

THE RELATIONSHIP BETWEEN LEARNING STYLES AND PERSONALITY
TRAITS OF STUDENTS FROM BOĞAZIÇI UNIVERSITY FACULTY OF
EDUCATION

ERDAL YANARDÖNER

BOĞAZIÇI UNIVERSITY

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Erdal Yanardöner

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Thesis Abstract

Erdal Yanardöner, “The Relationship between Learning Styles and Personality Traits of Students from Boğaziçi University Faculty of Education “

The purpose of this study was to investigate the relationship between learning styles and personality traits of students from Boğaziçi University Faculty of education. In addition to that purpose, description of learning styles, personality traits, and their relationship between gender, department and grade point average (GPA) were searched.

Three instruments were used for data collection in the study. For collecting demographic information regarding to sample, demographic data form designed by researcher was used. In order to measure learning styles of students, the Kolb's Learning Style Inventory (1985) was used. Finally, to measure personality traits of students, the Big Five Inventory (1993) (John, Donahue & Kentle) was administered. The data were collected from 236 students during 2009-2010 summer term, and data of 224 students were considered valid.

The findings of the study indicated that the majority of students had assimilator learning style, and there was not a significant relationship between students' learning styles and their genders, departments, and GPAs. Findings also showed that the majority of students' personality trait was agreeableness and there was not a significant relationship between students' personality traits and their gender, departments, and GPAs. Finally, according to the findings of the present study, no significant relationship was found between learning styles and personality traits of students.

Tez Özeti

Erdal Yanardöner, “ Boğaziçi Üniversitesi Eğitim Fakültesi öğrencilerinin öğrenme stilleri ve kişilik özellikleri arasındaki ilişki”

Bu araştırmanın amacı, Boğaziçi Üniversitesi Eğitim Fakültesinde okuyan öğrencilerin öğrenme stilleri ve kişilik özellikleri arasında bir ilişki olup olmadığını ortaya çıkarmaktır. Ayrıca, öğrencilerin öğrenme stilleri ve kişilik özelliklerinin profili ve bu değişkenlerin cinsiyetlerini, bölümlerine ve akademik başarılarıyla ilişkili olup olmadığını araştırılmıştır.

Verilerin toplanmasında üç ölçek kullanılmıştır. Örneklemle ilgili demografik bilgilerin toplanmasında araştırmacı tarafından geliştirilen demografik soru formu, öğrencilerin öğrenme stillerini belirlemek için Kol Öğrenme Stilleri Envanteri (1985) ve son olarak öğrencilerin kişilik özelliklerini belirlemek için Büyük Beş Envanteri (1991) kullanılmıştır. Veriler 2009-2010 dönemi yaz okuluna devam eden 236 öğrenciden toplanmış olup, 224 öğrencinin verileri geçerli olmuştur.

Araştırma sonuçları, öğrencilerin çoğunluğunun ayrıştırıcı öğrenme stiline sahip olduğunu ve öğrencilerin öğrenme stilleriyle, cinsiyetleri, bölümleri ve genel not ortalamaları arasında anlamlı bir ilişki olmadığını göstermiştir. Ayrıca araştırma sonuçları, öğrencilerin çoğunluğunun kişilik özelliğinin uyumluluk olduğunu ve öğrencilerin kişilik özellikleri ile cinsiyetleri, bölümleri ve genel not ortalaması arasında anlamlı bir ilişki olmadığını göstermiştir. Son olarak, araştırma sonuçlarına göre öğrencilerin öğrenme stilleri ve kişilik özellikleri arasında anlamlı bir ilişki olmadığı bulunmuştur.

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CHAPTER I

INTRODUCTION

The uniqueness of each individual, this idea is as old as history of human civilization. It is at the core of many religious movements from Buddhism to Mevleviyeh also including philosophies such as humanism. Why has this important idea not lost its value for human beings over centuries?

The answer to this question lies in the developmental milestones of human civilizations. Whenever people have been free of the pressure to live their own potential, the environment has been present for them to freely think and express their thoughts; human societies have made great progress. It is easy to see this fact if we look at the history of civilization. For example, today's modern world owes much to the developments of the Renaissance period. Many remarkable developments took place in various fields of human life. For example there were many artists who appeared in this period such as Leonardo da Vinci and Michelangelo who are still affecting today's modern art perception in the field of art. Copernicus and Galileo made great contributions to science, or Erasmus, Thomas More were important philosophers in this period (Hunt, 1999).

Why these important people in various fields of human civilization appeared especially in that period is a crucial question. It was the period, when the discovery of the individual appeared as an idea (Burckhardt, 1990). People comprehended the existence of the individual differences, remembered their individuality, became aware of their own potential, and were able to live and express it.

From the long journey of the development of civilization to today's modern science, the idea of individual differences has gained much support, especially from the field of psychology. Various researchers have conducted research pointing out

individual differences in many areas of human psychology such as in memory, motivation, decision making and language ability (Covvay, A. R. A., 1996; Nicholls, J. G., Cheung, P. C., Lauer, J. & Patashnick, M., 1989; Riding, R. J., Glass, A. & Douglas, G., 1993; Rebecca L. Oxford, L. R. & Ehrman, M., 1994). Observing people in daily life could also support this idea. For example we see some people who are better in working with abstract concepts or ideas whereas others could be more practical and they like to be interested in more tangible things. Some people could more extravert, while others could be more introvert. Some people could learn faster than others or some people could be more sensitive to auditory stimulus. There are many more examples to support this perspective. Actually, in all dimensions of human life, this diversity could be seen.

How about the individual differences in educational settings? What are the reflections of an individual's own characteristics in education? These are important questions for the efficiency of the educational processes. However, the answers are not encouraging. Freire (1968) names modern education as the "banking education", because it functions similar to investing some information to the minds of students and withdrawing it when the time comes. According to him, in modern classrooms, all students are seen as being the same, they are passive listeners of what the teacher says, and the teacher withdraws what he or she said when it is needed.

Today, Freire's ideas are still valid, at least in Turkey. In his very comprehensive study, Okçabol (2005) mentions the uniformed, elitist and antidemocratic characteristics of the Turkish education system. Although it is not so hard to see the diversity of human beings in all aspects of human life, it is interesting to see how educational processes ignore the individual differences.

In spite of the fact that the importance of individual differences is not focused on sufficiently by educational policy makers, the concept of individual differences is popular in the scientific area. There have been several studies about individual diversity in educational settings such as studies revealing the differences in how students comprehend learning material (Hasırcı, 2005; Tazegül 2008; Contessa , Ciardiello & Perlman 2005; Fowler, 2002). Additionally, many models have been developed to explain and measure how learners differ from each other in terms of gathering and retaining learning material, such as Kolb's, Dunn and Dunn's, Reinert's or Gregorc's models of learning styles (Cassidy, 2004).

Thanks to the development of several models of learning styles, it is possible to design appropriate teaching strategies that are comprehensive enough to meet the needs of all learners. Keefe and Ferrell (1990) state that "learning style assessment can provide the basis for a more personalized approach to student achievement and placement, instructional strategy, and evaluation of learning" (p 57). If the learning differences of students are taken into account the effectiveness of educational processes could be increased. Maybe in the future, a unique learning environment and teaching method that fits well with the each student's individual characteristics will be prepared.

Purpose of the Study

This study essentially aims to examine the relationship between the learning styles and the personality traits of students in Boğaziçi University Faculty of Education. In addition to that purpose, it aims to determine the learning styles and the personality traits of students, and the variation of these according to gender, department and

grade point average (GPA). The following are the main research questions of the study:

- I. What is/are the dominant learning style(s) of students in Boğaziçi University Faculty of Education
- II. Do learning styles of students change according to their
 - (a) Gender
 - (b) Department
 - (c) GPA
- III. What is/are the dominant personality trait(s) of students in Boğaziçi University Faculty of Education
- IV. Do their personality traits change according to their
 - (a) Gender
 - (b) Department
 - (c) GPA
- V. Is there a relationship between the learning styles and the personality traits of students

Significance of the Study

There are two major significant points of this study. First, this study aims to provide some conceptual arguments about the relationship between learning and personality in education. This can create a holistic perspective towards learning as it combines both cognitive processes and personality.

Secondly, in addition to its conceptual value, it has a practical significance for Turkey. Based on a comprehensive survey of the literature, no similar study could

be found in Turkey. Therefore this study could attract the Turkish scientists' and educators' attention to existing literature about the relationship between learning and personality.

Additionally, a study such as this will show the importance of individuality in educational settings, and help to teaching professionals to meet the educational needs of students. By revealing individual characteristics like learning styles and personality traits in the learning process, this study will be useful to organize an appropriate teaching curriculum and strategies that fit well with students' preferences, and thus increase the efficiency of learning outcomes.

CHAPTER II

LITERATURE REVIEW

In this chapter, in order to create a basis for the study, major models and theories related to learning styles and personality will be reviewed. In the first part, several models of learning style are described, and in the second part, the major theories of personality are examined. Empirical evidences from related studies are provided.

Major Models of Learning Style

There is no general agreement on the definition of learning style construct among researchers. For example, Kolb (1984) defines learning style as a preferred way of gathering information, whereas for Dunn (1984) learning style is an individual way of absorbing and retaining information or skills. Keffe and Ferrell (1990)'s definition of learning style is that "it is a gestalt combining internal and external operations derived from the individuals neurobiology, personality, and development and reflected in learner behavior (Keffe & Ferrel, 1990, p.59)". Maybe the most appropriate definition of learning style for the scope of this study is DeBelleo's overall explanation which is "learning style is the way people absorb, process and retain information" (DeBello, 1990, p. 2003).

Like the variety of definitions, there are many learning style models in current literature. In order to sort a variety of models into appropriate categories, three learning style classifications have been developed, which are Curry's Onion Model, Ridding and Cheema's Wholist Analytic Classification and Rayner's and

Ridding Cognitive-Centered, Activity (Learning)-Centered and Personality-Centered Approach (Cassidy, 2004).

In this study, Curry's Onion Model is taken as a classification model as it is the mostly used and best model (Cassidy, 2004). She uses the onion as a metaphor to show the layers of learning styles. The onion of learning styles is composed of four layers, which are from core to outmost: cognitive personality style, information processing style, social interactions style and instructional preference style. The cognitive personality layer is related to the lasting personality dimension which stays stable across varied learning situations. The information processing layer is defined as the individual's intellectual approach to the processing of information. The next layer is social interaction style and it is related to the individual's preference for social interaction during learning. Lastly the outermost layer is instructional preference, which refers to the individual's preferred choice of learning environment (Cassidy, 2004).

This classification model helps learning style models to be categorized systematically, and it brings consistency to the field. Below, major learning style models are discussed with their places in Curry's Onion Model. In the selection of these models, their effects on other models, their popularity, and theoretical significance have been taken into account.

