attached greater importance to these activities. For this reason, they had higher academic achievement levels and gains (Özder & Motorcan, 2013). Besides, a previous study revealed that physical education candidate teachers had higher intrinsic motivation towards a student-centred digital learning environment. Their meaningful and perceived learning as well as perceived enjoyment and self-confidence were higher as well (Calderón et al., 2020).

Besides, in another study conducted with pre-service teachers, a positive relationship was found between positive behaviours such as help-seeking skills and deep learning strategies, defined as mastery goals, and intrinsic motivation (Malmberg, 2006). Finally, it was proved in two different studies that prospective teachers with intrinsic motivation towards teaching felt more connected and had a feeling of belonging to the faculty of education (Kaldi & Xafakos, 2017; Niemiec & Ryan, 2009).

Taken together, learning style and academic motivation type are two factors that affect teaching skills of pre-service teachers. Considering this fact, it is likely that there is a relationship between pre-service teachers' academic motivation types and learning styles. As a result, following hypotheses were formulated:

1. There is a significant relationship between academic motivation types and learning styles of pre-service teachers.
2. There is a significant relationship between academic motivation types and departments of pre-service teachers.
3. There is a significant relationship between learning styles and departments of pre-service teachers.

2. METHOD

The research was designed as a descriptive correlational study. In the studies that have a descriptive correlational design, relationships as to cause and effect are not inferred, rather, it is aimed to describe the relationship between two independent variables over which the teacher has no control over (Lappe, 2000). In the present study, independent variables are pre-service teachers' academic motivation types determined by Self-determination Theory and learning styles determined by Experiential Learning Theory. This paper aimed at confirming the potential relationship between these two variables. Data of the study were gathered through two different scales that diagnosed learning styles and academic motivation types of pre-service teachers. After the ethical and administrative permissions were obtained from the university where the study was conducted (number 06/17 and date: 03.11.2022.), all pre-service teachers in the Faculty of Education were orally informed about the aim, significance and procedures of the study. Then, the measurement instruments were delivered to the volunteer pre-service teachers during the tutorials in late fall semester of the 2022-2023 academic year.

2.1. Participants

Since all pre-service teachers were targeted by this study, a convenience sampling method was used and all pre-service teachers registered at the faculty of education in Alanya Alaaddin Keykubat University, a state university in Türkiye, were asked to take part in the study. 711 pre-service teachers volunteered to respond to the scales. On the other hand, because of miscoded scales, a total of 574 scales were used during the data analysis. Regarding the mistakes made while coding the scales, some pre-service teachers did not mark the scales as required in the instructions and some of them marked only one of the scales delivered. While a single learning style was determined for all pre-service teachers, some of them were dominant in more than one type of academic motivation. During data analysis, the participants with more than one type of academic motivation were coded as two or more participants. Therefore, 706 responses obtained from 574 pre-service teachers were included into the study. Overall profile of the participants is depicted in Table 1.

Table 1: Overall Profile of the Participants

Department of the participants	Number of participants	Rate of participants
Primary school	52	9%
English language teaching	237	41%
Math teaching	43	8%
Psychological counselling & guidance	60	10%
Physical education	23	4%
Preschool education	22	4%
Science education	52	9%
Turkish language teaching	85	15%

As illustrated in Table 1, pre-service teachers from nine different departments took part in the study and the number of the preservice teachers in each department changed from 22 to 237.

2.2. Measurement Tools

In the study, two different instruments were used. So as to define learning styles of the participants, a Turkish version of Kolb's Learning Style Inventory was used. The original inventory by Kolb (1999) was adapted by Gencil (2007) into the Turkish Language. Experiential Learning Model underlies four learning styles measured by the inventory and both versions measure four different learning styles that are assimilating, converting, accommodating, and diverging. The adapted form of the learning styles inventory is equivalent to the original form. Because the correlation coefficient between the Turkish and English versions of the scale is 0,77. The reliability coefficients obtained with the Turkish form ranges between 0,71-0,84. In the scale, respondents are presented with 12 unfinished statements and four options to complete the statements. After reading the statements, respondents are required to order the options from 1 (option suits me well) to 4 (option does not suit me). The sum of the first statements gives the respondents' score on CE; the second column gives the point on RO; the point on the third column is for AC; and the fourth column is the point on AE. After that, four scores are transferred to the Learning Style Profile. Finally, respondents get a point that ranges between -36 and +36 which corresponds to one of the four learning styles. The Turkish version of the inventory was tested on 320 elementary students and it was reported as equivalent to the original form.

