HACETTEPE ÜNİVERSİTESİ
EĞİTİM BİLİMLERİ ENSTİTÜSÜ

The Department of Foreign Language Education
Program of English Language Education

FIELD DEPENDENCE/INDEPENDENCE, LEARNING STRATEGIES, LEARNING STYLES, and FOREIGN LANGUAGE ACHIEVEMENT

Özgür KÖSE

Ph.D. Dissertation

Ankara, 2018

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ALAN BAĞIMLILIK/BAĞIMSIZLIK, ÖĞRENME STRATEJİLERİ, ÖĞRENME BİÇEMLERİ ve YABANCI DİL BAŞARISI

Özgür KÖSE

Ph.D. Dissertation

Ankara, 2018

Acceptance and Approval

To the Graduate School of Educational Sciences,

This dissertation entitled "Field Dependence/Independence, Learning Strategies, Learning Styles, and Foreign Language Achievement" has been approved as a dissertation for the Degree of **Ph.D.** in **the Program** of English Language Teaching, Division of English Language Education by the members of the Examining Committee.

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This is to certify that this dissertation has been approved by the aforementioned examining committee members on 22/06/2018 in accordance with the relevant articles of the Rules and Regulations of Hacettepe University Graduate School of Educational Sciences, and was accepted as a **Ph.D. Dissertation** in the **Program of** English Language Teaching by the Board of Directors of the Graduate School of Educational Sciences on ...../...../2018

Prof. Dr. Ali Ekber ŞAHİN
Director of Graduate School of Educational Sciences

Abstract

Individuals' cognitive styles have an important role in every instructional environment. The purpose of this quantitative, non-experimental study was to explore whether field dependent/independent cognitive style affects individuals' use of language learning strategies, preferred learning styles, and achievement levels in different skills in the English language in an English for Academic Purposes context. The sample included a heterogeneous group of 123 college level students studying at an English-medium university. The instruments for the data collection were the Group Embedded Figures Test (GEFT), Rebecca Oxford's Strategy Inventory for Language Learning (SILL), and the BIG16 Learning Modality Inventory. Participants' scores in different skills in an EAP course were collected upon their written consent. Descriptive and inferential statistical analyses revealed significant relationships between field independence cognitive style and the use of cognitive, metacognitive, and compensation strategies; and higher achievement levels in reading, writing, and listening skills whereas field dependence was congenial with speaking skills only. No statistically meaningful relationships were found between participants' field dependent/independent cognitive style, and the use of memory strategies, affective strategies, social strategies, and their preferred learning styles.

Keywords: cognitive style, learning style, learning strategies, language achievement, field dependence, field independence, GEFT

Öz

Bireylerin bilişsel biçemlerinin eğitim ortamlarında etkili unsurlar olduğu kabul gören bir fikirdir. Nicel ve deneysel olmayan bir araştırma yöntemini benimsemiş bu çalışmanın amacı, alan bağımlı/bağımsız bilişsel biçemlerinin bireylerin benimsedikleri öğrenme stratejilerini, tercih ettikleri öğrenme biçemlerini ve Akademik Amaçlı İngilizce bağlamında, İngilizcedeki farklı becerilerdeki başarılarını etkileyip etkilemediğini keşfetmektir. Çalışmanın örneklemi, eğitim dili İngilizce olan bir yükseköğretim kurumunda okumakta olan ve İngilizceyi yabancı dil olarak öğrenen 123 kişilik çoktürel bir öğrenci grubunu kapsamaktadır. Veri toplama araçları olarak Grup Saklı Şekiller Testi, Rebecca Oxford tarafından geliştirilen Dil Öğrenme Stratejileri Envanteri ve BİG16 Öğrenme Biçemleri Envanteri kullanılmıştır. Katılımcıların dil becerindeki başarı verileri, kendilerinden yazılı izinleri alınmak suretiyle çalışmaya dahil edilmiştir. Betimsel ve kestirimsel analizler, alan bağımsızlık ile bilişsel, üst-bilişsel ve tamamlayıcı stratejiler ve okuma, yazma ve dinleme becerilerindeki başarı seviyeleri arasında istatistiksel olarak anlamlı ilişkiler ortaya koyarken, alan bağımlılık ile konuşma berisi arasında anlamlı bir ilişki bulunmuştur. Yapılan analizler, katılımcıların alan bağımlılık ve bağımsızlık bilişsel biçemleri ile bellek, sosyal ve duyuşsal stratejiler ve tercih ettikleri öğrenme biçemleri arasında istatistiki olarak anlamlı olabilecek herhangi bir ilişki tespit etmemiştir.

Anahtar sözcükler: Bilişsel biçem, öğrenme biçemleri, dil başarısı, alan bağımlılık, alan bağımsızlık, Grup Saklı Şekiller Testi

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Symbols and Abbreviations

EAP: English for Academic Purposes

EFL: English as a Foreign Language

EFT: Embedded Figure Test

ELL: English Language Learners

ESL: English as a second language

FD: Field Dependent, or Field Dependence

FDI: Field Dependence/Independence

FI: Field Independent, or Field Independence

GEFT: The Grouped Embedded Figure Test

L1: First Language

L2: Second Language

LLS: Language Learning Strategy

RFT: Rod-and-Frame Test

Ss: Students

Those who know, do. Those that understand, teach

Aristotle

c. 384 BC - 322 BC

Chapter 1
Introduction

Background of the Study

Many individuals will never feel the need to follow the footsteps of or does not seem to be as auspicious as Joseph Caspar Mezzofanti (1774 – 1849), an Italian cardinal from Bologna who allegedly spoke 40 languages fluently (Keen, 2010). Yet, the need for learning a foreign language today, as the world gets increasingly global and digital, is more apparent than ever. Researchers in linguistics and language education have long been seeking for the most effective ways and means of successful language teaching. This predominant strive initiated and eventually put an end to various teaching methods and conceptions, starting from the ancient Romans' attempts to enjoy the works of Homer, Aesop, and many other ancient Greek writers. Throughout centuries, the more the researchers delved into the world of language learning, the better it was understood that it was too deep and too complex to be examined and addressed with a perspective adopting a monodisciplinary approach.

Quite arguably, not many other human developmental phenomenon is as intricate as language learning, a phenomenon inter-relatedly governed by neurological (Boeree, 2004; Schumann, 1976; Scovel, 1969; Selinker, 1972), psychological (Mercer, Ryan, & Williams, 2012; Randall, 2007), biological (Jenkins, 2001; Talaber, 2011), and social and environmental factors (Ellis, 2001; Gonzalez, 2004; Graham, 1997). In various attempts taken to decipher the codes of the interplay between all these dynamics, researchers aimed at answering one of the most fundamental questions of second language teaching and learning research: What makes a language learner a good learner? While the answer still remains shadowy at some areas, research conducted in the field suggested that the significant portion of the answer for this question lied in the findings of interdisciplinary studies, psychology having a central role.

The conventional notion among psychologists and educators in general, as Sternberg and Zhang (2001) explain, was that what led individuals to success or failure was directly linked to the individual differences in their cognitive capabilities and personalities, an idea which does not exclude language learning success or

failure. This notion remained in the locus of various research in the near past; approximately six decades ago, the idea that cognitive styles, a term introduced by Klein and Schlesinger (1951), could serve as a linker between the study of cognition and the study of personality gained significant importance. Kagan and Kogan (1970) note that it was then when a group of psychologists set out to shed light on and to scrutinize the role of individual distinctions in cognitive styles on learning performance. Soon, several stylistic constructs, many of which continues to be included within language learning research frame since decades, emerged into the school of thought in cognitive psychology (Sternberg & Zhang, 2001).

Heineman (1995) believes that there is a clear confusion in the literature as to the differences between cognitive styles and learning styles. “Numerous authors”, according to Heineman “use the terms interchangeably” (para. 2). According to Riding and Rayner (1998), cognitive style is seen as the preferred and customary ways that an individual adopts to both organize and represent information. Similarly, Brown (1975) considers cognitive styles a “combination of affect and cognition” and sees it as “self-consistent and enduring individual differences in cognitive organization and functioning” (p. 238), and Messick (1976) defines it as “stable attitudes, preferences, or habitual strategies that determine individuals’ modes of perceiving, remembering, thinking, and problem solving” (p.3). Brown (2001), to clarify the distinction between cognitive style and learning style, says that the former is about the ways individuals deal with a general problem, the former refers more specifically to educational settings, “where affective and physiological factors are intermingled” (p. 120). Dunn and Dunn (1999) defines learning styles as “the degree to which each person learns differently from other people that makes the identical instructional environments, methods, and resources effective for some learners and ineffective for others” (pp. 11-12). Though abundant definitions exist, one question still remains mainly unanswered in the literature: What is the relationship between an individual’s “cognitive organization and functioning” and the way he or she learns?

In an attempt to answer this question, some of the groundbreaking ideas generated during the period of scientific scrutinization of cognitive styles include but are not limited to field dependence/independence (Witkin, 1949), conceptual complexity (Harvey, Hunt, & Schroder, 1961), impulsivity-reflectivity (Kagan, 1966),

breadth of categorization (Gardner, 1953a), leveling-sharpening (Gardner, 1953b), holist–serialist (Rayner, 2000), and verbalizer–visualizer (Paivio, 1971). One common finding in the diverse pool of language learning literature is that language learning is directly governed by all these cognitive variables and learners' individual cognitive styles, and it is of utmost importance that learners' individual differences are taken into consideration and addressed in language learning and teaching settings. As Skehan (1989) states, it is important to note that there are not much consistent research results in this area of interest, and it is most probably because there are intricate and unique interactions among cognitive styles of an individual. Nonetheless, many research studies indicate that individual differences plan an important role throughout learners' language learning experiences (Dörnyei, 2005; Oxford & Ehrman, 1993; Robinson, 2002; Selinker & Gass, 2008). Brown (1975) points out that "the cognitive approach to human learning has important implications for both the theory of second language acquisition and more effective approaches to language teaching" (p. 231). The most widely studied cognitive style is that of field dependence/independence (Bialystok, 2001). The term refers to "the degree to which an individual focuses on some aspects of experience and separates it from its background" (Ehrman, 1996, p. 78), and it has been studied by numerous researchers in the field second language learning (Alptekin & Atakan, 1990; Carter, 1988; Chapelle & Green, 1992; Elliott, 1995; Hoffman, 1997; Johnson, Prior, & Artuso, 2000; Stansfield & Hansen, 1983).In this study, *learning style* is defined as "observable learner preferences in the learning environment", and they "are seen as extensions of personality types and cognitive styles in the learning environment" (Wu, 2010).

In addition to cognitive style constructs, another area that is commonly studied to shed light on the aspects of good language learners is learning strategies. While the early research on learning strategies aimed at exploring the strategy choices of good language learners, later researchers focused more on identifying and categorizing the strategies utilized by good language learners. Although a significant number of researchers in the second language field have been working on learner strategies for a couple of decades, there, according to Macaro (2001), is no universal definition for what learner strategies are. Similarly, Ellis (1992) points out that the term strategy is a, in Ellis' words, "fuzzy" term due to the fact that no

agreement has been reached about the terms used to explain language learning strategies. Yet, the most widely cited definition for language learning strategies is that of Oxford (1990).

Oxford says that language learning strategies are specific methods or techniques utilized by individual learners to assist the comprehension, retention, retrieval and application of information for language learning and acquisition. Oxford further notes that language learning strategies "make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations" for individuals (Oxford, 1990, p. 8). Over the last few decades, there has been much prolific research conducted regarding language learning strategies in both second and foreign language contexts. A large amount of empirical evidence has lent credence to the important relationships between language learners' strategy use and their cognitive styles (Bruen, 2001; Chamot, 2004; Park, 1997; Watanabe, 1990).