The Dunn & Dunn Learning Style

Dunn and Dunn have focused on the learner's preferred modes for concentration and learning difficult information (Jonasen & Grobowski, 1999). Their definition of learning style was explained above. They are among the earliest researchers who

focused on individual differences in learning and learning styles (De Bello, 1990). Their learning style model fits the instructional preference and social interaction layers of Curry's classification. According to them, four variables affect learners' relation to learning environments, which are environmental, sociological, emotional, and physical, and each of these has some sub factors (Dunn & Griggs, 1998). In Figure 1, general picture of learning style is illustrated.

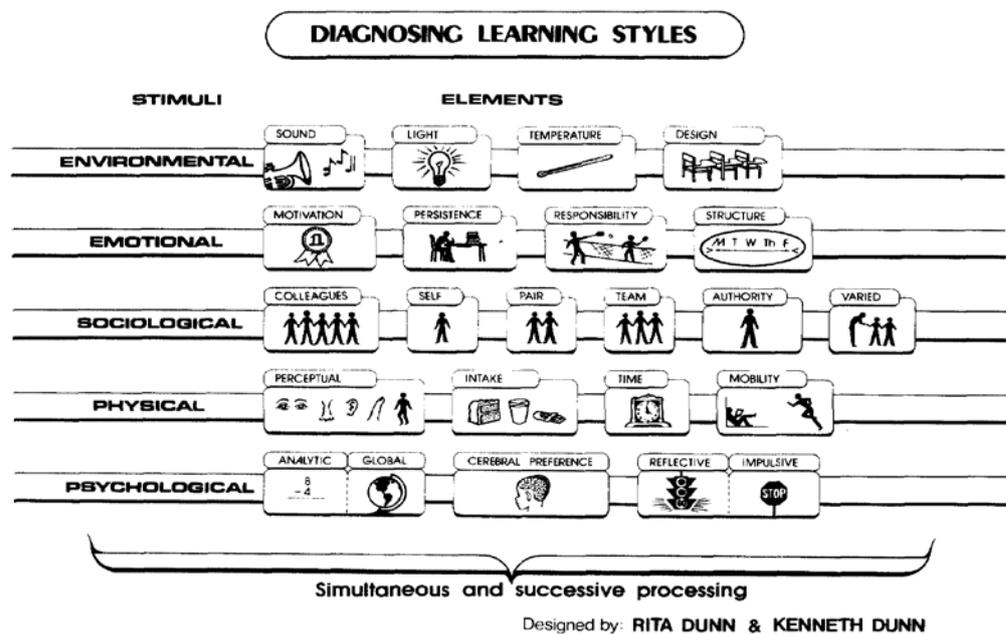


Figure 1. Diagnosing of Dunn and Dunn's Learning Styles.
Source: Dunn, 1984, p.11

In Dunn and Dunn's learning style classification, the first variable is the environmental variable, and it consists of noise level, lightening, temperature, and design factors. Learners prefer one end of a sub - factor over the other; when they are in the learning process. Some may choose to study in silence, whereas others may prefer to study while listening to music. Some like to have a warm study environment, while others like to study in a cool place. Some want to study in a formal designed environment and others choose informally designed places. This

logic of preference is the same for the rest of the variables and their sub factors. The second main variable of Dunn and Dunn's model is emotionality, and it consists of motivation, responsibility, persistence, and the need for structure. Factors of preferring to work with colleagues, alone, in pair, with a team, and under authority make up the sociological variable. The fourth variable is physical variable, and it includes perceptual, intake, time and mobility sub - factors. The last one is the psychological variable including global /analytic, hemisphericity, and impulsive/reflective characteristics.

Grasha & Riechman's Style of Learning Interaction Model

Grasha and Reichman developed their construct of learning styles based on social and affective perspectives learners prefer in the classroom environment. According to Jonassen and Grabowski (1999), this style construct can be described as a "social interaction scale because it deals with patterns of preferred styles for interacting with teachers and fellow students" (p. 281). Their model corresponds to the social interaction layer of Curry's classification. According to this learning style approach, learning styles can be classified as:

- Participant-Avoidant
- Competitive –Collaborative
- Dependent – Independent

The Participant/avoidant dimensions of this approach measure how much a learner wants to become involved in the classroom environment, his or her reactions to classroom procedures, and attitudes towards learning. The collaborative/competitive dimensions measure the drives that learners have while interacting with others. The third dimension is being independent/dependent, and it

measures how much a learner wants freedom or control the learning environment and, his or her attitudes towards teachers (Jonassen & Grobowski, 1999).

Reinert's Learning Style Model

Reinert developed his learning styles theory which is based on an individual's natural "perceptual modality" while s/he responds to the learning environment. This model is in the cognitive personality layer of Curry's onion. Reinert classified learning styles to four dimensions:

- Visual modality
- Verbal modality
- Auditory modality
- Activity based modality

The underlying argument in his theory of learning styles resulted from the idea that students should be introduced to new information through the most effective way for them to perceive that material (DeBello, 1990).

Gregorc's Learning Style Delineator

Gregorc developed his theory of learning style according to humans' preferred way of making sense of the world through two important processes: the perception and ordering of incoming information. His model fits the cognitive personality layer of Curry's onion layer. For him, perception could be in two forms, either in an abstract (processing information through intuition and reason) or concrete (physical aspects of information is processed through senses) manner. Likewise, ordering incoming information can happen in two ways: either in sequential (a linear, step by step

organizational scheme) or random (relating data to each other in variety of forms) ways. Combining these perceptions and ordering forms, he proposed four types of learning styles: Concrete sequential, abstract sequential, abstract random and concrete sequential (Jonassen & Grobowski, 1999).

People with concrete sequential learning styles are orderly, sequential and logical. They derive information through hands –on experience and use their five senses well and frequently. Concrete random learners like to experiment with ideas and concepts and prefer trial and error in learning. It is easy to move from fact to theory for them, they are insightful, and do not prefer authority in the learning environment. Abstract sequential learners have a very good ability of decoding written, verbal, and image symbols. They are logical, analytical and synthesizing, and they do not like authority and distraction. The people with random learning styles are holistic in perceiving and absorbing information, and use their personal and emotional experiences in evaluation. They prefer to be in unstructured learning environments like group discussions, and multisensory activities. They are focused on relationships, imaginative, and tuned to the nuances of mood and atmosphere (Jonassen & Grobowski, 1999).

Honey and Mumford's Learning Preference Model

Honey and Mumford developed their model based on the model of Kolb's learning styles. They categorized their learning styles into four groups: activists, theorists, pragmatists, and reflectors (Rayner & Riding, 1998).

Activists like new experiences, group work, and tend to use their intuition in decision making. They like brain storming and role - playing activities and dislike

administration or program implementation. Theorists are oriented towards logic, ideas, generalizations and systematic planning, and they do not like intuitive insight and social involvement. Pragmatists stay away from deep thinking and observations; they seek for group work, risk taking, discussion, debate and practical application. Reflectors like to focus on understanding meaning, observing and describing process or predicting outcome (Ridding & Rayner, 1998).

McCarthy's 4MAT System

Benice McCarthy developed his learning styles model based on Kolb's experiential learning construct that the gathering of information and the transformation of it determines an individual's learning style. For him, when the two dimensions of perceiving, which are sensing/feeling, and the two dimensions of processing, which are doing and watching, are juxtaposed, a four – quadrant model is formed. Each quadrant corresponds to a learning style. The four learning styles in his models t are:

- Imaginative Learners
- Analytic Learners
- Common Sense Learners
- Dynamic Learners

Imaginative learners are defined as perceiving information concretely and processing it reflectively. They are curious, aware and perceptive. Analytic learners are critical, fact seeking and philosophizing, and they perceive information abstractly and process it reflectively. Common sense learners perceive information abstractly and process it actively. They are hands-on, practical, and oriented towards the

present. The last style is dynamic learners who perceive information concretely and process it actively. They are adaptive, inventive and enthusiastic (McCarthy, 1990).

Kolb's Learning Styles

In her comprehensive study that aimed to investigate the studies on learning styles published in the electronic environment, Aşkın (2006) reported that Kolb's learning styles was the most studied construct. Because of its widespread usage in much other research and its applicability to adult learners, this model was chosen as the learning style construct for the present study. It fits the information processing layer of Curry's onion model. Kolb developed his learning style construct from his theory of experiential learning. Therefore before talking about his learning style model, it is important to mention on his experiential learning theory.

The origins of Kolb's experiential learning theory lie in the works of Dewey, Lewin and Piaget (Kolb, 1984). For Dewey, Lewin and Piaget, the basic characteristic of learning is the importance of process rather than outcome, and they emphasize that knowledge change regularly by experience. Kolb (1984) brings a definition by combining these three authors' main ideas about learning: "Learning is the process whereby knowledge is created through the transformation of experience "(p. 38). In his definition of learning, there are two characteristics that stand out. First, he gives importance to the process of learning rather than outcomes. Second, he believes that knowledge is continuously created and recreated by the transformation process.

According to Kolb, the process of experiential learning can be described as a four stage cycle involving four adaptive learning modes: concrete experience, reflective observation, abstract conceptualization, and active experimentation. In his

model, concrete experience/abstract conceptualization-called prehension- form one distinct dimension in the learning cycle, while reflective observation/active experimentation-called transformation- form the other dimension. The first dimension is about how an individual grasps experience, either by concrete experience or abstract conceptualization. Concrete experience, called apprehension, means the experience is tangible or hands on, whereas abstract conceptualization, called comprehension, appears when experience is grasped in a symbolic or abstract way. The second dimension is about how to transform this grasped representation of experience, either by reflective observation, called extension, or active experimentation, called intension. Kolb (1984) states that “knowledge results from the combination of grasping experience and transforming it “(p. 41).

For Kolb, learning occurs within a learning cycle as illustrated in Figure 2. All steps in this cycle are required, in other words, “learning requires both a grasp or figurative representation of experience and some transformation of that representation” (Kolb, 1984, p. 42).

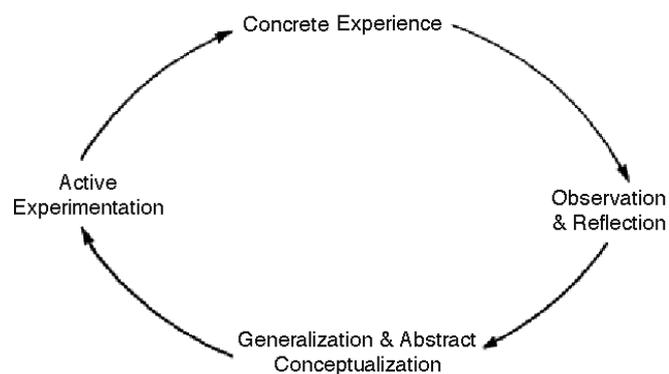


Figure 2. Kolb’s Experiential Learning Theory – Cycle of Learning
Source: Kolb, 1984, p. 42

Based on his learning cycle, Kolb (1984) proposed four forms of knowledge which are created by the combination of prehension and transformation modes:

Experience grasped through apprehension and transformed through intension results in what will be called divergent knowledge. Experience grasped through comprehension and transformed through intention results in assimilative knowledge. When experience is grasped through comprehension and transformed through extension, the result is convergent knowledge. And finally, when experience is grasped by apprehension and transformed by extension, accommodative knowledge is the result (p.42).