The Academic Motivation Scale (AMS) was used to diagnose the academic motivation types of the pre-service teachers. AMS was originally developed by Vallerand et al. (1992) and Demir (2008) adapted the scale into Turkish. Self-determination Theory underlies the academic motivation types measured by the scale and it targets higher education students. The Turkish version of AMS consists of 28 items and aims to define respondents' dominant academic motivation types in three main categories that are amotivation, intrinsic motivation (sub-categories: knowing, achieving and stimulating experience), and extrinsic motivation (sub-categories: defined regulation, internalized regulation, and external regulation). The Cronbach-alpha coefficient value of the scale by Demir (2008) is 0.85. Besides, Cronbach-alpha coefficients of the factors are as follows: achieving: 0.70, knowing: 0.77, defined regulation: 0.73, stimulating experience: 0.70, and external regulation: 0.73, internal regulation: 0.73, (Demir, 2008).

2.3. Analyzing Data

The Pearson's chi-square test of independence was run in SPSS (standart packet, 2022 version) in order to test the possible relationships in the three hypotheses. It is a non-parametric test performed on multi-category data and it is used so as to test the potential relationship between two or more independent factors (Curtis & Youngquist, 2013; McHugh, 2013). In the study, independent factors tested are academic motivation with seven categories and learning style with four categories and the data showed free distribution. Free distribution means that a normality assumption is not expected about underlying distribution of the data at hand. As a non-parametric test was administered in the study, normality distribution was not examined.

3. FINDINGS

Three hypotheses were taken into consideration to explain the study's results. The first hypothesis formulated in the study is "There is a significant relationship between academic motivation types and learning styles of pre-service teachers". The study's results confirmed the first hypothesis and revealed that academic motivation types of pre-service teachers affected their learning styles (Table 2).

Table 2: Result of Chi-Square Test for the First Hypothesis

	Value	df	Asymptotic significance (2-sided)
Pearson chi-square	734.417 ^a	9	<.001
Likelihood ratio	882.455	9	<.001
N of valid cases	1418		

a. 2 cells (12.5%) have expected count less than 5. The minimum expected count is 1.32.

As seen in Table 2, p value is <.001. As the p value of the test result is lower than .05, the expected relationship was confirmed for four academic motivation types that were knowing, achieving, external regulation, and stimulating experience (Table 3).

Table 3: Cross Tabulation for the First Hypothesis

		Academic motivation				Total
		Achieve	Know	External regulation	Stimulating experience	
Learning style	Converging	104	102	241	0	447
	Diverging	0	321	245	18	584
	Assimilating	0	283	0	0	283
	Accommodating	0	0	104	0	104
Total		104	706	590	18	1418

As depicted in Table 3, converger and accommodator pre-service teachers were more likely to have external regulation while the ones with diverging and assimilating learning styles were more likely to have knowing motivation. Additionally, although it was not preferred as dominantly as "knowing" the

academic motivation type, external regulation was the second dominant academic motivation type of the diverger pre-service teachers.

Regarding the second hypothesis, that is, “There is a significant relationship between academic motivation types and departments of pre-service teachers”, no significant relationship was revealed according to the results of the data analysis. Similarly, the third hypothesis, “There is a significant relationship between learning styles and departments of pre-service teachers”, was not confirmed by the results of the data analysis either. Consequently, the second and third hypotheses of the study were rejected and it was revealed that the department of participant pre-service teachers affected neither their academic motivation types nor their learning styles.