In short, the concept of cognitive style in general is of great interest in second language education research; indeed, together with the social-constructivist revolution, it has changed the conventional roles of students and teachers in learning environments, emphasizing a learner-centered approach to teaching rather than a teacher-centered one. Thus, developing a better understanding of the potential effects of cognitive styles on learners' learning experiences will be beneficial to all in an educational environment.

Purpose of the Study

Field dependence/independence cognitive style plays a crucial role in language learning; research reports that it is one of the influential factors with a significant impact on learners' learning experiences. While the literature is rich with research investigating the effects of field dependence–independence on learning, the alleged mystery about the potential tendencies of field dependence and field independence learners in adopting different language learning strategies and different learning styles and how their language learning success is possibly affected by these different traits still seem to be largely unearthed. A large portion of cognitive style studies a) display contradicting findings regarding the connection between language learning achievement and field dependence/independence, b)

were conducted predominantly in the Western Hemisphere and in ESL (English as a Second Language) settings, c) mainly draws on English for general purposes classrooms; limited research into the potential effects of field dependence/independence construct on EFL (English as a Foreign Language) learners in EAP (English for Academic Purposes) contexts is available.

By focusing on field dependence/independence of the undergraduate level English language learners in EAP settings in Turkey, where over three million students are enrolled in a higher education institution (Altınsoy, 2011), the current study aims at shedding light on settings that have remained largely unstudied so far by cognitive styles research. More specifically, the current study aims at investigating the existence of possible connections between field dependence/independence cognitive constructs and a) the level of success in different language skills, b) the language learning strategy choices, and c) preferred language learning styles of English language learners in EAP settings in Turkey. Through the findings of this study, it is hoped that some evidence will be found to develop a better understanding of the potential relationships between students' language learning achievement levels, their strategy uses, and learning styles with a specific focus on their field dependence/independence personality traits. As a byproduct, the results of the study may help current language teaching practitioners levitate their awareness of how language learners are affected by their cognitive style biases and tendencies in language classrooms in which critical thinking is strongly endorsed and required. It must be noted that the current study excludes the following variables in its attempts to investigate the factors affecting language learning style and learning strategy preferences of the subjects in this study: gender, motivation, teaching method, cultural background, age, and personality (other than field dependence/independence).

Research Questions

The first purpose of this study is to determine and characterize the relationship between field dependence/independence, and language achievement levels of Turkish learners of the English language in an EAP setting in Turkey. For this reason, the study will compare and analyze the performance differences, if any, of field dependent and field independent learners in different language skills and

subskills to identify the possible parallelisms among participants possessing similar cognitive tendencies and biases. Second, through qualitative data analyses, the study aims to detect what language learning strategies, if any, seem to correlate among Turkish field dependent and field independent learners of English. Finally, the study aims to discover the possible relationships between the field dependence/independence cognitive styles and language learning style preferences of the participants.

Hypotheses

Relative to these research questions, based on the amount and type of the data that was available for this study, and given the contradicting findings found in previous cognitive style research, the following null hypotheses were formulated:

***H*$_0$1a.** There is no relationship between achievement levels in while-listening skills and field dependence/independence cognitive styles.

***H*$_0$1b.** There is no relationship between achievement levels in listening and note taking skills and field dependence/independence cognitive styles.

***H*$_0$2.** There is no relationship between achievement levels in reading skills and field dependence/independence cognitive styles.

***H*$_0$3.** There is no relationship between achievement levels in speaking skills and field dependence/independence cognitive styles.

***H*$_0$4.** There is no relationship between achievement levels in vocabulary skills and field dependence/independence cognitive styles.

***H*$_0$5.** There is no relationship between achievement levels in writing skills and field dependence/independence cognitive styles.

***H*$_0$6a.** There is no relationship between the use of memory strategies and field dependence/independence cognitive styles.

***H*$_0$6b.** There is no relationship between the use of cognitive strategies and field dependence/independence cognitive styles.

***H*$_0$6c.** There is no relationship between the use of compensation strategies and field dependence/independence cognitive styles.

***H*$_0$6d.** There is no relationship between the use of metacognitive strategies and field dependence/independence cognitive styles.

***H*$_0$6e.** There is no relationship between the use of affective strategies and field dependence/independence cognitive styles.

***H*$_0$6f.** There is no relationship between the use of social strategies and field dependence/independence cognitive styles.

***H*$_0$ 7.** There is no relationship between participants' preferred learning styles and field dependence/independence cognitive styles.

Procedures

Three different data collection tools will be implemented to answer the research questions of the current study. Initially, to identify field dependent and field independent participants, the Group Embedded Figures Test (GEFT, hereafter) (Witkin, Oltman, Raskin & Karp, 1971) will be employed. The GEFT, according to Chen and Macredie (2004), is the most frequently employed tool to measure field dependence and field independence and is accepted to be a valid instrument for this purpose (Hall, 2000). Administered in a limited amount of time, takers of the GEFT are expected to locate 8 simple figures placed in 25 complex figures. Test takers' field dependence and field independence traits are determined by the number of figures they correctly spot. Additionally, Rebecca Oxford's Learning Strategies Inventory (Oxford, 1989) is employed to identify the participants' preferred language learning strategies. The third data collecting instrument is BIG16 Learning Modality Inventory developed by Şimşek (2002); it is implemented to classify the participants' prevailing learning style. Şimşek (2002) states a Cronbach's alpha reliability coefficient of 0.84 for the total scale, 0.68 for kinesthetic subscale, 0.77 for auditory subscale, and 0.79 for visual subscale.

Assumptions

During the conduct of the current study, it is assumed that the participants of the study give honest and accurate answers in the data collection process. Second, the study assumes that there will be meaningful relationships among field-dependent and field independent learners' strategy use in language learning. In

addition, it is assumed that the findings of this study will suggest that the strengths and weaknesses in the language skills of field dependence and field independence students will differ.

Furthermore, it is one of the assumptions of the study that it will contribute to the literature on cognitive and learning styles and provide valuable insights from a Eurasian setting that still remains mostly unstudied regarding the nexus between field dependence/independence and foreign language learning achievement. The current study, through its foci in the data collection process, will also shed light on some possible relationships between learners' choices of learning strategies and their field dependence/independence styles. It is further believed that this study will be helpful for English language instructors and educational practitioners with increasing their awareness of the importance of employing different teaching strategies to address their students' cognitive learning styles.

Significance of the Study

At the theoretical level, this study aims to contribute to a better understanding of the potential effects of field dependence and field independence cognitive tendencies of language learners on their learning styles, language learning strategies, and foreign language achievement levels in different skills by elucidating the possible underlying causes of these effects. The findings of this study may in the years to come assist all parties in the field of language teaching and learning, not only in its own contextual locus but also in broader global scale, by providing an understanding of what influential factors and nexuses exist in individuals' foreign language learning experiences and how those factors and individual differences determine the existence of each other. Also, in our increasingly globalized world, it is important to avoid ethnocentric biases such as mirror imaging, what Loewenthal (2009) explains as the way people view the world through their own cultural biases and preconceptions. One of the ways to avoid these kinds of biases is to replicate different studies conducted in different corners of the globe (Callahan, 2005). Since a significant amount of the field dependence and field independence studies have been conducted in the Western Hemisphere, the findings gathered in English as a Foreign Language settings of this study will invaluably contribute to the bigger picture of the field dependence and field independence research. At the practical

level, even a simple corroboration of the existence of meaningful relationships between cognitive style and learning styles, learning strategies, and achievement levels; and improving our understanding of the potential underlying dynamics of this relationship can improve the quality of our educational efforts. As the concept of learner-centered language teaching receives more and more attention (Kessler, 2018; Xu, 2015), the insights of this study about how learners' individual cognitive tendencies might impact their language learning experiences through predestinating their weak and strong points, therefore, might be of significance to all parties involved in language education.

Limitations and Delimitations of the Study

There had to be several boundaries in this study. First, this study obtained the participants' language achievement levels only through the graded components of the course which were designed by the course instructors and the Testing Committee of the course. Participants' language performances were not observed in real life situations, and were not determined through internationally recognized standardized language tests. Additionally, this study, owing to its exploratory nature and logistical reasons, used a convenience sampling method, which potentially affects its generalizability.

Participants preferred learning styles and learning strategies were identified though surveys—tools that have some inbuilt limitations. Though the participants are always informed that none of the options given under the survey questions are better or more desirable than another, some participants may always respond in the way they think they should. It should also be noted while there are various data collection tools to identify language learning styles and strategies and to explore field dependence and independence tendencies, single data collection tools were employed for each of these variables in this study.

Though a voluminous body of research in field dependence/independence research, together with the original answer key sent along with the purchased the GEFT test, classify those who score more than 11 out of 18 in the GEFT test as "field independent" and as "field dependent" if the score is 11 or less (Abraham, 1985; Cunningham, Ridley, & Campbell, 1988; Ling & Salvendy, 2009; Lusk & Wright, 1981; Raptis, Fidas, & Avouris, 2016; Saadatmanesh, 2013; Witkin, Oltman,

Raskin, & Karp 1971; Yoo & Yoo, 2015) some argue that the concept of field independence and field dependence is a continuum and reliability concerns arise due to dichotomization. It is argued that putting a continuous variable into a dichotomous structure would cause reliability issues (Hunter & Schmidt, 2004).

Though the current study is the first large scale study conducted in an EAP context in Turkey on this topic with these variables under its focus, the findings are limited to a certain number of language learners and to a single institution located in the capital city, Ankara. Hence, it is an irrefutable fact that the findings gathered in this study cannot be generalized and regarded as extensible to all students in Turkey. Furthermore, the study focuses only on the existence of meaningful relationships between the independent and dependent variables; exploring why these relationships exist if any relationships are identified was not under the scope of this study.

It is a well-documented phenomenon that learners' individual differences seem to have determining factors for their second language achievements. These individual differences are, but not limited to, learning styles, learning strategies, age, gender, language aptitude, affective domains such as extraversion or ambiguity tolerance, and cultural background. Because of time constraints, not all individual variables are under the scope of this study. Another limitation of this study is the lack of previous research on the field dependence/independence tendency of the Turkish language learners of English and its correlations to their learning and progress in EAP settings.

Last but not least, this study had to exclude participants' overall, end-of-the-term achievement levels because of two reasons regarding reliability concerns. First, the course which served as the data collection context for this study includes various graded tasks. Due to standardization concerns, all major components of the course are taught within certain criteria and are graded based on the standards set on rubrics designed by the Testing Committee of the course. Midterm and final exams are prepared by the Testing Committee and grading standardization meetings are held before every major exam and graded task are completed. Yet, in order to give some space for teacher creativity, teacher autonomy, and to be able to better address learners' individual need and interests, for the 15% of the total

grade, course instructors are allowed to adopt and design their own graded materials.

Though there are also standards set for this relatively flexible component, different course sections usually deal with totally different materials and tasks, graded solely by their course instructor. Depending on the tasks designed, the rubrics prepared by the Testing Committee may be irrelevant or even ineffective, and instructors may choose to set their own grading criteria and standards for the tasks and materials they develop. For this very reason, the scores the participants received from the tasks designed personally by the course instructors were excluded from the scope of this study which prevents this study from focusing on and discussing the differences, if any, between field dependent and independent participants and the overall achievement levels—at least not without raising serious reliability and validity concerns.