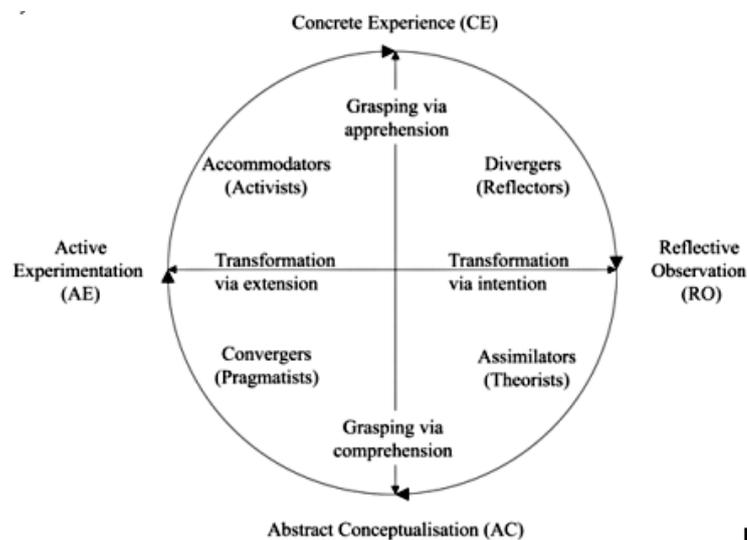


Figure 3. Kolb's learning styles
Source: Kolb, 1984, p.42.

These forms of knowledge correspond to Kolb's labeling of four learning styles which are divergers, assimilators, convergers and accommodators (see Figure 3).

Each person makes one of these learning styles dominant over the others during his or her life journey because of heredity, past life experiences and demands of the present environment (Kolb, 1984).

Convergers grasp experience through active conceptualization, and they transform grasped experience through active experimentation. The strengths of this style lie in problem solving, decision making, and the practical application of ideas. A person with this learning style seems to do best in situations where there is a single correct answer or solution to a question or problem; s/he prefers dealing with technical tasks and problems rather than social and interpersonal issues, and finally, uses hypothetical - deductive reasoning when organizing knowledge (Kolb, 1984).

Divergers are the exact opposite of Convergers. Their styles are made up of a combination of concrete experience and reflective observation. A person with this learning style has imaginative ability, tend to see concrete situations from a variety of perspectives, and can function better in situations which necessitate generating of alternative ideas such as brain storming. In addition, s/he is more feeling oriented and interested in people rather than interested in technical tasks (Kolb, 1984).

The assimilator style is formed by the combination of abstract conceptualization and reflective observation. The biggest strength of people with this style lies in their inductive reasoning and ability to create theoretical models. Furthermore, they can assimilate a variety of observations into an integrated explanation. People with this learning style tend to be more interested in ideas and abstract concepts than individuals, nevertheless rather than the practical value of ideas, logical soundness and precision is more important for them (Kolb, 1984).

Accomodators grasp experience concretely and transform it actively. The biggest strengths of people who are accommodators lie in doing things, carrying out plans and tasks, and getting involved in new experiences. People with this learning style tend to seek opportunity, take risks and engage in activities. They are able to

adopt themselves to changing immediate situations. Relying on other people's providing of information rather than their own analytical ability, they tend to solve problems in an intuitive trial -and - error manner (Kolb, 1984).

Kolb' Learning Style construct have been studied in many studies both in and out of Turkey. Several studies have aimed to give descriptive variation of the learning styles and compare them with other variables in educational setting such as gender, achievement, personality. For example, Hasırcı (2005) conducted a study aimed at analyzing the learning styles of students in Çukurova University. Based on his sample, which consisted of 202 students from faculty of education, he reported that 44% of students had a assimilator learning style and 33.2 % of students had a converger learning style.

Kılıç (2002) indicated the same results. Based on her study conducted with 118 students from Ankara University, she reported that the majority of students had an assimilator learning style. Similarly, Kılıç & Karadeniz (2004) reported that the dominant learning styles of 67 university students were assimilator. Moreover, a significant relationship between learning styles, genders and grades of students was not found

Another study was conducted by Tazegül (2008) with 200 students from the Department of Turkish Teaching in the Gazi University Faculty of Education. It was found that the majority of participants had converger and assimilator learning styles, and that there was no significant correlation between their learning styles and gender.

So far, the results of discussed studies indicate that the dominant learning style of participants was assimilator. However, in a recent study made by Can (2010), it I was reported that the dominant learning style of 84 senior preschool

teachers was converger. In addition, significant relationship between gender and learning styles of participants was not reported.

Similarly, Koçakoğlu's study (2010) with 222 primary school teachers sought to reveal learning styles of primary school teachers. In his study, he found that 48% of teachers had converger, 24% of them had assimilator, % 18 of them had accommodator, and 10% of them had diver learning styles. He also reported that there was no significant correlation between the gender and the branches of the teachers, and their learning styles.

Likewise, the study of Bahar, Özen and Gülaçtı (2009), which involved 433 participants, it was aimed to determine relationships between academic achievement, learning styles and genders of students from the Erzincan Ataturk University Faculty of Education. They reported that 43.6% of students had converger, 29.3% of students had assimilator, 16.3 of students had accommodator, and 10.8% of students had diverger learning styles.

The research results mentioned above show that there is no agreement on research results about dominant learning styles of participants. However, one can also see that none of the findings indicated a significant relationship between gender, department, and achievement. On the other hand, there are some other studies that report a significant relation between gender, department and learning style. For example Ergür (2000), revealed a significant relation between learning styles and genders of 509 senior university students. Similarly Uzuntiryaki, Bilgin and Gaban (2004) reported in their study with 121 university students that there was a significant relation between students' learning styles and genders. Bahar, Özen,

Gülaçtı (2009) reported similar findings that a significant relationship between learning style, gender, and achievement was not found

The study findings conducted abroad reported the converger learning style as the most frequent learning style, and no significant correlation between gender, achievement and learning style. For example, Severiens and Dam (1997) reported with 432 adult students that there was no significant relationship between gender and students' learning style. In another study conducted by Fox and Bartholomae (1999) with 414 undergraduate students that there was not found any significant relationship between learning style and academic achievement.

In their study, Covanneh, Hogan, and Ramgopal (1995) with 192 nursing student did not find any significant relationship between learning styles and gender. Contessa , Ciardiello and Perlman (2005) revealed in their study that most of the adult participants' learning style was converger. Fowler (2002) reported that the frequency of learning styles of 224 adult participants were converger and then assimilator, accommodator and diverger.

Based on literature survey, no research study, conducted in Turkey and abroad, was found, which aimed to look for relationships between learning styles and personality traits using the Kolb Learning Style Inventory and the Big Five Inventory. However, there have been seen studies done out of Turkey which compared learning styles with personality types or traits by using different instruments.

Although they did not use the Kolb Learning Style construct, Busato, Prins, Elshout, Hamaker (1999) found relationships between learning style and personality traits of 409 first year psychology students. They used the Vermunt learning style

construct which consists of meaning - directed, reproduction - directed, application - directed and undirected learning styles and Big Five Personality trait construct. They also reported also that there was no significant relationship between learning styles and academic success. Furnham, Jackson, and Miller (1999) reported that there was a significant relation between personality traits and learning styles of 223 adult participants. Similar results were indicated by Drummond and Stoddard (1992) that there is a significant relation between learning style and personality type.

To sum up the relevant research results, it appears that there is an inconsistency in the description of the dominant learning style, and the relationship between learning styles, gender, department and grade. In some studies, it was reported that a significant relationship exists, whereas other studies did not indicate any relationship. Finally, about the relationship between learning styles and personality, literature emphasized the existence of it.

Theories of Personality

Why do people behave in certain circumstances in the way they usually do? This question has attracted people's attention for thousands of years, from ancient Greek philosophers to today's modern personality psychologists. The answer changes depending on the perspective. In modern psychology, major important perspectives towards personality construct are psychoanalytic, behaviorist, cognitive, humanist, and trait perspectives. In this chapter, these major perspectives will be explained with the ideas of the main thinkers.

Psychoanalytic Perspective

The psychoanalytic movement has deeply affected the psychology discipline perspectives towards human nature in deep. It first appeared in the works of Sigmund Freud who is as being the inventor of psychoanalytic psychology. Psychoanalytic theory sees personality under control of unconscious, and instinctual derives. At this point, it is very deterministic. By resolving the unconscious process, it is believed human personality can be understood in an appropriate way. Below, the ideas of major psychoanalytic theorists are explained in order to give a comprehensive view of psychoanalytic perspective.

Sigmund Freud: Psychoanalytic Theory of Personality

Freud developed his theory with emphasis on unconscious processes. Freud (1965) asserts that "the unconscious must be assumed to be the general basis of psychical life. The unconscious is the larger sphere, which includes within it the smaller sphere of the conscious" (p. 7). Emphasizing the unconscious process, Freud built his structural personality theory. For him personality is made up of three structures which are id, ego and super ego (Freud, 1947).

The id refers to the biological part of the personality, and the only structure of it at birth. It works according to the pleasure principle, which means that it is a hedonistic structure and its only aim is the satisfaction of its urges. It is the most animalistic structure, does not know any rules or restrictions, and follows instinctual desires (Freud, 1947). Everywhere and every time, it is in search of satisfaction and cannot wait. Satisfaction must be accomplished immediately because it does not

know any past or future, only the present moment exists, which is called primary process, and the id functions according to that process (McAdams, 1994).

While infants grow, they see that their needs that are resulted from id impulses cannot be satisfied in every time and place, and the imbalance between reality and their ways of satisfaction of id urges, result in the development of ego, which is most realistic part of personality (Freud 1947). Ego works according to reality principle which means understanding reality and adapting to the constraints of real world. The ego can delay satisfaction and make plans, and these abilities are called the secondary process (McAdams, 1994).

The third structure of personality is the super ego which is formed by the rules and restrictions of first, family then society. It is the social part of personality, that is to say, it forces us to behave according to social norms; otherwise the feeling of guilt is generated (Freud, 1947).