4. DISCUSSION and RESULTS

This paper aimed to test the potential relationship between two variables that are academic motivation types and learning styles of pre-service teachers. Three hypotheses consistent with the aim of the study were formulated. The data were obtained from 574 pre-service teachers from nine different departments in a faculty of education in a state university in Turkey. According to the results reached, the first hypothesis was confirmed while hypothesis-2 and hypothesis-3 were rejected. The results of the study were summarized below:

1. Dominant academic motivation type of converger and accommodator pre-service teachers was external regulation while the preservice teachers with assimilating learning styles were more likely to have knowing motivation. Lastly, diverger pre-service teachers preferred either “knowing” or “external regulation” academic motivation type.

2. Departments of the pre-service teachers did not have an effect on their academic motivation types.

3. Departments of the pre-service teachers did not have an effect on their learning styles.

Results concerning the relationship between academic motivation types and learning styles of pre-service teachers is parallel to an existing study by Uysal (2022). In both studies, the findings gave evidence that pre-service teachers who have a diverging style dominantly adopted external regulation, the ones with assimilating style were more likely to adopt knowing motivation, and the ones with converging style to have external regulation. The present study differs from the past study in an aspect that is heterogeneity of the participants. In the past study, data were collected from EFL teachers, or pre-service teachers in an ELT department at a faculty of education, so the participant group was homogeneous in terms of the department. Whereas, in the present study, participants constituted of the pre-service teachers in nine different departments (primary school pre-service teachers, English Language Teaching, Math Teaching, Psychological Counseling and Guidance, Physical Education, Preschool Education, Science Education, Turkish Language Teaching). As a result, regardless of the department, it was confirmed that there was a relationship between academic motivation types and learning styles of pre-service teachers.

The finding concerning the first hypothesis could be explained with the nature of education offered in faculties of education and characteristics of assimilators according to Experiential Learning Theory (Kolb, 1999). According to the Experiential Learning Cycle, a learner needs to complete all four learning modes. Common learning mode both divergers and assimilators have is reflective observation which could be strengthened via examination and reflection. Also, AC interacts with assimilating learning

styles. These two learning modes are consistent with the nature of education offered in faculties of education in Turkey. Findings of this paper gave evidence on the fact that while assimilators dominantly preferred knowing motivation type (intrinsic motivation), divergers preferred both knowing (intrinsic motivation) and external regulation (extrinsic motivation). In particular, the learning style of assimilators is consistent with the nature of education in education faculties because assimilators are characterized with abstract thinking and a theoretical orientation. Similarly, education offered in faculties of education has similar characteristic features, which are theory-oriented instruction and limited in-class applications at schools. In an existing study, it was reported that the rate of branch theory is 50-60 percent and the rate of professional teaching theory is 25-30 percent in the curriculum used in education faculties. Additionally, pre-service teachers have to spend 28 weeks at school in 7th and 8th semesters. During the 7th semester, they are required to observe lessons and they start to teach during the 8th semester, so they are not provided ample opportunity to teach during their pre-service training (Çakıroğlu & Çakıroğlu, 2003; Öztürk, & Aydın, 2019). In other words, they cannot apply the theories in the real world, so instructional techniques do not address the two learning modes that are active experimentation and concrete experience. Considering the Experiential Learning Cycle, Kolb (1999) suggests that students go through the cycle beginning with CE and moving to RO, then to AC, and finally to AE. However, in education faculties in Türkiye, pre-service teachers deal with theory, so reflective observation and abstract conceptualization are strengthened during the pre-service training.

Thus, pre-service teachers with an assimilating style might be feeling more competent and relevant during their pre-service training, which helps them develop intrinsic motivation towards the teaching profession. According to self-determination theory, autonomy, competence and, relevance are three main needs for developing intrinsic motivation towards an action or phenomenon (Deci & Ryan, 2000). Pre-service teachers exposed to the instructional techniques might be feeling more competent in and relevant to the teaching profession. However, there is a need for testing the relationship between academic motivation types, academic achievement and learning styles of pre-service teachers in order to find out whether the relationship between academic motivation type and learning style affects academic achievement of pre-service teachers. Because pre-service teachers feeling competent and relevant are expected to have higher a academic achievement level.