Second, at the end of the semester, some, if not all, instructors may choose to use discretion and may round up the final grade of some or all students by a percent or two, which may consequently change the final letter a student receives in the course. Since this would also pose a reliability concern, the final grades are kept out of the scope of this study.

Definition of Terms

Definitions of key terms referred in this study are:

- **Cognitive Style:** individual, stable and pervasive differences in how people perceive, organize, store and process information as well as how they think solve problems, learn and relate to others (Witkin, Moore, Goodenough & Cox, 1977).
- **Learning Styles:** “observable learner preferences in the learning environment” and “extensions of personality types and cognitive styles in the learning environment” (Wu, 2010, p. 15).
- **Field Dependence:** a cognitive style describing individuals’ “tendency to give credit to external referents in a self-consistent way, to experience surroundings in a relatively global fashion, and to passively conform to the influence of the prevailing field or context” (Gibson, 1985, p. 50).

- **Field Independence:** The “ability to perceive a particular relevant item or factor in a 'field' of distracting items” (Brown, 2007, p. 382).
- **Language Learning Strategies:** “Optional means for exploiting available information to improve competence in a second language” (Bialystok, 1978, p. 71).

Conclusion

This chapter introduced the background and the purpose of the study and stated the research questions drawn to guide the investigation. The significance of the study was also stated, along with the planned procedures aimed to be taken. Next, the chapter presented the assumptions underlying the study as well as some possible limitations that must be taken into consideration. Finally, the chapter provided the definitions of some important and relevant terms that will be used in the chapters to follow. The next chapter provides a comprehensible review of related empirical and theoretical work on learning and cognitive styles with a special focus on the field dependence/independence constructs, will cite previous research regarding its effects on second language learning, and will finally explain and outline learning strategies theories which serve as the framework for the learning strategies focus of this study.

Chapter 2
Literature Review

Introduction

The aim of this study is to frame and identify the possible effects of the construct of field dependence/independence on language learning styles and language learning strategies of Turkish learners of the English language in an EAP class and to discover meaningful relationships among field dependent and field independent participants' level of achievements in different skills in English. The review of literature of this study includes the empirical and theoretical research regarding cognitive and learning styles with a specific focus on field dependence/independence and strategy use among English language learners. This chapter, and all these issues mentioned, are presented under three different parts. The first part briefly presents the construct of cognitive style theory and then introduces and explains field dependence and independence as a cognitive style, its effects on academic and language learning achievement, along with its measurement instruments. The second part outlines the concept of learning styles. The third part, and the final part, covers language learning strategies with a detailed focus on Oxford's (2001) taxonomy of language strategies. All these three themes are linked by the overarching question of whether, and more importantly how, individuals' varying degrees of field dependence/independence shape their foreign language learning experiences.

Cognitive Style Theory

Though the construct of cognitive style, the origins of which goes back to late 1800s, is commonly attributed to Gordon Allport due to his being the first to formally introduce the term "style" in 1937 in a text on personality, it was Riley Gardner who made the first explicit reference to the term "Cognitive Style" in his 1953 article (Messick, 1994). It started as an attempt to explain the connections between individuals' personalities and the way they process or interpret information, and there are numerous definitions for it cited in the literature. It is commonly defined as "an individual's preferred and habitual approach to organizing and representing information" (Riding & Rayner, 1998, p. 8); it is considered as "a fairly fixed

characteristic of an individual" (Riding, Glass, & Douglas, 1993, p. 268), and, to Saracho (2003), it is about "consistencies in the individuals' means of using their cognitive processes" (p. 161). The reason why cognitive styles display consistencies is, according to Kogan (1976), because cognitive style is an innate trait and that explains why it has "stability over time across response classes that are dissimilar but possibly linked together on some theoretical basis" (p. 3). According to Ellis (1985, p. 114), cognitive style is an expression used to refer to the ways in which individuals "perceive, conceptualize, organize, and recall information". Cook (2001) defines it as a "technical psychological distinction between typical ways of thinking" (p. 137). In another definition, it is defined as preferred approaches that a person habitualized to solve problems, think, and to perceive and remember information (Riding & Cheema, 1991). Letteri (1992) states that students' cognitive tendencies are arguably one of the most significant factors on their effective learning and success.

Sternberg and Grigorenko (2001) states that there are various cognitive style theories in the literature—40, to be precise, as noted by Keefe (1988); and according to Riding (1991), all those scattered schools of thought on cognitive styles cited in the literature could be grouped in two distinct categories based on their orthogonal dimensions which are the wholist-analytic dimension and the verbalizer-imager dimension. The latter refers to an individuals' inclination "to represent information during thinking verbally or in mental pictures" (Riding & Wigley, 1997, p. 379). In other words, verbal-imagery style explains if an individual's way of representing information is based on verbal codes or in mental images (Riding & Cheema, 1991). Individuals with a verbal style tendency are better at tasks requiring or containing verbal information; individuals with an imagery style, on the other hand, are better at dealing with tasks demanding visual and spatial abilities (Riding & Watts, 1997).

The former, the wholist-analytic cognitive style, on the other hand, is explained as an individual's predisposition to process a stimulus either in integrated complete wholes or in discrete parts. Graff (2003) states that while individuals with an analytic cognitive style of information processing is able to capture ideas or concepts when they are discrete parts, they are not able to display the same performance with integrating ideas in order to reach a complete whole. In the same vein, a wholistic tendency to process information enables individuals to see ideas

as complete wholes and obstructs the ability to break the whole into discrete bits. Davies and Graff (2005) elucidates that whether an individual possesses a wholistic or an analytic cognitive style is “determined by their relative speed of processing ‘matching figure’ tasks and ‘embedded figure’ tasks” (p. 990). The wholist-analytic continuum is derived from Witkin’s much cited field dependent (wholist) and field independent (analytic) cognitive style theory (Witkin, Moore, Goodenough, & Cox, 1977). Riding’s (1991) illustration of the difference between analytic and wholistic way of viewing information is shown in Figure 1.

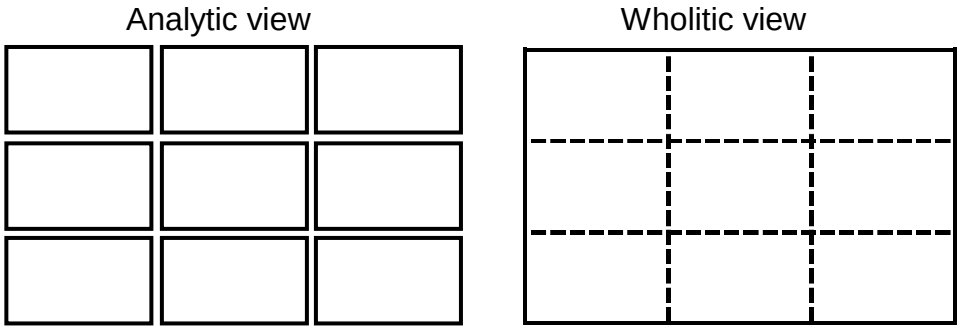

Figure 1. “Analytic vs. wholistic view of information” by Riding 1991 (adopted from M. Graff, 2003, Electronic Journal of e-Learning, 1, p. 23).

Other cognitive style constructs include but are not limited to *conceptual complexity* (Harvey, Hunt, & Schroder, 1961), *Impulsivity-Reflectivity* (Kagan, 1966), *Breadth of Categorization* (Gardner, 1953a), *Leveling-Sharpening* (Gardner, 1953b), *Repression-Sensitization* (Bergouist, Lloyd, & Johansson, 1973). Rayner and Riding (1997) categorized these, along with many other cognitive style models cited in the literature, based on the Wholist-Analytic and the Verbalizer-Imager cognitive style theories; Table 1 displays their categorization.

Table 1

Fundamental Dimensions of Cognitive Style

Label	Description	References
Key Dimension: *Wholistic-Analytic*		
Constricted Flexible control	tendency for distraction or resistance to inference	Klein (1954)
Broad-Narrow	preference for broad categories containing many items rather than narrow categories containing few items	Kogan and Wallach (1964); Pettigrew (1958)
Analytical Non analytic	a conceptual response which differentiates attributes or qualities conceptualizing rather than a theme or total effect.	Kagan et al. (1964); Messick and Kogan (1963)
Levelling Sharpening	tendency to assimilate detail rapidly and lose detail or emphasize detail and changes in new information.	Klein (1954); Gardner et al. (1959)
Field-dependency Field independency	individual dependency on a perceptual field when analyzing a structure or form which is part of the field.	Witkin and Asch (1948a, 1948b); Witkin (1961); Witkin (1971); Witkin et al. (1977);
Impulsivity Reflectiveness	tendency for quick as against a deliberate response	Kagan et al. (1964); Kagan (1966)
Cognitive Complexity	A tendency for the multidimensional or simplicity or unidimensional processing of information.	Harvey et al. (1961); Gardner and Schoen (1962)
Atomization Restructuring	Preference for simple repetitive tasks rather than re-structuring tasks.	Tiedemann (1989)
Converging Diverging	Narrow, focused, logical, deductive thinking rather than broad, open-ended, associational thinking to solve problems.	Hudson (1966; 1968); Guilford (1967)
Serialist Holist	The tendency to work through learning tasks or problem solving incrementally or globally and assimilate detail.	Pask and Scott (1972); Pask (1976)
Splitters-Lumpers	A response to information and interpretation which is either analytical and methodical or global.	Cohen (1967)
Adaptors-Innovators	Adaptors prefer conventional, established procedures and innovators restructuring or new perspectives in problem solving.	Kirton (1976; 1994)
Concrete sequential Concrete random/ Abstract sequential/ Abstract random	The learner learns through concrete experience and abstraction either randomly or sequentially.	Gregorc (1982)
Reasoning-Intuitive Active-Contemplative	Preference for developing understanding through reasoning and/or by spontaneity or insight and learning activity which allows active participation or passive reflection.	Allinson and Hayes (1996)
Key Dimension: *Verbal-Imagery*		

Abstract versus Concrete Tolerance for unrealistic experiences	preferred level and capacity of abstraction. Individual readiness to accept perceptual variance with conventional reality or 'truth'.	Harvey et al. (1961) Klein et al. (1962)
Verbaliser Visualizer	The extent to which verbal or visual strategies are used when processing information	Paivio (1971); Riding and Taylor (1976); Richardson (1977)
Key Dimensions: *Wholist-Analytic and Verbal-Imagery*		
Analytic-Wholist and Verbal-Imager	Tendency for the individual to process information in parts as a whole and think in words or pictures.	Riding (1991; 1994); Riding and Cheema (1991); Riding and Rayner (1995)

Adapted from "Towards a Categorisation of Cognitive Styles and Learning Styles," by S. Rayner & R. Riding, 1997, *Educational Psychology*, *17*(1&2), 8-9.

Field Dependence/Independence: Theoretical Foundations

Inspired by the Gestalt school of German psychology and as a result of Werner's (1948) organismic theory of development, Witkin and Asch (1948) introduced the concept of field dependence and field independence, a construct also known as the global-articulated continuum. Research on field dependence/independence initially started in laboratory studies during World War II. Herman Witkin and his associates tried to analyze and to have a better understanding of individual differences in perceptions of the upright (Witkin & Goodenough, 1981). In 1977, Witkin, Moore, Goodenough, and Cox implemented two different tests, the Body Adjustment Test and the Rod-and-Frame Test (RFT), to analyze field dependent and field independent phenomena. While the former test required the participants to adjust their body to the upright position in a tilted room when they were sitting in a tilted chair, in the latter test, the participants, in a completely dark room, were asked to put the rod placed in a gleaming tilted frame in the upright. Using these test, Witkin aimed to study how individuals perceive the upright position when it is influenced by a surrounding external factors. The question was, "how important are visual cues in perceiving the vertical direction of space?" (Goodenough, 1986, p. 5).