For Freud, all kinds of human behaviors resulted from interactions between these structures. The ego is under pressure from the id and the superego, and it tries to find a balance for finding ways of satisfaction of id needs which are the most appropriate in terms of social norms and real world conditions. The ego use defense mechanisms and distorts reality for the impulses of id which are not acceptable for the super ego and or dangerous in the real world. Some of these defense mechanisms are reaction formation, projection, displacement, identification, isolation, rationalization and intellectualization (Geçtan, 2002).

Carl Jung: Analytical Psychology

Like Freud, Jung believes that the ego is the most conscious part of personality and gives great importance to the unconscious processes. However, he

did not agree with Freud's assumption that the main drive is primarily sexual energy. Moreover he brought different perspectives to unconscious and divided it to two construct: Personal unconscious and collective unconscious (Cloninger, 2004)

The personal unconscious is made of three constructs, which are shadow, anima and animus. Shadow is the socially unacceptable, unrewarded, unwanted part of personality. The opposite of this structure is persona. It is the most socially approved side; it is our self image which is shaped by the reactions we elicit in other people. In addition to evil or unwanted qualities that are inconsistent with persona (the shadow), people reject qualities that are inappropriate with their genders. These sex inappropriate qualities such as emotionality for males and power for females, construct anima (a man's repressed feminine typed qualities) and animus (a female's repressed masculine-typed qualities) (Jung, 1991).

The collective unconscious is inherited and not dependent on personal experience. For Jung (1991), this category of unconscious is "universal and impersonal nature which is identical in all individuals and it consists of pre-existent forms, the archetypes, which can only become conscious secondarily and which give definite form to certain psychic contents." (p. 43)

Alfred Adler's Individual Psychology

Opposing Freud's emphasis on unconscious, instinctual needs and importance of sexuality, Adler proposed the wholeness and indivisibility of the human being who is motivated by social urges rather than instinctual and has capabilities of free will and growth to self actualization. In Adler's view all human beings have some sorts of inferiority which happens mainly as people begin to life as small, weak

dependent infants. The feeling of inferiority also could be resulted from personal limitations. Based on peoples' ways of compensation of their inferior feelings, they build their life style. If the inferiority is not achieved, it becomes what Adler calls "inferiority complex" (Cloninger, 2004).

Erik Erikson: Psychosocial Theory of Personality

Erikson accepted many Freudian concepts, like his structural personality theory, Oedipus complex, however disagreed with the emphasis on psychosexual development on personality. He proposed psychosocial development of ego and focused on ego development. Moreover, in contrast to Freud's idea of personality development based mostly on early childhood experiences, he asserted the life span development of personality. He focuses on ego development based on eight stages of human being. Each stage is based on a conflict and the resolution of each conflict in certain period of life makes ego gain more strength. The stages of his psychosocial development of ego with its basic conflicts are trust versus mistrust, autonomy versus shame and doubt, initiative versus guilt, industry versus inferiority, identity versus identity confusion, intimacy versus isolation, generatively versus stagnation, integrity versus despair (Erikson, 1977).

Behaviorist Perspective

From its occurrence to midst of twentieth century, behaviorist theory has been the second main perspective after psychoanalysis in personality psychology. Although it has been mainly related to learning, it has affected personality psychology deeply (McAdams, 1994). Although there are differences among different theorist, main arguments of behaviorist view on human nature are emphasis on the importance of environment and overt or observable behaviors. The roots of behaviorism have been

constructed by John B. Watson. He mainly proposed the importance of observable events and environment rather than subjective impressions about mental concepts. While he was constructing his theory, he was affected by the Russian physiologist and psychologist Ivan Pavlov's works (Parkin, 2002). Pavlov is very famous for his theory of classical conditioning which is based on learning association between stimuli (Domjon, 1998).

In addition to classical conditioning, there is another type of learning process called instrumental or operant conditioning developed by B.F. Skinner. Although Skinner's studies and main attention was related to learning process, he affected very deeply the aspect toward personality. Below, the main components of his theory are explained.

Skinner's Radical Behaviorist Theory

Rather than unobservable constructs such as the subconscious, B.F. Skinner gives great importance to overt behaviors which can be observed and hence measured, and to attribute the causes of human behavior to environment instead of internal states. For him, what causes human being to act is either some form of payment or the fear of punishment (Dilman, 1988). He sees operant learning procedures, which are composed of reinforcement, punishment, and construct complex human behavior. In Skinner's view, the human is made up of repertoire of appropriate responses to the environmental stimulus. (Poppen, Ricks & Wandersman 1976). He sees the human being as a mechanism that knows when to produce desired or rewarded outcomes and to avoid unwanted results after behaving in a certain way.

Humanistic Perspective

Rather than psychoanalysis's irrational deterministic view and behaviorism's mechanistic perspective toward personality, the Humanist theory stresses humankind's capacity to think, love and grow (Costa & McCrae, 2003). Carl Rogers and Abraham Maslow are two most important theorists in this perspective, and the main components of their theory are described below.

Carl Rogers's Humanistic Personality Theory

Carl Rogers is one of the main theorists in humanistic theory. According to him, human behaviors are exquisitely rational and the core of human beings' nature is essentially positive (Rogers, 1961). The main features of his theory are actualizing tendency, self, organismic value and fully functioning person and they are discussed briefly below.

Rogers (1959) defines actualizing tendency as "directional trend which is evident in all organic and human life – the urge to expand, develop, mature-the tendency to express and activate all the capacities of the organism or the self" (p. 351). With this concept, Rogers emphasizes human nature as inherently a growing process toward mature personality with its all dimensions, and stays away from deterministic view of psychoanalytic approach and mechanistic view of behaviorist perspective. Another core concept in his theory is concept of self. According to him, self means how people view themselves. It involves awareness of being and functioning. Compared to this conscious and perceived conception of self, Rogers proposes another concept which is he calls the ideal self. Ideal self is what people most like to possess, their highest value for themselves (Rogers, 1959). For him, there might be discrepancy between real and ideal selves, between what a person wishes to

be and how is he in reality. The magnitude of this discrepancy could affect the seriousness of peoples' mental health. By organismic value, he means an ongoing processes in which experiences are accurately symbolized and valued according maintenance and enhancement of organism and self (Rogers, 1959). The last important concept in his theory is the fully functioning person. For him, ideal or fully functioning person is one who is open to experience, able to live existentially, trusting his or her own organism, expresses feelings freely and is creative (Rogers, 1959)

Maslow's Need Hierarchy Theory

Abraham Maslow is famous for his hierarchies of need theory. He views human personality as a development process from lower to higher needs. These needs are physiological, safety, belonging, esteem and self actualization needs. They are illustrated in Figure 4. It is called hierarchy as it is not possible to move higher need before satisfaction of lower one.

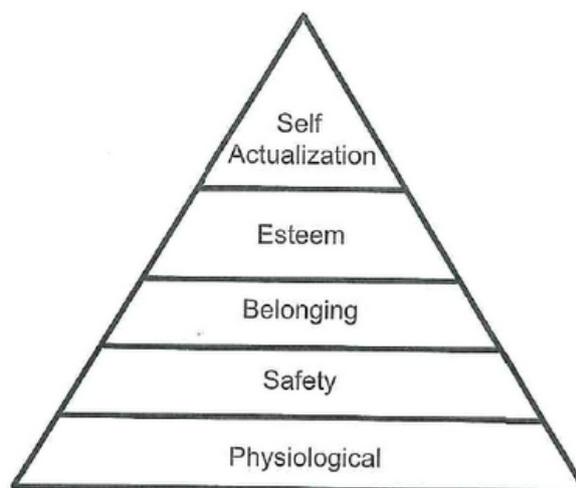


Figure 4. Maslow Hierarchy of Needs

Physiological needs are what keep human being alive. Food, water, sleep are factors that are survival for human being. If they are not met, it is not possible to move higher other needs. As Maslow (1970) states “for the man who is extremely and dangerously hungry, no other interests exist but food” (p 37). The following need is safety which is described as security, stability, protection, freedom from fear, from anxiety and chaos, order. After satisfaction of security needs, it is possible next one which is called belongings and love needs. An individual in this level seeks for friendship and love. He wants to be in affectionate relationships with people, have a place in his group or family. Next phase of hierarchy is esteem needs. They are characterized as desire for strength, achievement, competence, respect, prestige, recognition and appreciation. These needs are more related to our personal status in society, and how we are behaved by others.

So far, the needs explained are called lower or deficiency needs. After satisfaction of all these deficiency needs, it is time to meet the last needs called self actualization. In Maslow (1970)’s terms, self actualization need “refer to man’s desire for self-fulfillment, namely, to the tendency for him to become actualized in what he is potentially “(p. 46). It is at the top of hierarchy and more related to our higher cognitive functions, to who we are, and what potential we have, and hence what makes us different from other species.

Cognitive Perspective

Cognitive perspective gained importance since 80s in explaining human behaviors. This perspective is based essentially to the mental processes of human beings. Its basic assumption about personality is that thought is primary cause of human behaviors; it causes arousal of emotions and emotions lead people to behave. There

are differences in peoples' ways of thinking about themselves and others, and hence differences in peoples' behaviors. These differences in thinking are essence of personality differences (Parkin, 2000). George Kelly is one of the most important theoretician in cognitive tradition, below his major ideas about personality is discussed.

George Kelly' Cognitive Theory of Personality

Kelly is one of the earliest theoreticians who focused on cognitive process in explaining personality dimension. He was interested in peoples' mental process in creating knowledge based on perception. According to Kelly (2003), every people have different way of perceiving and interpreting people and things in their environment. He further proposed that in the attempt of perception and interpretation of their personal experiences, people use their personal construct, which is a category of thought through which perception and interpretation of experiences gain meaning (Kelly, 2003). Peoples' behaviors are directed based on their interpretation of experiences through their personal constructs. Therefore, according to Kelly, peoples' personal constructs should be analyzed in order to explain their behaviors

The Trait Perspective and the Big Five Factor Model of Personality

Trait is a common sense term. In daily life we all attribute some traits to some people in certain cases such as being calm, warm, anxious, extrovert and so on. In this point we make descriptive inferences about people's behaviors. The term trait is related to this kind of descriptive statements about peoples' general behaviors. In a more scientific way, trait is defined as "generalized and personalized determining

tendencies-consistent and stable modes of an individual's adjustment to his environment (Allport & Odbert, 1936, p.26, cited in John & Srivastava, 1999).

The Big Five factor model of personality assumes that human personality is made of five main domains of traits. It has not been easy to come to this conclusion. The development of theory has happened in two paths which are lexical and questionnaire approaches (McCrae & John, 1990).