However, the study's findings demonstrated that assimilator pre-service teachers had knowing motivation that is a subcategory of intrinsic motivation while the ones with diverging learning styles preferred either knowing (a type of intrinsic motivation) or external regulation (a type of extrinsic motivation). The preservice teachers with converging and accommodating learning styles were more likely to have external regulation, a type of extrinsic motivation. Taken together, it could be claimed that Turkish pre-service teachers have a tendency to adopt extrinsic motivation as well as intrinsic motivation towards the teaching profession.

According to Self-determination theory, external regulation emerges when an individual is motivated in response to some external awards. In our case, such external awards as job security and regular payment might be motivating teacher candidates towards the profession because according to the results of past studies, job security and employment possibilities were the two factors that explained why Turkish teachers preferred the teaching profession (Topkaya & Uztosun, 2012; Yüce et al., 2013; Balyer & Özcan, 2014; Başöz, 2021).

As stated earlier, pre-service teachers' adopting intrinsic motivation towards the teaching profession provides considerable benefits such as a higher level self-efficacy (Kaldi & Xafakos, 2017), pleasure with the activities presented during in-service training, a higher academic achievement level

(Özder & Motorcan, 2013), mastery goals (Malmberg, 2006), and a sense of belonging and connectedness in faculties of education and the department (Kaldi & Xafakos, 2017; Niemiec & Ryan, 2009). Considering these advantages, intrinsically motivated pre-service teachers could be claimed to have greater academic achievement during their pre-service training and benefit from the pre-service training better, which is significant in terms of teacher qualifications.

Considering these benefits, one of the implications of the study is to decrease the amount of theoretical content and to increase the amount of time spent at schools. That implication is significant in terms of helping the accommodator and converger pre-service teachers feel more intrinsically motivated towards the teaching profession because according to Self-determination theory, relevance and competence are the two needs that must be fulfilled for intrinsic motivation. Replacing theoretical content with application might help accommodator and converger pre-service teachers feel intrinsically motivated towards the teaching profession because active experimentation, or learning through "experience" and concrete experience, or learning through "application" are two learning modes consistent with convergers and accommodators. In case instruction offered during pre-service training matches with the learning styles of these pre-service teachers, they might feel more competent and relevant and they might become intrinsically motivated towards the teaching profession.

Fulfilling the need for autonomy is also significant to increase the intrinsic motivation level of pre-service teachers. In order to fulfill this need, pre-service teachers could be allowed to choose teacher trainers or the number of selective courses could be increased. Last, Cognitive Evaluation Theory, which is a mini-theory within self-determination theory, states that the conditions of the social environment impact upon intrinsic motivation (Ryan & Deci, 2019). If the actors perceive their environment less controlling and more supportive, they feel more autonomous, which leads them to develop intrinsic motivation, so pre-service teachers in faculties of education should be provided with a supportive environment. In order to achieve this, they should be provided with immediate and supportive feedback (Kaldi & Xafakos, 2017; Niemiec & Ryan, 2009).

Last but not least, no relationship was found between academic motivation types and departments as well as learning styles and departments of the participants. This finding is parallel to the findings of Uysal's (2022) study. The past study (Uysal, 2022). While Uysal's (2022) study tested the first hypothesis with a homogeneous group, the present study tested it with a heterogeneous group. The results of both studies were almost identical, which means that departments of pre-service teachers did not affect their academic motivation types and learning styles. On the other hand, a different number of teachers from each department participated in the study. These numbers varied as a maximum of 237 and a minimum of 22 participants. To put it another way, distribution of the data was imbalanced. Statistical results may differ in cases where the data set is more evenly distributed.

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There is no statement of support and acknowledgment.

Conflict of Interest Declaration

There is no conflict of interest in this study.