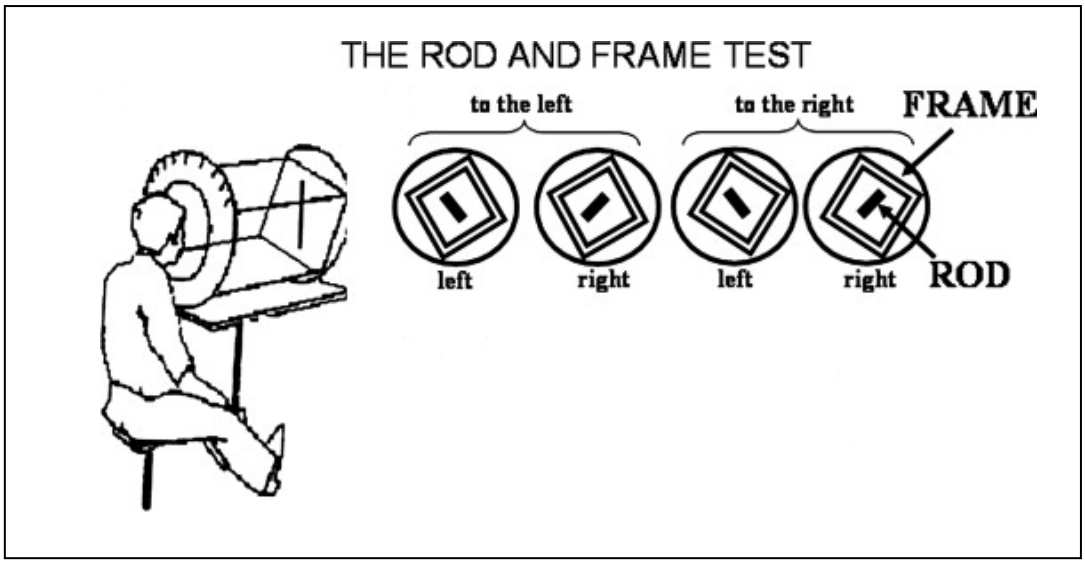

Figure 2. The rod-and-frame test. Adapted from "Postural control and sensory integration in cervical dystonia," by F. Vacherota, M. Vaugoyeaua, S. Mallaua, S. Soulayrolb, C. Assaiantea, and J.P. Azulay, 2007, *Clinical Neurophysiology*, 118, pp. 1019 - 1027.

Next, Witkin et al. tested the same participants of Rod-and Frame and the Body Adjustment Tests with what they call “embedded-figures situation”; they asked the articipants to locate a simple figure, first shown in an isolated form, when it is embedded in a more complex figure (See Figure 3). Witkin et al. noted a correlation across these two sets of tests; those, field independent participants, who were able to spot the figure more easily when it is embedded into a more complex figure were also the ones who were more successful with placing the rod and their body in the upright position. Based on the findings of this study, it is found that some individuals are more inclined to rely on themselves while some rely on the *field* as the primary referent for behavior (Witkin & Goodenough, 1977). While the former, the ones who rely on self as the primary referent, is accepted to have a field independent cognitive style, the others are considered to be field dependent. In other words, the major discrepancy between field independent and dependent learners, as Riding and

Cheema (1991) explains, is visual perceptiveness: the capability of differentiating the parts of an image from the whole (also referred to as the “field”).

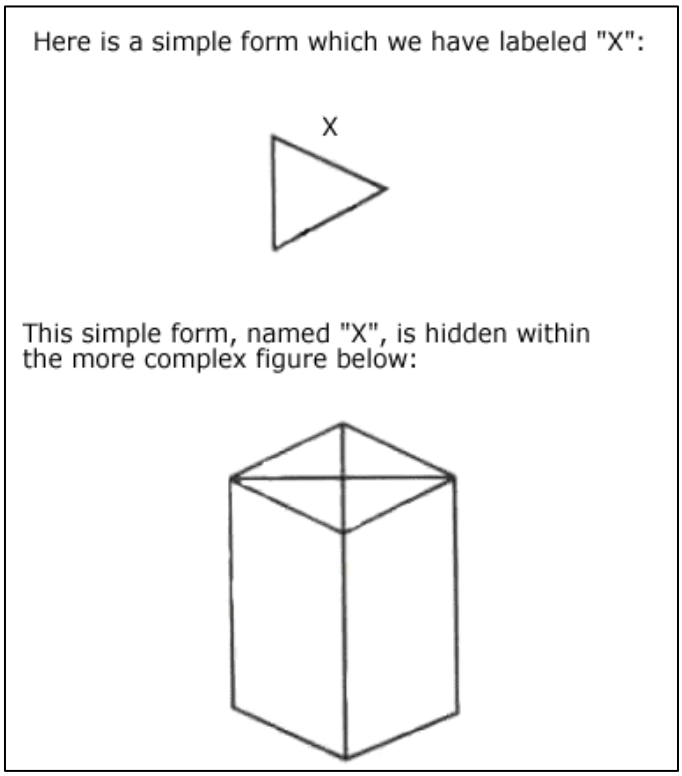

Figure 3. Embedded figures test. From "Group Embedded Figures Test" by Mind Garden. Retrieved from http://www.mindgarden.com/products/gefts.htm

Field Dependence/Independence Cognitive Style

Among all the dimensions of cognitive styles in second language research, one of the most popular and most commonly studied one is Witkin’s theory of field dependence and independence. Indeed, Chinien and Boutin (1992) point out that while all subsets of cognitive styles received a considerable amount of attention, with thousands of references available in the literature, field dependence/independence is the most commonly studied cognitive style. Keefe (1979) sees field dependence/independence as the degree to which a person adopts an “analytical as opposed to global way of experiencing the environment” (p. 9). According to Chapelle and Green (1992), field dependence/independence affects the way individuals “perceive and process information” and the way “they interact with their environment” (p. 47).

Field dependence/independence is believed to be a bipolar cognitive style because, as Witkin and Goodenough (1981) notes, individuals at the two ends have different seem to display distinctively different dispositions. Various researchers point out that the personal dispositions that are related to the field dependent-independent dimensions are also quite different. According to Selinker and Gass (2008) field independent individuals are more likely to be analytic, "ignoring potential confusing information in the context" and seem to be more self-reliant. They, as Witkin and Goodenough (1981) indicate, seem to be more objective in their judgments, self-motivated, task-oriented in their learning process. They also seem to be more focused and their attention span is longer; that is why field independent individuals are considered to be more disciplined and better learners. On the other hand, while their analytical skills make them relatively more advantaged in academics, they seem to lack social and interpersonal skills. Field independent people are also known to have a tendency to be distant in social relations and seem to be able to separate themselves from the surrounding setting. In addition, Rayner and Riding (1997) state that they set certain goals for themselves, bank on intrinsic reinforcement, and are more inclined to devise their own learning strategies.

A field independent cognitive style, as noted by different studies, have a positive correlation with a "strong ego" (Ferguson & Crowley, 1997; Rémy & Gilles, 2014). On the other hand, some other studies, including the early publications of Witkin, state that field independent individuals, especially the ones with an extreme level of field independence, seem to employ *defense mechanisms,* defined as mental processes employed to protect the ego from anxiety and painful emotional drives (A. Freud, 1946), in their social life frequently (Karp, Poster, & Goodman, 1963; Lewis, 1971), and the extreme levels of field independence is commonly associated with paranoia (Lewis, 1971; Witkin et al., 1979; Witkin, 1965). Furthermore, field independents' impersonal orientation, favoring non-social environments, being less affected by others' perceptions, and acting more egocentrically might, as noted by Witkin (1965), at some point, pave the way to the development of a narcissistic personality.

The field dependent individuals, in contrast to the analytic abilities of field independent ones, are inclined to pay more attention to the whole context. They, according to Witkin and Goodenough (1981), are less autonomous in their behaviors

because the primary referent points underlying their acts are the environment, circumstances, and others. Rickards, Fajen, Sullivan, and Gillespie (1997) also found that field-dependent students when “left to their own devices . . . assume a passive spectator approach to learning” (p. 515). This, however, as a result, makes field depended people better at social and interpersonal relations and help get along better with others; people who are predominantly field dependent, as noted by Witkin and Goodenough, care more about social cues and prefer situations that help them get in contact with others.

Witkin, Goodenough, and Karp (1967) note that while individuals with a field independent style seems to be better in applied sciences requiring an analytical way of processing information such as engineering, sciences, and mathematics; field dependent people tended to be more successful in social sciences and with more people-oriented careers possibly because, as explained by Wooldridge (1995), field dependent individuals favor learning settings that are less structured. Additionally, Jonassen and Grabowski (1993) point out that field dependent learners, compared to field independent learners, are more sensitive to the learning settings, and have a more holistic approach when perceiving information. In other words, the former adopts a global cognitive style since it is the cues available in the field which assist their understanding while the latter’s cognitive orientation would be more of an articulated one because they do not rely on external cues to help them understand.

Ellis (2008, p. 662) summarizes the variables that are commonly associated with field dependence and field independence as follows (Table 2):

Table 2

Variables Associated with Field Dependence and Independence

Field Independence	Field Dependence
Adolescents/adults	Children
Males	Females
Object oriented jobs	People-oriented jobs
Urban-technological societies	Rural, agrarian societies
Free social structures	Rigid social structures
Individualistic people	Group-centered people

As Table 22 suggests, field dependence/independence style is influenced by the environment of the individuals; Brown (2007) explains that authoritarian societies tend to produce more field dependent individuals while a democratic and competitive society seems to produce more field dependent people. Brown summarizes that whether children develop a field dependent or a field independent style as they mature is primarily shaped by the type of society and home in which they live. Table 3 provides further explanation regarding the characteristics of field dependent and field independent individuals.

While in the initial years of research predominantly made use of the Rod-and-Frame method to assess field dependence/independence, further research showed the ability to locate upright perception is associated with being able to locate camouflaged and embedded figures, which in turn paved way to the use of Embedded Figure Test (EFT) in field dependence/independence research (Goodenough, 1986). According to Wooldridge and Haimes-Bartolf (2006), during the EFT, the subject is asked to locate a simple figure embedded in a more complex one. The findings in the EFT tests show that subjects who were not able to locate the embedded figure in the complex one were the ones who had hard time keeping their body and rod separate in the Rod-and-Frame Test. Namely, the EFT, a much simpler and economic tool, had provided similar results with those of Rod-and-Frame test, a logistically more demanding one.

Table 3

Characteristics of Field Dependent and Field Independent Individuals.

Field Dependent	Field Independent
Having difficulty in disembedding objects form their background	Have a relative ease in disembedding objects from their background
Solve problems intuitively	Solve problems analytically
Are dominated by present display	Can utilize cognitive restructuring skills (can picture ways in which the display can be changed)
Have difficulty in utilizing visuo-vestibular cue articulation; are either dominated by the visual or become confused.	Have relative ease in utilizing visuo-vestibular cue articulation.