Lexical hypothesis means that "those individual differences that are most salient and socially relevant in people's lives will eventually become encoded into their language; the more important such a difference, the more likely it is to become expressed as a single word" (John, Angleitner, & Ostendorf, 1998; p. 174). Firstly German psychologist Klages(1926/1932) used this hypothesis, then its elaborated by Allport (1937), Cattell (1943), Norman (1963), and Goldberg (1982). (Digman, 1990). The first most comprehensive study was done by Allport and Odbert (1936). They analyzed most comprehensive English dictionaries to list the adjectives that are describing personality and found 18.000 of those adjectives. After finding personality describing adjectives, they summarized them into four categories. These categories were traits (e.g., fearful, aggressive and sociable), evaluative judgments of personal conduct and reputation (e.g., excellent, worthy, average, and irritating), temporary states, moods and activities such as (e.g., afraid, rejoicing and elated), and last one physical characteristics, capacities and talents. Norman (1967) made another classification by dividing Allport and Odbert's domain into seven categories: stable, biophysical traits, temporary states, activities, social roles, social effects, evaluative terms and anatomical and physical terms (John & Srivastava, 1999).

Because the classifications of both Allport and Odbert and Norman were fuzzy and overlapping, clear and multidimensional classification was needed. Cattell reduced Allport and Odbert lists to 4500 traits and, and generated 12 independent factors by using factor analysis which made up his 16PF Personality Questionnaire (Goldberg, 1993). Goldberg used factor analysis in reviewing existing adjective lists and results demonstrated that five factors replicated across different factor extraction and rotation methods. Based on these results, it is stated that at the broadest level these five dimensions represent personality and each big five dimension consists of a large number of specific personality characteristics (John & Srivastava, 1999).

Questionnaire - based research made up another historical path to the development of big five model and primarily constructed by Costa and McCrae's studies. Their research was different than lexical approach, because rather than encoding language to reach basic dimension of personality, they developed inventory called NEO Personality Inventory which is based on phrases that aim to assess five dimensions of personality. In addition to Costa and McCrae's NEO instrument, John, Donahue and Kentle conducted Big Five Inventory (1994) which consists of 44 short phrases that are based on the trait adjectives known to be prototypical markers of the big five (John, Nauman & Soto, 2008).

The big five personality factors are neuroticism, extraversion, openness, conscientiousness and agreeableness. Neuroticism domain is characterized by having tendency to experience negative affects such as fear, anger, sadness, embarrassment, anger, guilt, and disgust. Extraversion domain is defined as having tendency to like people, to be in large groups, desire excitement and stimulation, to be assertive, active and talkative. People who have high scores in openness domain are described as having tendency to have an active imagination, esthetic sensitivity, intellectual

curiosity and be attentive to feelings. Agreeableness domain is characterized as having tendency to be altruistic, cooperative and trusting. Conscientious people are described as having tendency to be purposefully organized, reliable, determined and ambitious (Major, Turner, Fletcher. 2006).

Big five personality theory is very popular in personality psychology. This theory was chosen in the present study, as it is most useful theory in terms of measuring personality construct as it provides very appropriate operational definitions (McCrae & Costa, 2002). Because of its applicability to research situations, there have made many studies such as studies aimed to reveal relationships between personality trait and other individual variables such as academic achievement, career interest, learning style motivation to learn, gender, and thinking styles. For example Busato, Prins, Elshout and Harmaker, (1999) found that a significant relation between conscientiousness and academic success. Ueleke (2000) revealed significant relations between personality traits and career interests of 162 graduate and undergraduate students from University of Missipi. In their study with 223 tele-sales employees, Furnham, Jackson, and Miller (1999) reported a significant relationship was found between learning style and personality trait by using the Eysenck Personality Inventory (Eysenck &Eysenck, 1964) and Honey & Mumford's (1982) Learning Styles Questionnaire.

In a more recent study with 183 employees of a financial services, Major, Thomas, Fletcher, (2006) found that personality factors of openness, extraversion and conscientiousness predicted motivation to learn. Rubinstein reported in his study with 320 university students that women were significantly more agreeable and conscientious than men. Finally, in his study Zhang (2010) revealed a significant

relation between thinking styles and personality trait with sample of 154 second year university students from Hong Kong.

Despite the fact that the big five factor model of personality is very popular and studied very much, based on the literature survey, it does not attract attention likewise in Turkey as there were limited studies related to it. In his study Ekşi (2004) found significant relationships between personality factors of neuroticism and dispositional and optimistic situational coping with 261 university students.

Ulu (2007) reported in her thesis study with 604 university students aimed to investigate adaptive and maladaptive dimensions of perfectionism in relation to adult attachment and big five personality traits that adaptive perfectionism was significantly predicted by personality factors of conscientiousness, openness and extraversion. In another thesis study with 170 managers and workers conducted by Demirkan (2006). She aimed to look at the association between attachment styles, locus of control beliefs, job satisfaction levels and big five traits. She reported that big five personality factors of workers and managers were significantly different and emotional stability and openness personality factors predicted job satisfaction and locus of control.

CHAPTER III

METHODOLOGY

In this part, the methodology of the study is explained. The methodology will include population and sample selection, data collection instruments, data collection procedure, and data analysis.

Research Design

This study was conducted by quantitative research design and descriptive statistical method. Descriptive research method is used in exploring the learning styles and personality traits of students and their relation to variables of gender, department and GPA. The descriptive statistics are composed of a set of procedures that can be applied to summarize data, enabling the researcher to make comparisons and correlations (Merriam & Simpson, 2000).

The learning style variable consists of four variables which are diverger, converger, accommodator and assimilator, and they are operationally defined as scores in the Learning Style Inventory (Kolb, 1985). Personality trait variables consist of five variables which are agreeableness, neuroticism, openness, conscientiousness, and extraversion, and they are operationally defined as scores in the Big Five Inventory (John, Donahue & Kentle ,1991). These measures are explained in detail in the instruments parts.

Population and Sample Selection

The target population of the study was undergraduate university students in Boğaziçi University Faculty of Education during the 2009-2010 academic year. According to

Entwistle (1981) the teaching styles of educators are the reflection of their learning style. By taking this idea into consideration, the reason of choosing the sample from this faculty was to describe the learning styles and personality traits of future educators in Turkey.

Boğaziçi University is one of the most popular universities in Turkey. Because of this popularity, it attracts students from all parts of Turkey and this characteristic increases its likelihood to be representative of Turkish students' general profile. The faculty of Education has five departments, which are Computer Education and Educational Technology Department, Educational Sciences Department, Primary Education Department, Secondary School Science and Mathematics Education Department, and Foreign Language Education Department.

Computer Education and Educational Technology Department has undergraduate program in teaching computer education and educational technology, and graduate program in educational technology. The Secondary School Science and Mathematics Department has undergraduate department in teaching chemistry, teaching mathematics and teaching physics. The Educational Science Department has undergraduate program in guidance and psychological counseling, and graduate program in guidance and psychological counseling, and adult education. The Primary Education Department consists of preschool education, mathematics education, and science education undergraduate programs. The Foreign Language Department has undergraduate, graduate and doctorate program in teaching English.

The total number of students in faculty of education was 801 during 2009-2010 summer term (Özüdoğru, 2010). The sample from the population was chosen conveniently, 236 participants were reached in the present research, and the number

of valid date was 224. The distribution of selected sample by department is shown in Table 1.

Table 1. Distribution of Sample according to Department

	Frequency	Percent
Teaching Mathematics	36	16.1
Teaching Physics	16	7.1
Teaching Chemistry	20	8.9
Teaching Computer Education and Educational Technology	18	8.0
Mathematics Education	27	12.1
Science Education	24	10.7
Preschool Education	13	5.8
Guidance and Psychological Counseling	29	12.9
English Language Education	41	18.3
Total	224	100.0

Data Collection Instruments

There are three data collection instruments in this study. First one is demographic data form designed by the researcher. Others are the Kolb's Learning Style Inventory and the Big Five Inventory (BFI) Personality Test.

Demographic Information Form

The demographic information form consists of information about name, gender, age, and studied program (See Appendix A).

The Kolb's Learning Style Inventory

All research participants were administered Turkish version of Kolb's Learning Style Inventory Version II (Kolb, 1985) (See Appendix B). It is basically designed for adult learners and it is one of the most studied inventories and easy to administer (Aşkın, 2006). Kolb's Experiential Learning Theory which assumes that

learning is a process is the underlying theoretical base of his learning style model. It is composed of four modes, two modes of grasping information and two modes of transforming it. For Kolb (1980)

Learning Style Inventory measures a person's relative emphasis on each of the four modes of learning process - concrete experience (CE) and reflective observation (RO), abstract conceptualization(AC) and active experimentation(AE)- plus two combination scores that indicate the extent to which person emphasizes abstractness over concreteness (AC-CE) and the extent to which person emphasizes action over reflection (AE-RO) (p. 68).

Each one of the four columns in each sentence corresponds to a mode. By adding 12 numbers given to each column, learning mode is found. The raw score range is from 12 to 48 , after which the combination score is found by subtracting the concrete experience score from the active abstract conceptualization score and the reflective observation score from the active experimentation score. Combined score range is between +36 to -36.

The scores collected for the inventory by Kolb (1985) were found to be reliable with a Cronbach Alpha coefficient of .82 for the concrete experience scale, .73 for the reflective observation scale, .83 for the abstract conceptualization scale, .78 for the active experimentation scale, .88 for the abstract concrete combination score and .81 for the active reflective combination (See Table 2). The Turkish adaptation of the inventory was made by Aşkar and Akkoyunlu (1993) who conducted the validity and reliability of the inventory with participants attending to a certificate program of teaching in Hacettepe University Faculty of Education. Total number of participants was 102 adult learners (F: 64; M: 41). Thirty seven percent of them were from natural sciences field (math, chemistry, biology), 52 percent were from social sciences field (literature, psychology, sociology, geography, history, librarianship), and 12 percent were from engineering field (physic, chemistry,

geology, forester). Their adaptation study was found to be reliable with a Cronbach Alpha of .58 for the concrete experience scale, .70 for the reflective observation scale, .71 for the abstract conceptualization scale, .65 for the active experimentation scale, .77 for the abstract concrete combination score, .76 for the active reflective combination score (See Table 2.). Based on these values, the inventory’s reliability was in appropriate levels for using it in the Turkish settings.

Table 2. Cronbach Alpha Coefficiencies for the Reliability of the Kolb Learning Style Inventory (1985)

	Kolb - 1985	Aşkar and Akkoyunlu - 1993
Concrete Experience	.82	.58
Reflective Observation	.73	.70
Abstract	.83	.71
Conceptualization		
Active Experimentation	.78	.65
Abstract Concrete	.88	.77
Combination		
Active Reflective	.81	.76
Combination		

The Big Five Inventory

Big Five Inventory was developed by John, Donahue, and Kentle (1991) for the purpose of assessing big five personality dimensions of neuroticism, extraversion, openness, agreeableness, and conscientiousness. It consists of five scales and 44

short phrase based on trait adjectives known to be prototypical of markers of the big five personality traits (See Appendix C).