REFERENCES

- Baltaoğlu, M. G., & Güven, M. (2019). Relationship between self-efficacy, learning strategies, and learning styles of teacher candidates (Anadolu University example). *South African Journal of Education*, 39(2), 1-11. <https://doi.org/10.15700/saje.v39n2a1579>
- Balyer, A., & Özcan, K. (2014). Choosing teaching profession as a career: Students' reasons. *International Education Studies*, 7(5), 104-115. <http://dx.doi.org/10.5539/ies.v7n5p104>
- Başöz, T. (2021). "I've decided to become an English teacher": Pre-service EFL teachers' reasons for choosing teaching as a career. *Kastamonu Eğitim Dergisi*, 29(5), 813-821. <https://doi.org/10.24106/kefdergi.860727>
- Bozkurt, N. (2013). An examination of the links between pre-service teacher's metacognitive level, learning styles and their achievement of history class. *Procedia-Social and Behavioral Sciences*, 93, 1634-1640. <https://doi.org/10.1016/j.sbspro.2013.10.093>
- Calderón, A., Meroño, L., & MacPhail, A. (2020). A student-centred digital technology approach: The relationship between intrinsic motivation, learning climate and academic achievement of physical education pre-service teachers. *European Physical Education Review*, 26(1), 241–262. <https://doi.org/10.1177/1356336X19850852>
- Curtis, K., & Youngquist, S. T. (2013). Part 21: Categorical analysis: Pearson chi-square test. *Air Medical Journal*, 32(4), 179-180. <https://doi.org/10.1016/j.amj.2013.04.007>
- Çakıroğlu, E., & Çakıroğlu, J. (2003). Reflections on teacher education in Turkey. *European Journal of Teacher Education*, 26(2), 253-264. <https://doi.org/10.1080/0261976032000088774>
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum. <http://dx.doi.org/10.1007/978-1-4899-2271-7>
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227-268. https://doi.org/10.1207/S15327965PLI1104_01
- Demir, Z. (2008). Uzaktan eğitim öğrencilerinin akademik güdülenme düzeyleri (SAÜ örneği) (Publication No. 228626). [Yayımlanmamış Yüksek Lisans Tezi], Sakarya Üniversitesi.
- Elban, M. (2018). Learning styles as the predictor of academic success of the pre-service history teachers. *European Journal of Educational Research*, 7(3), 659-665. <https://doi.org/10.12973/eu-jer.7.3.659>
- Fernet, C., Guay, F., Senécal, C., & Austin, S. (2012). Predicting intraindividual changes in teacher burnout: The role of perceived school environment and motivational factors. *Teaching and Teacher Education*, 28(4), 514-525. <https://doi.org/10.1016/j.tate.2011.11.013>
- Gencel, İ. E. (2007). Kolb'un deneyimsel öğrenme kuramına dayalı öğrenme stilleri envanteri-III'ü Türkçeye uyarlama çalışması [Study of adapting learning styles inventory-III based on Kolb's experiential learning theory into Turkish]. *Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü Dergisi* 9(2), 120-139. <http://hdl.handle.net/20.500.12397/5475>
- Gencel, İ. E. (2015). Learning styles and problem solving skills of Turkish prospective teachers. *International Journal of Progressive Education*, 11(2), 39-56.
- Gencel, İ. E., & Köse, A. (2011). Relationship between the prospective science teachers' learning styles, learning and study strategies and self-efficacy beliefs in science teaching. *Journal of Theory and Practice in Education*, 7(2), 311-333. http://eku.comu.edu.tr/index/7/2/iegencel_akose.pdf
- Güven, M., & Kürüm, D. (2008) The relationship between teacher candidates' learning styles and critical thinking dispositions. *Elementary Education Online*, 7(1), 53-70.
- Kaldi, S., & Xafakos, E. (2017). Student teachers' school teaching practice: The relation amongst perceived self-competence, motivation and sources of support. *Teaching and Teacher Education*, 67, 246-258. <https://doi.org/10.1016/j.tate.2017.05.019>
- Kolb, A. Y., & Kolb, D. A. (2009). Experiential Learning Theory: A dynamic, holistic approach to management learning, education and development. In S. J. Armstrong & C. V. Fukami (Eds.), *The Sage Handbook of Management Learning, Education and Development* (pp. 42-68). Sage Publishing.
- Kolb, D. A. (1999). *The Kolb Learning Style Inventory*. Hay Resources Direct.