(Adapted from Witkin and Goodenough 1980, as cited in McMorris, 2005, p. 44)

The Group Embedded Figures Test

The Group Embedded Figures Test (GEFT) is an adaptation and a group administered version of the EFT. The GEFT takers, as Zhang and Sternberg (2006) explains, are given 8 simple figures embedded within 25 more complex figures. The examinees are expected to locate and trace as many of the simple figures as possible within a given amount of time. The examinee's field dependence or field independence is assessed by the number of items correctly located in the complex figures. "The higher one's score, the more field independent one is; the lower, the more field dependent" (p. ix). Psychometric information presented in the test manual indicates a reliability coefficient of .82 (r =.82) for the GEFT dependent upon correlating parallel forms of the two components of the test which are both marked and equally timed (Witkin, Oltman, Raskin, & Karp, 2002). In 2014, MindSpring®, the publisher of the GEFT, launched a software-based version of the test, making it possible to administer and score field dependence and independence electronically and more practically.

The GEFT has received several criticisms from different scholars. Ellis (2008), for example, argues that what the GEFT tests is only field independence; one's being field dependent is taken for granted when the existence of field independence is not observed. Griffiths and Sheen (1992) claim that the GEFT should not be considered a tool to test one's style; it is rather a test of ability (p.141). Another concern is that different researchers, due to the lack of clear-cut evaluation guidelines in the text manual, have assigned different interpretations to similar test scores on the GEFT. Additionally, some scholars, for example Willing (1987), claim that the GEFT has potential cultural biases and has a discriminative nature. Despite these concerns, field dependence/independence (FDI) research is predominantly based on the findings gathered through the GEFT; it has been adopted in the literature since 1970 (DeTure, 2004) and is the most commonly used tool to measure field dependence/independence (Blanton, 2004; Chen & Macredie, 2004); no other test, according to Hall (2000) is as well represented in the literature.

Field Dependence/Independence: Academic Achievement

In their extensive review of literature on cognitive styles and learner performance, Dillon and Gabbard (1998) concluded that FID "has failed to demonstrate much in the way of predictive or explanatory power and perhaps should be replaced with style dimensions that show greater potential for predicting and performance" (p. 344). In the educational, psychological, and organizational research literature spheres, nonetheless, the theory and the effects of cognitive style have continued to be explored for more than 30 years, and this is because, as Pithers (2002) puts it, "it has tended to generate more questions than it has answers" (p.129) or potentially because, as various scholars (see Saracho, 1991; Swyter & Michael, 1982) argue, research in this area has the greatest potential for application to the problems experienced in educational settings. There is a vast body of research drawing attention to the effects of cognitive styles on individuals' academic achievement.

There seems to be a widely-accepted notion about the existence of a connection between field independence and problem solving abilities of an individual, where the solution depends on the individual's capabilities in differentiating a single element in a more complex context—from the one in which

the target element had originally been presented. This implies a conceivable connection between analytical and structuring abilities and field independence—a connection widely-studied and seems to have been verified in various research findings. Scholars, such as Richardson and Turner (2000) and Tinajero and Paramo (1998), explain that field independent individuals are better at solving multifaceted problems, recalling information, isolating facts and separating the relevant from the irrelevant, and they do well on standardized tests—all in accordance with the early findings of Witkin and Moore (1974) reporting that field-independent subjects tend to do well in science and mathematics. In short, Tinajero and Paramo, in the same year with Dillon and Gabbard, concluded that there was strong evidence for highly possible correlations between FDI and academic performance.

Tinajero and Paramo (1998) tested more than 400 high-school students and found that all field independent students, in regardless of their sex, performed better than field dependent ones in all subject. Again, Tinajero and Paramo (1997) analyzed the relationship between cognitive styles and student achievement in several fields including English, mathematics, natural science, social science, Spanish, and Galician. They found that their 408 middle school level participants' performance in each field was significantly determined by their cognitive style; researchers report that field independent participants outperformed the field dependent ones. Another research study seeking to shed light on the relationship between academic achievement and FID was conducted by Murphy, Casey, Day, and Young (1997).

In their study carried out in Canada, they worked with 63 undergraduate students in an information management program. While they report that field independent students performed better than field dependent participants only on one of the technical courses and for the other three courses the two groups the participants' performance did not significantly differ, research findings reported by Varma and Thakur (1992) suggest that field dependent learners display higher achievement in mathematics and physical sciences and field dependent learners showed higher achievement in social science and literature. Their arguments are supported by a more recent review by Smith (2002). Smith generalized from the body of field dependence independence research and said,

> Field independent students favor areas of study that are impersonal and require cognitive skills (such as the physical and biological sciences and mathematics) while field dependent students make study choices that require interpersonal skills, such as social sciences and primary school teaching. (p. 65)

Noraini (1998) explored the possible relationship between middle school students' field dependence-independency and achievement in geometry. The study had a pretest-posttest experimental and control group design and adopted the GEFT to identify subjects' field dependence-independency. Findings gathered through multiple regression analyses indicated that cognitive style was the predominant factor for achievement in geometry. Roberge and Flexner (1983) also investigated the relationship between FDI and mathematical ability. They had a sample of 450 students from sixth, seventh, and eighth grades and found positive correlations between FI and mathematical problem solving skills; the field independent subjects did significantly better than the field dependent ones. The correlation between cognitive style and conceptual and procedural mathematical knowledge was, similarly, investigated and verified by some other researchers (Kadijevic & Krnjaic, 2003). McCorkle and Cohen (1988) point out that students with a field independent cognitive style seem to perform at a significantly higher level than their relatively field dependent counterparts in college-level introductory economics courses.

The meta-analytic review composed by Baker and Dwyer (2005) investigates the effect of instructional strategies and individual learner differences. Baker and Dwyner conclude that field independent individuals "achieve higher scores on achievement tests" (p. 78). Bahar and Hansell (2000) investigated the interaction between FDI and working memory capacity. According to their findings, there is a significant positive correlation between students' field dependence or independence and the results of the working memory capacity test. They indicate that field independent subjects were better at sorting signal or relevant information from "noise" or incidental information. Field independent learners also were found to display a better information processing performance in the study conducted by Cameron and Dwyer (2005) with a sample size of 422 participants.

Frank's (1984) analyzed the extent to which the recall capacities of the field dependent and field independent university students enrolled in Educational Psychology I differ from each other. The participants, 160 female undergraduates, were asked to listen to a recorded lecture under four different conditions:

> 1. Students in the no-notes condition were instructed to listen carefully to the lecture, but they were not permitted to take any notes.
>
> 2. Students assigned to the student's notes group received instructions to take notes while listening carefully to the lecture.
>
> 3. Students in the outline framework condition were instructed that the outline framework was to guide their listening to the lecture and that they were to take additional notes they thought were important directly on the pages containing the framework.
>
> 4. Students assigned to the complete outline group received instructions that the outline of the lecture was to guide their listening and that were to take additional notes they thought were important directly on the pages containing the outline. (p. 672)

Findings show that in the second condition, students' notes condition, field dependent participants displayed an inferior performance compared to that of field independent ones. Additionally, field independent students seem to take notes in a more efficient way; their more outline-like note taking skills helped them take more advantage of note-taking strategy. Researcher also pointed out that notes taken by field dependent participants seemed less efficient since they included less words.

Alamolhodaei (2009), in his study with 13-14 year-old female students, found that field independent students possess a higher working memory capacity compared to their field dependents counterparts. Alamolhodaei's research concludes that field independent subjects scored higher not only in ordinary mathematical tests but also in a word problem-solving exam. Nicolaou and Xistouri (2011) analyzed 94 sixth grade students (age 11 - 12) from two different schools located in two major districts of Cyprus. Their findings, quite similar to those of Alamolhodaei, indicate that field-independent students outperformed field-dependent ones "in both problem-posing ability and the complexity of the problems posed" (p. 611). In another recent research study, Hederich-Martínez and Camargo-

Uribe (2016) investigate the correlations among educational performance, field dependence/independence cognitive style and factors traditionally linked with performance and style in Bogotá, Colombia with the participation of more than 3000 students enrolled in grades 8 and 10, from more than 60 public schools. They highlight the relationship between cognitive style and academic performance and state, "field-independent students are more likely to obtain high-performance levels both in standardized tests and in teachers' evaluations" (p. 719). Davey and Menke (1989) aimed to investigate the effects of discrepancies in students' cognitive styles on the acquisition of reading skills and found that readers with a field independent cognitive style outperform the field dependent subjects in reading comprehension tests. Donnarumma, Cox, and Beder (1980) provide some statistical support to show the implications of field dependence and field independence on student achievement. They analyzed the rate of successful completion of the General Educational Development Test (GED) and stated that, "57.1% of the field dependents dropped out of the program, 33.3% failed, and 9.5% passed the GED. In contrast, of the field independents, 31.6% dropped out, 15.8% failed and 52.6% passed" (p. 227-228). Tootle (1986) analyzed the relationship between FDI and levels of learning. The study, which was conducted with the participation of 191 officers from the US Air Force; the GEFT was used to identify cognitive skills of the subjects who then attended to a teacher training program. The participants took a knowledge-level test, a comprehension-level test, and an application-level test in the end of the training. While their scores on the knowledge-level test did not display any significant differences, findings show that Tootle's field dependent subjects scored significantly less than their field independent counterparts both in the comprehension and application-level tests. It was concluded that field independence influences learning at higher levels of information processing.

Some research, despite all those studies verifying the existence of a strongly probable correlation between FDI cognitive style and academic achievement, demonstrate conflicting findings on that matter. Wells (2000) and Shih and Gamon (2001), for example, found no significant difference between FDI and students' academic success. Siebenman (1984) found no statistically significant difference between the performances of field dependent and field independent college students in a reading class. In this research, Siebenman aimed to discover if there

were a meaningful correlation between the subjects' cognitive styles and learning styles, and if their learning styles were being met. The Group Embedded Figures Test (GEFT) was administrated to determine the participants' cognitive style, and their learning styles were analyzed through the Productivity Environmental Preference Survey (PEPS). Siebenman held interviews with 30 students and sought to better understand if the participants believed their preferred learning styles were being addressed, and how if yes, in the college-level learning environment. While the findings gathered through the GEFT and PEPS displayed some correlations, no relationships statistically significant were discovered. The findings implied that most, if not all, subjects thought that the efficiency of learning was predominantly associated not only with how much personal effort students put into their own learning and but also with instructor ability.

Siebenman's findings posed a strong contradiction to what had been found through FID and reading skills focused research studies emphasizing that field independent readers seem to possess higher comprehension capabilities due to their higher cognitive skills, being better at using imagery, and their more active hypothesis-testing tendencies (Cochran & Davis, 1987; Davey, 1990; Davey & Menke, 1989). Garger and Guild (1987) remind that field dependent and field independent learners have varying sources of motivations directly or indirectly affecting their academic performance, and thus teaching practitioners should remember the following factors to levitate motivation levels among field dependent/independent learners.

Table 4

Motivating factors for Field Dependent and Field Independent Learners

Field Independent	Field Dependent
Through verbal praise	Through grades
Through helping the teacher	Through competition
Through external rewards (stars, stickers, prizes)	Through choice of activities, personal goal chart
Through showing the task's value to other people	Through showing how the task is valuable to them
Through providing outlines and structure	Through freedom to design their own structure

One of the most commonly studied academic domain in which field dependence and field independence cognitive style is considered to be one of the most important factors affecting success is foreign and second language learning and teaching (see Abraham & Vann, 1987; Carter, 1988; Chapelle & Green, 1992; Johnson, Prior, & Artuso, 2000).