So far, reliability and validity studies of the instrument indicated sufficient results. It was found to be reliable with a Cronbach Alpha coefficient of .79 to .90 of the scales of the instrument in the USA and Canada studies. Test-retest reliability of three months scores change from .75 to .90 with a mean of .85. Hampson and Goldberg (2006) found a mean test reliability of .74 with stability correlations of .79 for extraversion and openness and about .70 for agreeableness, neuroticism, and conscientiousness in a middle aged sample (John, Naumann & Soto 2008). John and Srivastava (1999) reported that its validity coefficients with NEO-Five Factor Inventory developed by Costa and McCrae (1985) were found as .91 for extraversion, agreeableness and conscientiousness, .88 for neuroticism and .83 for openness.

There are two Turkish version of Big Five Inventory. It was translated into Turkish by Alkan (2006) and Sumer (2005). In this study, Alkan's translation was used. She reported .87 alpha reliability for total scale and Cronbach alphas ranging from .67 to .89 for the subscales of the Big Five Inventory. These values make inventory appropriate to use for the present study.

Data Collection Procedures

First of all, in order to use Turkish translations and adaptations of the related instruments, permissions were taken from Akkoyunlu and Aşkar via mail, and from Alkan via phone call for the Kolb's Learning Style Inventory and the Big Five Inventory respectively. In July and August of 2010, necessary permissions were taken from the course instructors in order to apply the instruments to the students in their courses. However, participants were asked to attend this research voluntarily.

Learning Style Inventory, Big Five Inventory and Demographic Information Form were administered to the students in their classrooms in a regular school day. The completion of all forms took approximately 20 minutes.

Analysis of Data

For the analysis of data, Statistical Package for the Social Sciences (SPSS) Version 17 was used. For the research question of one and three which aimed to describe learning styles and personality traits of students, descriptive (frequency, percentage) statistics were used. For the research questions of two and four that whether learning style and personality trait change according to GPA, one-way analysis of variance (ANOVA) was used. ANOVA is used when there is a categorical independent variable and a continuous dependent variable, and the difference in the means of dependent variable broken by the levels of the independent variable could be estimated (Gravetter & Wallnau, 2009). For the other the components of research question two and four that aimed to investigate the distribution of learning styles and personality traits according to gender and department, chi square analysis was applied. Chi square analysis is used to investigate the relationship of two categorical variables (Gravetter & Wallnau, 2009). The last question which asks if there is a significant relationship between learning styles and personality traits, again chi square analysis was used.

CHAPTER IV

RESULTS

The results of the statistical analysis of collected data for the present study are exhibited in this chapter. The results of the study are presented in two domains: firstly the demographic characteristics of the sample (gender, age) are presented, then the findings for each question are provided.

Demographic Characteristics of the Sample

The majority of the sample was composed of females with a ratio of 59.4. Males' ratio in the sample was 40.6 (See Table 3).

Table 3. Description of Student's Genders

	Frequency	Percent
Male	91	40.6
Female	133	59.4
Total	224	100

The average age of the students participating in the present study was 22. This age also was the mod of the present sample. The youngest participant was 18 years old, whereas the oldest participant was 32. The standard deviation of students' ages was 1.7 (See Table 4).

Table 4. Description of the Students' Ages

Mean	22.1027
Mod	22
Standard Deviation	1.70549
Minimum	18
Maximum	32

Results according to the Research Questions

Research Question I – Description of Students’ Learning Styles

According to the results, 46% of students had the assimilator learning style, 23.2% of them had the diverger learning style, 22.3% of them had the converger learning style and 8.5% of them had the accommodator learning style (See Table 5).

Table 5. Description of Learning Styles of Students

Learning style	Frequency	Percent
Assimilator	103	46.0
Accommodator	19	8.5
Converger	50	22.3
Diverger	52	23.2
Total	224	100.0

Research Question IIA - Distribution of Students’ Learning Styles According to Their Genders

In order to determine the variation in students’ learning styles according to gender, chi square analyses were used. The results of analysis are shown in Table 3. These results indicate that students’ learning styles do not significantly vary according to their genders ($X^2:1.44, p>.05.$) (See Table 6).

Table 6. Distribution of Students’ Learning Styles according to Their Genders

	Assimilator		Accommodator		Converger		Diverger		Total	
	n	%	n	%	n	%	n	%	n	%
Male	42	46.2	6	6.6	19	20.9	24	26.4	91	100.0
Female	61	45.9	13	9.8	31	23.3	28	21.1	133	100.0

Research Question 2B – Distribution of Students’ Learning Styles According
to Their Departments

The results show that students’ learning styles do not significantly vary according to their department ($\chi^2: 33.118, p>.05$) (See Table 7).

Table7. Distribution of Students’ Learning Styles According to Their Departments

	Assimilator		Accommodator		Converger		Diverger		Total	
	n	%	n	%	n	%	n	%	n	%
Teaching Mathematics	23	63.9	2	5.6	3	8.3	8	22.2	36	100.0
Teaching Physics	7	43.8	2	12.5	4	25.0	3	18.8	16	100.0
Teaching Chemistry	13	65	0	0	4	20	3	15	20	100.0
Teaching Computer Education and Educational Technology	7	38.9	0	0	6	33.3	5	27.8	18	100.0
Mathematics Education	11	40.7	2	7.4	5	18.5	9	33.3	27	100.0
Science Education	11	45.8	2	8.3	2	8.3	9	37.5	24	100.0
Preschool Education	2	15.4	3	23.1	4	30.8	4	30.8	13	100.0
Guidance and Psychological Counseling	11	37.9	2	6.9	10	34.5	6	20.7	29	100.0
English Language Education	18	43.9	6	14.6	12	29.3	5	12.2	41	100.0

Research Question 2C – Distribution of Student’s Learning Styles according to Their GPAs

In order to determine change in students’ GPAs according to their learning style, one way ANOVA test was used. According to these results, it was found that there was no significant difference in students’ grades according to their learning styles ($F .731 p > .05$) (See Table 8).

Table 8. Difference in Students GPAs according to Their Learning Styles

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.531	3	.177	.731	.534
Within Groups	52.033	215	.242		
Total	52.564	218			

Research Question III- Description of Students’ Personality Traits

Based on these results, 29% of students were found to be agreeable, 23.7% of them were found to be open, 18.8% of them were found to be extravert, 14.7% of them were found to be neurotic and 13.8% of them were found to be conscientious (See Table 9).

Table 9. Description of Students’ Personality Traits

	Frequency	Percent
Neuroticism	33	14.7
Extraversion	42	18.8
Openness	53	23.7
Conscientiousness	31	13.8
Agreeableness	65	29.0
Total	224	100.0

Research Question 4A- Distribution of Students' Personality Traits

According to Their Genders

To analyze whether students' personality traits vary according to their gender, chi square statistical analysis was used. Based on these results, it was found that students' personality traits did not vary according to their genders ($X^2: 8.855 p > .05$) (See Table 10).

Table 10. Distribution of Students' Personality Traits According to Their Genders

	Neuroticism		Extraversion		Openness		Conscientiousness		Agreeableness		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Male	14	15,4	20	22,0	28	30,8	8	8,8	21	23,1	91	100,0
Female	19	14,3	22	16,5	25	18,8	23	17,3	44	31,1	133	100,0

Research Question 4B – Distribution of Students' Personality Traits

According to Their Departments

The distribution of students' personality traits according to their departments was investigated and the results revealed that students' personality traits did not vary according to their departments ($X^2: 37.359 p > .05$) (See Table 11).

Table 11. Distribution of Students' Personality Traits According to Their Departments

	Neuroticism		Extraversion		Openness		Conscientiousness		Agreeableness		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Teaching Mathematics	9	25.0	10	27.8	4	11.1	5	13.9	8	22.2	36	100.0
Teaching Physics	3	18.8	2	12.5	5	31.3	0	0	6	37.5	16	100.0
Teaching Chemistry	0	0	3	15	9	45	3	15	5	25	20	100.0
Teaching Computer Education and Educational Technology	1	5.6	4	22.2	7	38.9	4	22.2	2	11.1	18	100.0
Mathematics Education	2	7.4	5	18.5	4	14.8	7	25.9	9	33.3	27	100.0
Science Education	4	16.7	3	12.5	4	16.7	4	16.7	9	37.5	24	100.0
Preschool Education	3	23.1	2	15.4	1	7.7	1	7.7	6	46.2	13	100.0
Guidance and Psychological Counseling	3	10.3	7	24.1	8	27.6	2	6.9	9	31.0	29	100.0
English Language Education	8	19.5	6	14.6	11	26.8	5	12.2	11	26.8	41	100.0

Research Question 4C – Distribution of Students’ Personality Traits According to Their GPAs

To determine whether difference in students’ GPAs according to their personality traits exists, one way ANOVA was used. The results indicate that the grades of students did not significantly differ according to their personality traits ($F 2.113$ $p>.05$) (Table 12)

Table 12. Difference in Students GPAs according to Their Personality Traits

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.997	4	.499	2.113	.080
Within Groups	50.567	214	.236		
Total	52.564	218			

Research Question 5 – Distribution of Students’ Learning Styles According to Their Personality Traits

In order to determine the variation in students’ learning styles according to their personality traits, chi square analysis was applied. The results indicate that students’ personality trait did not vary significantly according to their personality trait ($X^2: 15.415$ $p>.05$) (See Table 13).

Table 13. Distribution of Students’ Learning Styles according To Their Personality Traits

	Neuroticism		Extraversion		Openness		Conscientiousness		Agreeableness		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Assimilator	20	19.4	16	15.5	25	24.3	9	8.7	33	32.0	103	100.0
Accommodator	4	21.1	6	31.6	4	21.1	1	5.3	4	21.1	19	100.0
Converger	3	6.0	10	20.0	11	22.0	12	24.0	14	28.0	50	100.0
Diverger	6	11.5	10	19.2	13	25.0	9	17.3	14	26.9	52	100.0

CHAPTER V

DISCUSSION AND CONCLUSION

The aim of the present study was to describe students' learning styles, to examine variation in learning styles according to genders, departments and GPAs.

Additionally, it aimed to describe students' personality traits, to examine variation in personality traits according to their genders and departments, and GPAs. Finally and most importantly, it aimed to reveal the variation of learning styles of students according to their personality traits.

In the first research question, the description of students' learning styles was investigated. The results indicated that 46% of students had the assimilator learning style, 23.2% of them had the diverger learning style, 22.3% of them had the converger learning style and 8.5% of them had accommodator learning style. Based on these results, it is understood that the majority of students had the assimilator learning style.