- Lappe, J. M. (2000). Taking the mystery out of research: Descriptive correlational design. *Orthopaedic Nursing*, 19(2), 81.
- Malmberg, L. E. (2006). Goal-orientation and teacher motivation among teacher applicants and student teachers. *Teaching and Teacher Education*, 22(1), 58-76. <https://doi.org/10.1016/j.tate.2005.07.005>
- McHugh, M. L. (2013). The chi-square test of independence. *Biochemia Medica*, 23(2), 143- 149. <https://doi.org/10.11613/BM.2013.018>
- Niemiec, C. P., & Ryan, R. M. (2009). Autonomy, competence, and relatedness in the classroom: Applying self-determination theory to educational practice. *Theory and Research in Education*, 7(2), 133-144. <https://doi.org/10.1177/1477878509104318>
- Özder, H., & Motorcan, A. (2013). An analysis of teacher candidates' academic motivation levels with respect to several variables. *British Journal of Arts and Social Sciences*, 15(1), 42-53. <http://www.bjournal.co.uk/BJASS.aspx>
- Özgür, S. D., Temel, S. & Yılmaz, A. (2012). The effect of learning styles of preservice chemistry teachers on their perceptions of problem solving skills and problem solving achievements, *Procedia - Social and Behavioral Sciences*, 46, 1450-1454. <https://doi.org/10.1016/j.sbspro.2012.05.319>
- Öztürk, G, Aydın, B. (2019). English language teacher education in Turkey: Why do we fail and what policy reforms are needed?. *Anadolu Journal of Educational Sciences International (AJESI)*, 9(1), 181-213. <https://doi.org/10.18039/ajesi.520842>
- Peker, M., & Mirasyedioğlu, Ş. (2008). Pre-service elementary school teachers' learning styles and attitudes towards mathematics. *Eurasia Journal of Mathematics, Science and Technology Education*, 4(1), 21-26. <https://doi.org/10.12973/ejmste/75302>
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25(1), 54-67. <https://doi.org/10.1006/ceps.1999.1020>
- Ryan, R. M., & Deci, E. L. (2019). Brick by brick: The origins, development, and future of self-determination theory. In A. J. Elliot (Ed.), *Advances in Motivation Science* (pp. 111-156). <https://doi.org/10.1016/bs.adms.2019.01.001>
- Topkaya, E. Z., & Uztosun, M. S. (2012). Choosing teaching as a career: Motivations of pre-service English teachers in Turkey. *Journal of Language Teaching & Research*, 3(1), 126-134. <https://doi.org/10.4304/jltr.3.1.126-134>
- Tulbure, C. (2012). Learning styles, teaching strategies and academic achievement in higher education: A cross-sectional investigation, *Procedia - Social and Behavioral Sciences*, 33, 398-402. <https://doi.org/10.1016/j.sbspro.2012.01.151>
- Uysal, D. (2022). The relationship between academic motivation types and learning styles of pre-service EFL teachers. *Sakarya University Journal of Education*, 12(3), 591-611. <https://doi.org/10.19126/suje.1108158>
- Vallerand, R. J., Pelletier, L., Blais, M., Briere, N., Senecal, C., & Vallieres, E. (1992). The academic motivation scale: a measure of intrinsic motivation, extrinsic motivation, and amotivation in education. *Education and Psychological Measurement*, 52, 1003–1017. <https://doi.org/10.1177/0013164492052004025>
- Yüce, K., Şahin, E.Y., Koçer, Ö. et al. (2013). Motivations for choosing teaching as a career: a perspective of pre-service teachers from a Turkish context. *Asia Pacific Educational Review*, 14, 295–306. <https://doi.org/10.1007/s12564-013-9258-9>