Field Dependence/Independence: Foreign/Second Language Learning

Griffiths and Sheen (1992), in their much debated article titled *"Disembedded Figures in the Landscape: A Reappraisal of L2 Research on Field Dependence/Independence"* severely criticize the idea of a possible connection between, in their words, "the so-called cognitive style of field dependence - independence" (p. 133) and learner achievements in second language learning, and they firmly concluded that the cognitive style of field dependence and independence was not, and had never been relevant for the school of second language teaching and learning. For Griffiths and Sheen, the theory of field dependence and independence is flawed, and embedded figures tests are only style measures—not a measure of ability. Those arguments, according to Chapple (1992), seem to "[confuse] fundamental theoretical and research issues" (p. 375); a vast body of research on the relationship between field dependence/independence and foreign/second language learning seem to agree with Chapple's spirited counter-criticism. Yet, the discernable inconsistencies among research findings in the literature highlight the need for more sufficient answers as to how individuals' cognitive styles govern, or at least influence, their language learning.

Dörnyei and Skehan (2005, pp. 602-603), after their review of various research findings about how field dependence/independence affects second language learning provided the following generalizations:

> i) Coefficients obtained have usually indicated a low correlation between [field dependence and field independence] indicated a low correlation between [field dependence and field independence] and language learning achievement.

> ii) Despite the claims that each different style has its advantages, the significant positive correlations are always in favor of the [field independence] style.
>
> iii) Not all studies report significant correlations.
>
> iv) The correlations are lowered when intelligence scores are partialed out, leading to the allegation that the [field dependence and field independence] interpretation of cognitive style is simply a disguised measure of intelligence.
>
> (Dörnyei & Skehan, 2005, pp. 602 - 603)

Brown (1987) believes that field-independence may be more desirable in a classroom-based second language learning while a field-dependent cognitive style—possibly due to field dependent learners' arguably more outreaching, social, communicative and emphatic dispositions—seems to pose more advantages in real-life language learning experiences in which the learner is surrounded by the target language. Tinajero and Paramo (1998) point out a significant positive correlation with language achievement and cognitive style. Their research concludes that reading, listening, writing, and grammar tests scores are positively correlated with field independence cognitive style. In the same vein, Stern (1991) indicates that field independent people's aptitude for being able to focus on individual items within a whole would help them with their language learning experiences. Stern, to exemplify how field independence can be beneficial in language learning, states that in language learning it is needed to comprehend language items within a context, and simultaneously, to notice some particular items out of that immediate context, or field, to be able to comprehend their paradigmatic relationships. Stern, moreover, believes that field dependent learners, compared to field independence ones, would have harder time understanding an ambiguous structure since they would not be able to recognize its possible multiple meanings.

Various other studies favor field independence for higher language learning achievement levels (Alptekin & Atakan, 1990; Hansen, 1984; Hansen & Stansfield, 1983; Carter, 1988). While Brown (2007) states that field dependence style would foster successful learning of communicative aspects of the target language thanks to social characteristics of field dependence individuals such as the empathy, social outreach, and perception of other people, he further adds that both field

independence and field dependence are necessary for successful language learning. Brown explains that natural language learning environments would favor field dependence style while formal educational settings field independence would be more preferable. Various research studies conducted in different corners of the globe provide a direct confirmation for Brown's claims as to how field dependence positively correlates with learners' communicative competence.

Salmani-Nodoushan (2006), for instance, recruited 240 junior and senior Iranian students all majoring in English, and reported a superior performance of field dependent participants in communicative skills after analyzing the relationship between the subjects' cognitive styles and their achievements in communicative language tests. Similarly, Carter's (1988) study which, as she states, "was conceived in response to both implicit and explicit assumptions found in the literature that a field independent (FI) cognitive style is more effective than a field dependent (FD) style for classroom study of another language" (p. 21), point out that field dependent Spanish language learners were found to be more advantageous for language learning. Johnson, Prior, and Artuso (2000) indicate that communicative oral proficiency of ESL students from the University in Toronto displayed a significant negative correlation between the GEFT scores of the participants and their communicative language competencies. Johnson, Prior, and Artuso also report a significant negative correlation with the participants' pragmatic competence and their GEFT scores. A myriad of other research studies analyzed the construct of field dependence/independence in relation to other language skills and seem to highlight field independence over field dependence for a more advantageous language learning experience.

Hwang (1997), for instance, investigated the correlation between field dependence and independence and speaking, listening, reading, and writing skills; Hwang reports a significant positive correlation between listening comprehension and field independence. Salmani-Nodoushan (2007) applied the GEFT to 1743 college students, all majoring in English. The study continued with the analysis of the IELTS scores of 582 field independent and 707 field dependent students. Salmani-Nodoushan says:

> Using SPSS commands for collapsing continuous variables into groups and participants' IELTS scores (based on the 25th, 50th, and 75th percentiles), four proficiency groups were identified for each cognitive style. From each proficiency group, 36 FD and 36 FI individuals were selected through a matching process. The resulting sample of 288 participants took the Task-Based Reading Test (TBRT) designed for the study. Data analysis revealed that individuals' cognitive styles resulted in a significant difference in their overall test performance in the proficient, semi-proficient, and fairly proficient groups, but not in the low-proficient group. The findings also indicated that cognitive style resulted in a significant difference in participants' performance on true-false, sentence completion, outlining, scanning, and elicitation tasks in all proficiency groups. (p. 82)

Chen and Yeh (2017) analyzed the type of language hints that learners enrolled in an academic English classroom prefer to use help themselves understand the target language. Researchers aimed to explore the effects of cognitive styles on learners' reactions to the use of hints in terms of learning behavior and learning performance. Chen and Yeh concluded that field dependents, referred as *holists* in their study, seem to choose synonym hints while *serialists*, field independents, have a stronger tendency to use Chinese hints when learning academic English. Chen, Lin, and Lin (2014) examined EFL students' progress in developing metaphoric competency and indicated that field dependent individuals seem to recall and learn more if their instructors adopt a conceptual approach to teaching English metaphors. They say, "for the FI participants, the instruction involving metaphoric mappings was more beneficial in raising their awareness of figurative language" (p. 704). For understanding figurative language, field independent students, on the other hand, benefited more from instructions including metaphoric mapping, a logical approach.

Some other studies in the literature, on the other hand, provide conflicting findings regarding the relationship between field dependence/independence and language achievement. Despite the mounting positive research findings, some seem to support Griffiths and Sheen's strict criticism. Wang (2014), for example, reported no meaningful correlation between field dependence/independence and pictorial complexity in EFL learning. Ellis (1990) found a weak or insignificant

correlation between the lexical, grammatical, and oral competencies of 39 German language learners and their cognitive styles. Bacon (1987), and similarly, Day (1984) found no meaningful relationship between the GEFT scores and language learners' grammatical, pragmatic, and socio-linguistic competence. Alimorad (2013) more specifically analyzed how, or if, English language learners' performance on cloze tests is affected by their cognitive styles. The study found no significant relationship between field dependence/independence and the subjects' test performances. In contrast, Khodadady, Fatemi, and Etminan (2012) reported a clear negative correlation between the GEFT scores and multiple choice cloze tests scores of English language learners.

Learning Styles

More than three hundred years ago, in 1689, John Locke in his work titled, *An Essay on Human Understanding*, writes, "Let us then suppose the mind to be, as we say, white paper, void of all characters, without any ideas" and continues by asking, "How comes it to be furnished?" (Ariew & Watkins, 2009). While this tricentennial statement has much to debate, the question it presents has inarguably been the attention of all educational disciplines. From philosophical schools of ancient Greece to digitized contemporary educational institutions, various philosophers and researchers have aimed at exploring the enigmas of the ways in which learning in different areas takes place. The concept of individually differing learning, or individual learning styles, can be traced back to the ancient Greek physician Hippocrates, who categorized personality types into four groups: the Melancholic, the Sanguine, the Phlegmatic, and the Choleric (Ouellette, 2000). This Hippocratian perspective is embraced in every sphere of educational world since every individual, according to Skinner (1954), seemingly has varying ways of processing and structuring information, which are composed of their learning styles, a term that is, as mentioned earlier in this chapter, often used interchangeably with *cognitive style*. This interchangibility is, as Heineman (1995) argues, due to an apparent terminology confusion or ambiguity among researchers. In general, though, the former is a broader term which comprises the fields of cognitive learning style, affective style, and physiological style (Dörnyei, 2005; Parry, 2000). Liu and Ginther (1999) point out that these two terms, cognitive style and learning style,

differ from each other in terms of their core aspects; while the former has more of a bipolar nature, the latter is not necessarily about “either/or extremes” (para. 5).

There is abundant amount of definitions for the term learning styles in the literature, many of which visibly has a terminological overlap with the definitions suggested for cognitive style. Learning style, as Brown (2007) points out, refers to “consistent and … enduring tendencies or preferences within an individual … which differentiate [people] from someone else” (p. 119). For Keefe (1979), learning styles are “cognitive, affective, and physiological traits” and they, according to Keefe “are relatively stable indicators of how learners perceive, interact with, and respond to the learning environment” (p.4). Dunn and Dunn (as cited in Reid, 1987) define it as “a term that describes the variations among learners in using one or more senses to understand, organize, and retain experience” (p. 89). In Scarcella and Oxford’s (1992) words, learning styles are particular “actions, behaviors, steps, or techniques—such as seeking out conversation partners, or giving oneself encouragement to tackle a difficult language task—used by students to enhance their own learning” (p. 63). According to Dunn, learning style is a “biologically and developmentally imposed set of characteristics that make the same teaching method wonderful for some and terrible for others” (Dunn & Griggs, 1988, p. 3). Despite the confusing diversity in its definitions, individual learning differences, as argued by Sternberg and Zhang (2001), have traditionally been perceived as the determining factor for individuals’ success or failure by many psychologists and educators. Therefore, exploring the concept of learning styles and how people handle information have an importance for both psychologists and educational practitioners as certain learner characteristics interrelate with the outcomes of the learning experience and with the way instruction is carried out (Jonasses & Grabowski, 1993). Explored both theoretically (Sadler-Smith, 2001) and in practice (Joy & Kolb, 2007), learning styles remains as one of the most commonly studied areas in learning research. Similarly, Green (1999) notes that it, in the world of educational research, has long been known that students populating the same classrooms possess different learning styles and further posits that if learners’ individual dichotomies are addressed, their academic performance levels will increase. This perception has made its way deep into second and foreign language teaching, and individual differences are now believed to be a foundational concern

in language. Indeed, individual differences, in Dörnyei's (2005, p. 2) words, seem to be the "most consistent predictors of second language learning success, yielding multiple correlations with language attainment in instructed settings within the range of 0.50 and above". "No other phenomena investigated within SLA", as Dörnyei (2005) notes, "have come even close to this level of impact" (p. 2).

Oxford (2001) states that learning styles are among the most operative determining factors that govern "how – and how well" learners learn a foreign language (p. 359). There have been studies indicating that certain learning styles might be more essential than intelligence in one's learning experience (Dembo, 1977, for instance). Additionally, Dunn, Dunn, and Price (1997) believe that the more language educational practitioners know about learner's learning preferences, the easier it would be to create learning-friendly environments for language learners. That is probably why the attempts to spot particular characteristics in learners' learning styles that either "enhance or hinder progress in learning another language" to develop a new model in second language education are not newfangled at all (Hansen & Stansfield, 1982, p. 263).

Dunn and Dunn (1999), who consider learning style as "the way each person begins to concentrate on, process, internalize, and retain new and difficult academic information" (p. 11), posit that same instructional settings, methods, and materials seem to be helpful for some learners and totally futile for some others—depending on "the degree to which each person learns differently from other people" (pp.11-12). Table 5 outlines Dunn and Dunn's five stimuli that affect the individual's ability to acquire new information and the elements within these five stimuli.