The main characteristic of the people with assimilator learning style is their strength with being interested in ideas and concepts. This strength is an important component of the teaching occupation, and when it is thought that the sample of the study is the future teaching candidate, it is meaningful to find that the dominant learning style was the assimilator.

When comparing this finding with the findings of other studies, it can be seen that there were some contrary and parallel findings in the existing literature. For example, Tazegül (2008) reported that the majority of students (56%) from 200 students in the Teaching Turkish Department had converger learning style.

Moreover, in a recent study made by Can (2010), it was reported that nearly half of the pre-service teachers had the converger learning style. Furthermore, Koçakoğlu

(2010)'s study with 222 primary school teachers indicated that 48% of teachers had the converger learning style which corresponded to the majority of the total sample. Similarly, Bahar, Özen and Gülaçtı (2009) reported in their study with 433 participants from the Erzincan Ataturk University Faculty of Education that the majority of students (43.6) had the converger learning style.

In studies made abroad, the findings are similar. Contessa, Ciardiello and Perlman (2005) reported that most of adult participant had converger learning styles. In a similar manner, Fowler (2002) reveal majority of 224 adult participants had the converger learning style.

On the other hand, there are a few studies that support this finding of present study. For instance Hasırcı (2005) indicated that dominant learning styles of 202 students from Cukurova University Faculty of Education were assimilator. Similarly, Kılıç (2002) found that the dominant learning styles of 118 students from Ankara University were assimilator. Finally, Kılıç & Karadeniz (2004) reported that the dominant learning styles of 67 students from Ankara University were assimilator.

The second research question aimed to investigate the distribution of students' learning styles according to their gender, department, and GPA. Chi square analysis of students' learning styles and their genders indicated that there was no significant variation in student's learning styles according to their gender.

This finding is along the same line as many studies conducted in Turkey (Tazegül 2008; Can 2010; Koçakoğlu 2010; Bahar, Özen & Gülaçtı 2009, Kılıç & Karadeniz 2004). Similar results were found in studies conducted abroad (Dam 1997; Cavanagh, Hogan & Ramgopal 1995). In his study with 432 adult students, Dam reported that there was no significant relation between the learning styles of students and their genders. Similar results were indicated by Cavanagh, Hogan and

Ramgopal's study. Based on their study with 192 nursing students, they reported that there was no significant relationship between students' learning styles and their gender.

Although several studies reported no significant relationship between gender and learning style, a few studies indicated the opposite. For instance, Ergür (2000), Uzuntiryaki, Bilgin and Gaban (2004) had different findings. With 509 senior university students, Ergür reported a significant relationship between students' learning styles and their gender. Similarly, in their study with 121 university students from elementary science education department, Uzuntiryaki, Bilgin and Gaban indicated no significant relationship.

As it is seen, there are more studies reporting no significant relationship between learning style and gender. From these findings, it might be inferred that biological difference such as gender do not make a difference on individuals' preferred learning styles and might support the importance of environment such as past life experiences or demands of present environment.

As another part of second question, the distribution of students' learning styles according to their departments was analyzed by chi square statistics. Like the gender variable, no significant variation was found in the students' learning styles according to their departments. In current literature, there was found only a study with the same aim, and it reported contrary finding. It was conducted by Koçakoğlu (2010) with 222 primary school teachers; it found a significant relation between students' learning styles and their departments.

In the present study, it was expected to find a difference in students' learning styles according to their departments, as it was thought that certain departments would require certain learning styles. For example, it was assumed that the students

from guidance and psychological counseling department would dominantly have diverger learning style which is characterized as feeling oriented, and being interested in people rather than technical tasks. However, their dominant learning styles were found to be assimilator (37.9 %) and converger (34.5 %) which is respectively described as more interested in ideas and concepts than individuals, and dealing with technical tasks and problems rather than social and interpersonal issues. It was not surprising to find that the students from teaching mathematics department had assimilator learning styles. On the other hand, it was not supposed to find that dominant learning styles of the students from guidance and psychological counseling and teaching mathematics departments would be the same.

This finding might be interpreted by saying that students did not get guidance services well enough in terms of choosing the right department which correspond to their learning styles. Furthermore, even though they had sufficient guidance related to their career choices, the reason for choosing a department that does not fit their learning styles but is popular and could bring more financial welfare in the future might be another way of interpreting this result.

The last part of the second question aimed to seek whether students' GPAs vary according to their learning styles. As the result of one way ANOVA, it was found that students' grades did not significantly vary according to their learning styles. This finding is consistent with Busato, Prins, Elshout and Hamaker (1999)'s finding. They analyzed a relationship between the learning styles and the academic success of 409 first year psychology students and reported that there is no significant relationship between them. However, in another study conducted by Uzuntiryaki, Bilgin and Gaban (2004), it was indicated that students' grades vary significantly according to their learning styles.

The finding of the present study that indicated no significant relationship between students' learning style and GPA might be interpreted by saying that the teaching process was comprehensive enough for all types of students' learning styles so that it did not lead some students with a certain learning style to be more successful than others. In other words, the teaching process at Boğaziçi University Faculty of Education did not appeal to only a type of learning style, but rather was encompassing, hence it supported the learning of all students who had different learning styles.

The fourth question aimed to describe the dominant personality traits of students. The results showed that 29% of students were agreeable, 23.7% of them were open, 18.8% of them were extravert, 14.7% of them were neurotic, and 13.8% of them were conscientious. This finding indicate that majority of students had personality trait of agreeableness.

To find the result that the majority of students were agreeable was not surprising. Agreeable people are characterized as having the tendency to be altruistic, cooperative and trusting. These characteristics may be appropriate for many occupations but they mostly describe the essence of teaching occupation. Therefore, finding that future teaching candidates were dominantly agreeable was meaningful.

The fifth research question aimed to look into the distribution of student's personality traits according to their gender, department, and their GPA's. Based on chi square analysis, it was found that the students' personality traits did not vary according to their gender. There were not many studies aimed to analyze the relation between gender and personality except Rubenstein (2005)'s study. She studied with 320 university students and reported that a significant relationship between gender and personality trait was found.

The finding of no relation might disprove a common sense of attributing certain characteristics to certain genders. For example, being emotional, sensitive and meticulous is attributed to females, whereas being calm, messy and brave is attributed to males. Although there is opposite evidence, this finding of the present study might support the idea of the equality of genders (biological sex) in all dimensions of human lives.

Based on the chi square analysis of students' personality traits and their departments, the findings of the present study indicated that personality traits of students did not significantly vary according to their departments. Although they were from different departments, all participant students were teacher candidates except students from guidance and psychological counseling, but they could work in school settings as well. Despite of the fact that the subject matter of what is taught is different, the essence of teaching occupation has certain characteristics and requires specific personality traits. The finding of indifference in the personality traits of students from different departments of teaching was therefore expected.

About the relation between grade and personality trait, in their comprehensive study Trampmann, Hell, Hirn and Schuler (2007) reported that there was a significant relationship between academic success and personality trait based on meta- analysis of 58 studies published since 1980. They indicated that conscientiousness especially correlated with students' grades. The same result came from Busato, Prins, Elshout and Hamaker (1999)'s finding that conscientiousness was related to the grades of students. However, these findings were not parallel to the finding of the present study. Although it was expected to find a relationship between personality traits and the GPAs of students, this finding might support the general

tendency to explain academic achievement with traditional concepts such as intelligence or intellectual ability.

In final and essential question, it was aimed to reveal variation in students' learning styles according to their personality traits. The finding of the study indicated that the students' learning style did not significantly vary according to their personality trait. This finding is not in the same line with other studies in existing literature. For instance, Furnham, Jackson, and Miller (1999) reported that there was a significant relation between the personality traits and learning styles of 223 adult participants by using the Eysenck Personality Inventory (Eysenck & Eysenck, 1964) and Learning Styles Questionnaire (Honey & Mumford, 1982). Drummond & Stoddard (1992) revealed a significant relationship between learning style and personality type. In another study, Jackson and Lwey-Jones (1996) found that students' learning style varied significantly according to their personality trait.

At first glance, it seems that there should be a relationship between a person's preferred way of learning and his or her personality, like as it was reported in existing literature. However, in the history of science, there are many examples of falsified assumptions and empirical truths and this is one of the main components of scientific development. In this sense, the contrary finding of the present study with existing literature is meaningful and could create new perspectives on existing knowledge. A reason of finding no relation between learning styles and personality traits of students might be related to using different models and instruments to describe and measure related constructs. In addition, finding of no relationship between these two variables might be interpreted as the cognitive process and personality are diverse functions. Finally, this finding of the present study might bring criticism to Kolb' learning style model as it proposes some personality

characteristics belonging to certain learning styles such as being interested with people for converger learners, although there was not found a significant relationship between his learning styles and personality traits.

Conclusion

The underlying idea of conducting the present study was to emphasize individual differences in the learning process, and was to investigate some empirical evidences about the relationship between peoples' preferred ways of learning and their personality traits. The study partially reached its aim.

Firstly, in the present study, the variation in students' learning styles was described. It was seen that not all the students prefer the same way of learning and this finding might be a proof for the individual differences in learning process. Secondly, by taking into account the fact that teaching style is a reflection of learning style, finding dominant learning style of future teacher candidate was assimilator might give an idea about future teachers' teaching tendency. Finally, based on finding of the present study about the description of students' learning styles, a comprehensive teaching process might be designed which take differences of learning styles into account.

On the other hand, when a learning style is analyzed, that how people gather information is seen, but at the same time some personality characteristics are also described, therefore, discovering a relationship between learning style and personality trait was assumed. However, no significant relationship was found in the study, despite the fact that existing literature reported the opposite. This finding might refute exiting literature, and bring a new perspective, because of being the only

contrary finding so far. Furthermore, this finding of the study might propose that people's preferred way of learning is independent from their personality.

Limitations of the Study and Recommendation for Future Research

First, using the convenience sampling method might have decreased the possibility of generalizing the results. Second, collecting data in the students' regular classroom environment might have increased the social desirability of the answer, as students were able to see the answers of students who were sitting next to them. Third, the instruments were of the self report type. Therefore, they only give a general idea of how a person views himself or herself. Finally, the generalizability of the results to others faculties would be possible if data were collected from other faculties as well.

This study was conducted only in the faculty of education. Conducting a study including other faculties would make it more effective to compare variation of students' learning styles and personality traits across departments and faculties. Moreover a further study would be conducted by using stratified sampling to increase accurate representation of each department that might affect the variation of learning and personality traits according to departments.

Additionally, further research would be conducted that includes description of learning styles of students, teaching strategies and academic achievement. This kind of a research would show whether students' learning styles which are met by appropriate teaching strategies really make a difference on their academic achievement or not.

Finally, in the present study, about the relationship between learning style and personality trait, a contrasting result with existing literature was found. Further

research would be conducted to investigate the reasons of that, or similar research would be conducted to test the correctness of that result.

APPENDICES

-A-

The Demographic Information Form

Sevgili Katılımcı,

Bu araştırma, Boğaziçi Üniversitesi Eğitim Fakültesi öğrencilerinin baskın öğrenme stilleri ve kişilik özellikleri arasında anlamlı bir ilişki olup olmadığını konu edinen yüksek lisans çalışması kapsamında yürütülmektedir.

Birinci bölümde kendinizle ilgili kişisel sorular yer almaktadır. İkinci bölümde baskın öğrenme stilinizi ölçmek için geliştirilmiş Kolb Öğrenme Stili Envanteri ve son bölümde de kişilik özelliklerinizi belirleyen Büyük Beş Envanteri yer almaktadır.

Anketler üzerine adınız ve soyadınız gibi kimliğinizle ilgili herhangi bir bilgi yazmayınız. Vereceğiniz cevaplar saklı tutulacak, sadece araştırmanın veri toplama bölümünde işlevsel olup bunun dışında herhangi bir yerde kullanılmayacaktır. Araştırmanın bulguları büyük ölçüde sorulara vereceğiniz içten cevaplara bağlı olacaktır.

Araştırmaya katıldığınız için teşekkür ederim.

Erdal YANARDÖNER

Boğaziçi Üniversitesi

Yetişkin Eğitimi

Yüksek Lisans Öğrencisi

KİŞİSEL BİLGİLER

Cinsiyetiniz :

Bay

Bayan

Yaşınız:

Bölümünüz:

Genel Not Ortalamanız:

-B-

Kolb's Learning Style Inventory

Öğrenme Stilleri Envanteri

Sayın Bay/Bayan

Aşağıda her birinde dörder cümle bulunan on iki tane durum verilmektedir. Her durum için size en uygun cümleyi 4, ikinci uygun olanı 3, üçüncü uygun olanı 2, en az uygun olanı ise 1 olarak ilgili cümlenin başında bırakılan boşluğa yazınız.

Teşekkürler

Örnek

Öğrenirken

4 mutluyum.

1 hızlıyım.

2 mantıklıyım.

3 dikkatliyim.

Hatırlamanız için

4 en uygun olan

3 ikinci uygun olan

2 üçüncü uygun olan

1 en az uygun olan

1. Öğrenirken

___ duygularımı göz önüne almaktan hoşlanırım.

___ izlemekten ve dinlemekten hoşlanırım.

___ fikirler üzerine düşünmekten hoşlanırım.

___ bir şeyler yapmaktan hoşlanırım.

2. En iyi

___ duygularıma ve önsezilerime güvendiğimde

___ dikkatlice dinlendiğim ve izlediğimde

___ mantıksal düşünmeyi temel aldığımında

___ bir şeyler elde etmek için çok çalıştığında

öğrenirim.

3. Öğrenirken

___ güçlü duygu ve tepkilerle dolu olurum.

___ sessiz ve çekingen olurum.

___ sonuçları bulmaya yönelirim.

___ yapılanlardan sorumlu

olurum.

4. ___ Duygularıyla

___ İzleyerek

___ Düşünerek

___ Yaparak

öğrenirim.

5. ___ Yeni deneyimlere açık olurum.

___ Konunun her yönüne bakarım.

___ Analiz etmekten ve onları parçalara ayırmaktan hoşlanırım.

___ Denemekten hoşlanırım.

6. Öğrenirken

___ sezgisel

___ gözleyen

___ mantıklı

___ hareketli

biriyim.

7. En iyi

___ kişisel ilişkilerden

- ___ gözlemlerden
- ___ akılcı kuramlardan
- ___ uygulama ve denemelerden

öğrenirim.

8. Öğrenirken

- ___ kişisel olarak o işin bir parçası olurum.
- ___ işleri yapmak için acele etmem.
- ___ kuram ve fikirlerden hoşlanırım.
- ___ çalışmamdaki sonuçları görmekten

hoşlanırım.

9. En iyi

- ___ duygularıma dayandığım zaman
- ___ gözlemlerime dayandığım zaman
- ___ fikirlerime dayandığım zaman
- ___ öğrendiklerimi uyguladığım zaman

öğrenirim.

10. Öğrenirken

- ___ kabul eden
- ___ çekingen
- ___ akılcı
- ___ sorumlu

biriyim.

11. Öğrenirken

- ___ katılırım.
- ___ gözlemekten hoşlanırım.
- ___ değerlendiririm.

___ aktif olmaktan hoşlanırım.

12. En iyi

___ akılcı ve açık fikirli olduğum zaman

___ dikkatli olduğum zaman

___ fikirleri analiz ettiğim zaman

___ pratik olduğum zaman

öğrenirim.

-C-

The Big Five Inventory

KİŞİLİK ÖZELLİKLERİ TESTİ

Aşağıda, insanların kendilerini ve kişilik özelliklerini tanımlamak için kullandıkları bazı ifadeler bulunmaktadır. Her bir ifadeyi okuyarak, genel olarak sizi ne derece tanımladığımı, uygun rakamı işaretleyerek belirtiniz.

Örneğin

“Yardımsever biriyim” ifadesi genel özelliklerinizi düşündüğünüzde tamamen size uyuyorsa 5 i, oldukça yardımseverim diyorsanız 4 ü, biraz yardımseverim diyorsanız 3 ü, pek yardımsever biri değilim diyorsanız 2 yi ve hiç yardımsever birisi değilim diyorsanız 1 i işaretlemeniz gerekir.

Çalışma sonuçları bilimsel veriler olarak kullanılacağından, içtenlikle ve sizin için tamamen doğru olan cevapları vermeniz çok önemlidir. Test sorularının yorumlanabilmesi için tüm maddelere hiç boş bırakmadan cevap vermeniz gerekmektedir.

Aşağıdaki ifadelerin sizi ne derece tanımladığını lütfen belirtiniz	1 Hiç	2 Çok az	3 Biraz	4 Oldukça	5 Çok fazla
1. Konuşkan	1	2	3	4	5
2. Başkalarının kusurunu bulmaya eğilimli	1	2	3	4	5
3. Bir işi eksiksiz yapan	1	2	3	4	5
4. Depresif ve hüzünlü	1	2	3	4	5
5. Orijinal, yeni fikirler üreten	1	2	3	4	5
6. Mesafeli	1	2	3	4	5
7. Yardımsever, bencil olmayan	1	2	3	4	5
8. Özensiz olabilen	1	2	3	4	5
9. Rahat, stresle iyi başadan	1	2	3	4	5
10. Birçok farklı konuya meraklı	1	2	3	4	5
11. Enerji dolu	1	2	3	4	5
12. Başkaları ile ağız dalaşı başlatan	1	2	3	4	5
13. Güvenilir bir eleman/çalışan	1	2	3	4	5
14. Gergin olabilen	1	2	3	4	5
15. Yaratıcı zekası olan, derin düşünen	1	2	3	4	5
16. Heyecan ve coşku yaratan	1	2	3	4	5
17. Bağışlayıcı bir yapıya sahip	1	2	3	4	5
18. Düzensiz olmaya eğilimli	1	2	3	4	5
19. Çok endişelenen	1	2	3	4	5
20. Hayal gücü zengin	1	2	3	4	5
21. Sessiz kalmaya eğilimi olan	1	2	3	4	5
22. İnsanlara genellikle güvenen	1	2	3	4	5
23. Tembelliğe meyilli	1	2	3	4	5
24. Duygusal açıdan dengeli, kolay kolay üzülmeyen	1	2	3	4	5
25. Yaratıcı	1	2	3	4	5
26. Girişken bir kişiliğe sahip	1	2	3	4	5
27. Soğuk ve kayıtsız olabilen	1	2	3	4	5
28. Bir işi bitirmeden bırakmayan	1	2	3	4	5
29. Duygusal iniş ve çıkışlar yaşayan	1	2	3	4	5
30. Sanatsal ve estetik deneyimlere değer veren	1	2	3	4	5
31. Bazen utangaç ve tutuk	1	2	3	4	5
32. Hemen hemen herkese karşı nazik ve düşünceli	1	2	3	4	5
33. İşleri etkin, verimli yapan	1	2	3	4	5
34. Gergin durumlarda sakin kalan	1	2	3	4	5
35. Rutin işler yapmayı tercih eden	1	2	3	4	5
36. Dışadönük, sosyal	1	2	3	4	5
37. Zaman zaman başkalarına karşı kabalaşan	1	2	3	4	5
38. Plan yapan ve onları uygulayan	1	2	3	4	5
39. Kolayca heyecanlanan	1	2	3	4	5
40. Düşünmekten ve fikirlerle oynamaktan hoşlanan	1	2	3	4	5
41. Sanatsal ilgileri az olan	1	2	3	4	5
42. Başkaları ile işbirliği yapmaktan hoşlanan	1	2	3	4	5
43. Dikkati kolay dağılan	1	2	3	4	5
44. Sanat, müzik ve edebiyat konusunda çok bilgili	1	2	3	4	5

-D-

Chi Square Tables of Distribution of Students' Learning Styles and Personality Traits according to Gender, and Department, and Distribution of Learning Styles according Personality Traits

Table D1: Chi-square test for the distribution of students' learning styles according to gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.447 ^a	3	.694
Likelihood Ratio	1.460	3	.691
Linear-by-Linear Association	.217	1	.642
N of Valid Cases	224		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.72.

Table D2: Chi-square test for the distribution of students' learning styles according to department

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	33.138 ^a	24	.101
Likelihood Ratio	36.702	24	.047
Linear-by-Linear Association	1.757	1	.185
N of Valid Cases	224		

a. 17 cells (47.2%) have expected count less than 5. The minimum expected count is 1.10.

Table D3: Chi-square test for the distribution of students' personality according to gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.855 ^a	4	.065
Likelihood Ratio	8.993	4	.061
Linear-by-Linear Association	3.480	1	.062
N of Valid Cases	224		

Table D3: Chi-square test for the distribution of students' personality according to gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.855 ^a	4	.065
Likelihood Ratio	8.993	4	.061
Linear-by-Linear Association	3.480	1	.062
N of Valid Cases	224		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.59

Table D4: Chi-square test for the distribution of students' personality according to department

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	37.359 ^a	32	.236
Likelihood Ratio	42.481	32	.102
Linear-by-Linear Association	.529	1	.467
N of Valid Cases	224		

a. 26 cells (57.8%) have expected count less than 5. The minimum expected count is 1.80.

Table D5: Chi-square test for the distribution of students' learning styles according to their personality traits

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.415 ^a	12	.220
Likelihood Ratio	15.682	12	.206
Linear-by-Linear Association	.742	1	.389
N of Valid Cases	224		.220

a. 4 cells (20.0%) have expected count less than 5. The minimum expected count is 2.63

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