Table 5

Stimuli Affecting the Individual's Ability to Acquire New Information

Environmental	Emotional	Sociological	Physiological	Psychological
Sound	Motivation	Self	Perceptual	Global
Light	Persistence	Pair	Intake	Analytic
Temperature	Responsibility	Peers	Time	Hemisphericity
Design	Structure	Team	Mobility	Impulsive
		Adult		Reflective
		Varied		

David Kolb's 1984 book, Experiential learning: Experience as the Source of Learning and Development, is commonly considered as the launching movement for learnings styles research. Kolb states (2014, p. xvii) that "Experimental Learning Theory was developed following Lewin's plan for the creation of scientific knowledge by conceptualizing phenomena through formal, explicit, testable theory". In his book, Kolb unifies the contributions and insights of various prominent scholars of the 20th century such as William James, John Dewey, Kurt Lewin, Jean Piaget, Lev Vygotsky, Carl Rogers, and others (Kolb & Kolb, 2012). Kolb says that learning is "the process whereby knowledge is created through the transformation of experience", and adds, "knowledge results from the combination of grasping experience and transforming it" (Kolb, 1984, p. 41). According to Kolb, experimental learning has the following characteristic features:

- Learning is best conceived as a process, not in terms of outcomes,
- Learning is a continuous process grounded in experience,
- Learning requires the resolution of conflicts between dialectically opposed modes of adaptation to the world,
- Learning is a holistic process of adaptation to the world,
- Learning involves transactions between the person and the environment, and
- Learning is the process of creating knowledge.

Having been constructed with these notions in its foundations, *The Kolb Learning Inventory*, as Lum (2006) says, explains "an experimental cycle of learning

with four dimensions consisting of concrete experience, reflective observation, abstract conceptualization, and active experimentation" (p. 115): Accommodator, diverger, converger, and assimilator:

> Accommodators [concrete, active] rely on concrete experience and active experimentation, learn from "hands on" experience and rely heavily on other people for information. Divergers [concrete, reflective] learn from concrete experience and reflective observation. Assimilators [abstract, reflective] combine abstract conceptualization and reflective observation, understand a wide range of information and are more interested in abstract ideas and concepts. Convergers [abstract, active] utilize abstract conceptualization and reflective observation, find practical uses for ideas and theories, deal with technical tasks and are less interested in social and interpersonal issues. (p. 115)

Figure 4 illustrates Kolb's learning styles and learning types:

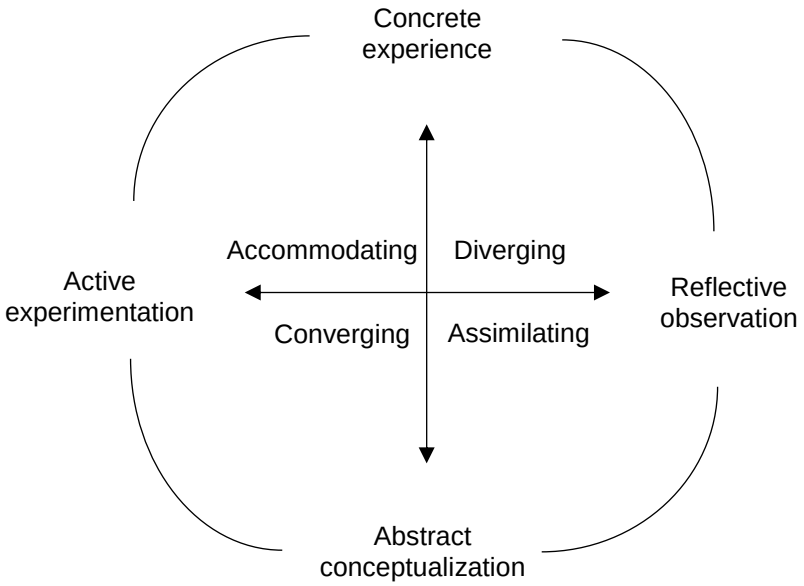

Figure 4. Kolb learning styles. Adapted from Sharp (2006, p. 95).

Zull (2002) suggests that spiraling process of experimental learning is correlated with the functioning process of human brain and therefore sees a direct link between Kolb's Experimental Learning and neuroscience. He, in his book titled *the Art of Changing the Brain: Enriching Teaching by Exploring the Biology of Learning*, illustrates his idea with the following figure.

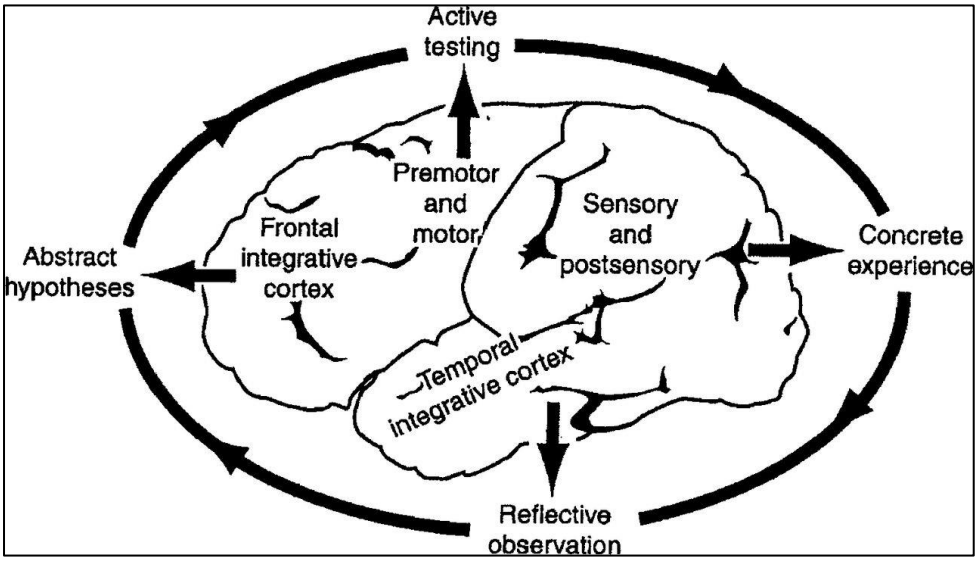

Figure 5. The experiential learning cycle and regions of the cerebral cortex (Zull, 2002).

Zull (2002, p. 18) says,

> Concrete experiences come through the sensory cortex, reflective observation involves the integrative cortex at the back, creating new abstract concepts occurs in the frontal integrative cortex, and active testing involves the motor brain. In other words, the learning cycle arises from the structure of the brain.

Some scholars, such as Smith (2001) on the other hand, criticizes Kolb's model and points out that Kolb's Model has a lack of attention to reflection, does not recognize cultural factors, and is not supported by empirical data, and adds that its applicability to adolescent learners is dubious. *The 4MAT System*—a four-step model developed by Bernice McCarthy in 1985—is, as Nicoll-Senft and Seider (2010) state, based on Piaget's Cognitive Development Theory, Dewey's Experiential Education, Kolb's Experiential Learning Theory, Jung's Personality Theory, and on the Split-Brain Theory. McCarthy's 4MAT System was predominantly inspired by Kolb's learning style and adopts its very same experimental learning cycle idea. The 4MAT System puts learners into four different types of learning styles. These are analytic learners, common sense learners, and dynamic learners. Table 6 summarizes the aspects of these four learner types:

Table 6

4MAT Language Style Inventory

Learning Style Inventory	
Innovative Learners	understand information better when presented in a concrete manner
	process information reflectively
	like sharing ideas with others
	are imaginative thinkers
	rely on experience
	would rather listen than talk
	need to be personally involved often do not
	seek meaning and clarify
Analytic Learners	understand information better when presented in an abstract manner
	process information reflectively
	learn by thinking through ideas
	value sequential thinking
	are task oriented
	do not like sharing feelings
	are uncomfortable with the subjective
Common Sense Learners	understand information better when presented in an abstract manner
	process information actively
	prefer verbal over written communication
	are quick to communicate
	integrate theory and practice
	learn by testing and applying theories
	are problem-solvers and resent being given answers
Dynamic Leaders	understand information better when presented in a concrete manner
	process information actively
	integrate experience and application
	share personal feelings and beliefs
	believe in self-discovery
	often digress in conversation
	learn by trial and error
	are enthusiastic about new things
	adapt to change
	are flexible
	often reach accurate conclusions in the absence of logical justification

(Chen, 2006, p. 27)

Having been adopted by more than 300 publications, as noted by Dunn and Griggs (2003), perhaps, one of the most widely studied learning style constructs is

the multidimensional conceptual model proposed by Dunn and Dunn in 1974: The Dunn and Dunn Learning Model of Learning Styles. The Dunn and Dunn Learning Style Model is built upon the theory that every individual can learn and that every individual has unique strengths and weaknesses (Mitchel, 2009). The Dunn and Dunn Model of Learning Styles includes 21 biological and developmental factors that influence learning. Dunn (1996) explains that:

> Learners are affected by: (a) their immediate environment (sound, light, temperature, and furniture/seating designs); (b) their own emotionality (motivation, persistence, responsibility [conformity vs. nonconformity], and need for either externally imposed structure or the opportunity to do things their own way); (c) sociological preferences (learning alone, in a pair, in a small group, as part of a team, with an authoritative or collegial adult, and wanting variety as opposed to patterns and routines); (d) physiological characteristics (perceptual strengths, time-of-day energy levels, and need for intake or mobility while learning); and (e) processing inclinations (global/analytic, right/left, and impulsive/reflective). (p. 225)

Having been studied in dozens of educational intuitions around the globe, research states that learners with an awareness of their preferred learning styles perform higher levels of achievement and retention (Rochford & Mangino, 2006).

Dunn, Dunn, and Price (1985) introduced what is called *The Learning Styles Inventory* (LSI), the first comprehensive approach to assessing an individual's preferred or dominant learning style in accordance with the components included in the Dunn and Dunn Learning Style Model. The LSI evaluates the environmental, emotional, sociological, and physical preferences of students. The environment strand of LSI focuses on learners' preferences and lack of interest in room design, sound, heat, light. The emotional strand, on the other hand, includes preferences for "motivation, responsibility, persistence, and structure. The third strand, sociological preferences, refers to being self-oriented, peer-oriented, adult-oriented or varied groupings; while the physiological one, the last strand, has the elements of perceptual preferences, (auditory, visual, tactile, or kinesthetic) time of day, intake, and mobility (Schiering, Bogner, & Buli-Holmberg, 2011).

Based on phenomenological methodology, Gregorc (2007) created the *Gregorc Style Delineator* in which he names four learner types: *concrete sequential*, who prefers highly organized, sequential lessons, concrete materials; *concrete random*, who prefers hands-on trial and error approaches, constructivist and problem solving activities; *abstract sequential*, who prefers reading and analysis, lectures and discussion; and *abstract random*, who is compatible with a humanistic teaching style and prefer, as Butler (1987) explains, to focus on themes, ideas, feelings and activities that allow for group interaction and communication (Gregorc, 2007). As Gregorc explains, the inventory, nevertheless, is applicable only to adults, and some of the terms might not be related to adolescents.

Reynolds, Riegel, and Torance's (1977) theory on learning styles focuses on specific functions of the cerebral hemispheres. From their perspective, learning styles is defined as the ways that individuals choose to process information and is categorized into three main groups. The first one is left-dominant information processing which is associated with being active, verbal, analytic, and logical. The second one, the right dominant one, on the other hand, is about being more receptive, nonverbal, spatial, and intuitive. The last style, whole-brained, is about complementary, integrated, simultaneously left and right information processing. Hence, according to Reynolds, Riegel, and Torrance (1977), a right-brain dominant individual may possess innate abilities to comprehend abstract concepts whereas a left-brain dominant learner might have better skills in constructing meaningful connections among scientific constructs. Dunn and Griggs (2000, p. 8) believe that since every individual's different biological developmental and psychological experiences affect his/her learning in a different way, a multidimensional model to study the multifaceted concept of learning is needed to be able "to reflect all these individual differences coming from each person unique individual background". To understand those individual differences, one of the most commonly referred learning style model is VARK, an acronym for visual, aural, read/write, and kinesthetic preference modalities.

An extension of the earlier neuro-linguistic model (Eicher, 1987), the VARK inventory classifies four sensory modalities: While visual learners, the "V" prefer diagrams, pictures, flow charts, graphs, flow to depict and to process information, the "A", aural learners process information best by listening to lectures, attending

tutorials, CDs; individuals with this aural preference like to “think out loud and to talk about the information. Read/write learners, on the other hand, prefer to process text-based information presented in the form of words and like to take notes verbatim. They, in short, like to see written words. Lastly, individuals with kinesthetic learning preferences, the “K”, like to deal with new information through practice by experiencing something themselves or through demonstrations and simulations (Fleming, 2001). VARK, according to Fleming (2001), is not considered an actual learning style because it is basically related to individuals’ preferences regarding incoming information and outgoing communication, and their preferences do not necessarily mean their strengths. A person with visual preferences, in other words, might also benefit from aural input.

In theory, as Maghsudi (2007, p. 3) indicates, there might be as many learning styles as there are learners; Reid (1995), however, divides them in three major categories: cognitive learning styles, sensory learning styles, and personality learning styles. Studying all these learning styles have promising potentials to explain the inequality in, what Lardiere (2006) calls, *the ultimate attainment* of foreign language learners. In Reid’s (1995) classification, *Cognitive Learning Styles* include the following: Field-Independent/Dependent Learning Styles (FI/D), Analytic/Global Learning Styles, Reflective/Impulsive Learning Styles. *Sensory styles*, according to Reid, on the other hand, can be divided into the following subcategories: a) *Perceptual Learning Styles*—which includes auditory learners, visual learners, tactile learners, kinesthetic learners, haptic learners; b) *Environmental Learning Styles,* under which physical learners and sociological learners are found. Finally, what Reid calls *Personality Learning Styles* refer to the following:

- Myers-Briggs Temperament Styles
    - Extroversion/Introversion
    - Sensing/Perception,
    - Thinking/ Feeling,
    - Judging/ Perceiving
- Tolerance of Ambiguity Styles
    - Tolerant Learners/ Intolerant Learners

- Right-and Left-Hemisphere Learners

Myers-Briggs Temperament Styles has its roots in Carl Gustav Jung's theory of psychological types. Jung's categorization of different personality types is summarized in Table 7 (Silver & Hanson, 1996, pp. 27 – 36).

While Moran (1991) states that learning styles can be categorized in at least 21 different models, possibly referring to Dunn and Dunn Learning Model, Gezmiş and Sarıçoban (2006), in their thorough review of learning styles, categorize the learning styles into 22 different dimensions including:

- active
- reflective
- sensing
- intuitive
- visual
- verbal
- auditory
- sequential
- global
- extrovert
- introvert
- thinking
- feeling
- judging
- field dependent
- field Independent
- tactile
- kinesthetic
- dynamic
- innovative
- common sense learners
- pragmatist

Table 7

Jung's classification of personality types

Sensing	Intuiting
• interested in facts • focuses attention on the here and now, what is • prefers verbal directness • tries to complete work as quickly as possible • wants to achieve immediate tangible results	• interested in ideas • focuses attention on the future and what could be • prefers elaboration, metaphoric expression and poetry • works continuously when interested in what they are doing • wants to achieve important new solutions to long-range problems
Thinking	**Feeling**
• makes decisions impersonally based on logical analysis • responds to logic, reasons, and truth • likes to figure things out before taking action • exhibits consistent and predictable behavior	• makes decisions on personal feelings • responds to his own and other people's likes and dislikes • tends to be spontaneous: may be "way up" or "way down" work is scattered, sometimes messy, and unorganized
Introversion	**Extroversion**
• likes quiet for concentration • likes to work alone • generally reluctant initially to share feelings and information • thinks, contemplates extensively before taking action • tends not to mind working on one project for long periods of time • dislikes interrupts • careful with details • prefers to listen	• likes variety and action • likes to work with others • open; eager to share feelings and information • acts/reacts quickly to new situations or new challenges • tends to be impatient with long-term tasks • doesn't seem to mind interruptions • tends to dislike complicated procedures • prefers the interaction that comes in talking with others

Styles: Stable or Flexible?

Sadler-Smith & Smith (2004) believes that learners seem to possess different ways to acquire knowledge, and they are able to differentiate their information processing approaches based on the demands of situations they face. Similarly, and more specifically, Witkin and Goodenough (1981) report that both field dependent and field independent individuals have adaptable qualities that seem to function differently based on circumstances they face. This adaptability sets the stage for one of the most passionate debates in teaching and learning literature, with some claiming that cognitive styles are stable traits; they resist external stimuli and environmental influences (Robertson, 1985; Kirton, 1989; Clapp, 1993) and some asserting that they are temporary or malleable *states*.

Timm (1999), for example, points out that the concepts of learning and cognitive style are not stable because empirical evidence, according to Timm, shows that learners apparently are able to tailor their styles based on the task and situations they encounter. Leonard, Scholl, and Kowalski (1999) and Hayes and Allison (1998), in a similar vein, assert that cognitive style is malleable and can be modified or improved with style training. Kolb suggests that foreign language learners seem to have a style which is more dominant than the other styles they have in their mental repertoire, but their styles are not fixed; they are capable of enjoying different learning styles within different learning setting (Kolb & Kolb, 2008). Similarly, Oxford and Lavine (1991) posits that learners' altering or switching learning styles totally might not be possible, "but it is possible for a learner to stretch his or her learning style by adopting new, less comfortable strategies as necessary to fulfill a given learning goal" (p.102). This has positive outcomes for learning experiences, according to Chapelle and Roberts (1986) and Oxford, Ehrman and Lavine (1991), because flexibly adopting their learning styles and using different ways of acquiring the target information is one of the common characteristics of good language learners. Jones and Reichard (2003) define this style adaptability as *style flexing,* meaning that no matter how the knowledge is presented, learners can, if their styles are flexible, process and acquire it. However, they further question: if the concept of *style* possesses such a flexibility and can be situationally adopted by the learners, how can it be possible to for a researcher to reliably test and clearly

identify it? While this concern remains mostly unanswered, various attempts to identify and differentiate the style domains that seem to be more prone to external stimuli from the one(s) that seem to be relatively stable, the most well-known of which is Curry's (1983) *Onion Model*.

Curry (1983), in order to organize the of style labels in the literature, offered, what she called *the onion model*, a metaphoric multilayered interpretation of cognitive and learning styles (Figure 6). Curry's model suggests that the outer a layer the more malleable since it "interacts most directly with learning environments; learner expectations; teacher expectations and other external features" (Curry, 1983, p. 8). The innermost area is called cognitive personality style, and it "refers to the individual's approach of assimilating and adapting information … [it] does not directly interact with the environment … [and it] is a function of the deep, more permanent personality" (Cools & Bellens, 2012, p. 455). Zhang (2005) concludes that there is a lack of consistent data in the literature, and therefore research is not able to verify if cognitive style is stable or flexible, Kozhevnikov, Evans, and Kosslyn (2014) believe that "the idea that cognitive style is an adaptive system that is constrained by basic processes invites a novel approach to understanding cognitive styles" (p. 4).

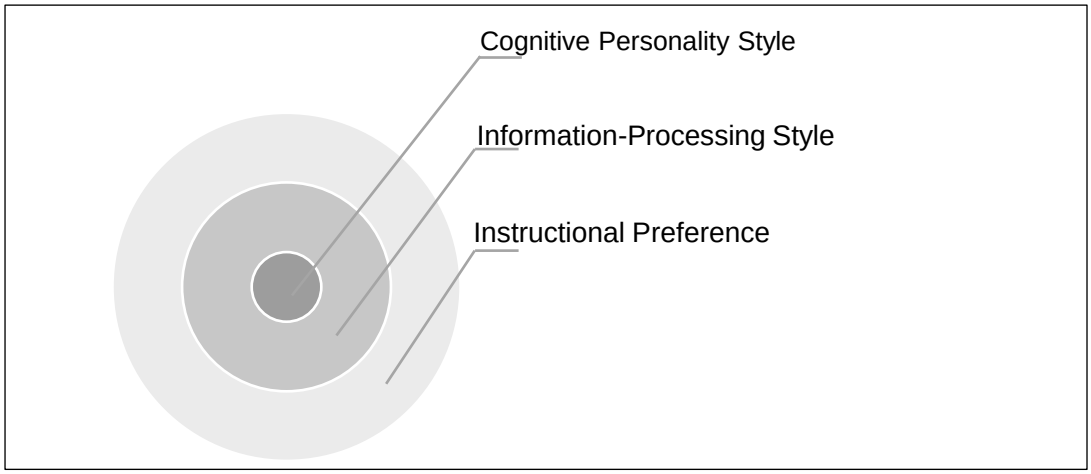

Figure 6. The onion model. Adapted from "An Organization of Learning Styles Theory and Constructs", by L. Curry, 1983, *Paper presented at the Annual Meeting of the American Educational Research Association*, p. 8.

Language Learning Strategies

> *Your hands alone are not enough; you need objects to grasp. Moreover, as you reach for an object, whether a pen or a ball, you shape your hand to assure a good grip. And you need to learn to handle different objects appropriately—you don't pick up a baby in the same way you pick up a basket of laundry.*
>
> (Perkins & Salomon, 1989 as cited in Gu 2012, p. 325)

Perkins and Salomon's analogy succinctly summarizes the notion of and the need for second language learning strategies—one other determining factor that seems to have potential answers' to Locke's aforementioned question is language learning strategies, a research area that dates back to mid-1970s (Grenfell & Macaro, 2007). O'Malley and Chamot (1990) say that the literature on language learning strategies in the field of second language learning arises from the search for classifying the characteristics of successful language learners; a voluminous amount of research shows that successful language learners are found to be making a more frequent use of learning strategies to facilitate their learning experiences compared to less proficient language learners. Researchers seem to have some differences in their understanding of the definition of learning strategies. Oxford (2001) explains that second language learning strategies are certain actions or "thought processes" that individuals utilize to foster their own language learning experiences (p. 362), and according to Ellis (1994, p. 529) strategies are "consisted of mental or behavioral activity related to some specific stage in the overall process of language acquisition or language use". Rubin (1975) believes that learning strategies are "the techniques and devices" that an individual may utilize "to acquire knowledge" (p. 43). Strategy, according to Stern (1983), is "best reserved for general tendencies or overall characteristics of the approach employed by the learners, leaving techniques as the term to refer to particular forms of observable learning behavior" (p. 405).

Another difference among researchers is visible in what meaning they attribute to the terms, strategy, technique, and tactic. Bialystok (1983) highlights this concern and indicate that the terms *strategy*, *technique*, and *tactic* are interchangeably used by various researchers, implying a lack of consensus in the

literature regarding what is understood by each of these terms. Cohen (1998) suggests that “a solution to the problem would be to refer to all of these simply as *strategies*, while acknowledging that there is a continuum from the broadest categories to the most specific level” (p. 10). A third dichotomy among scholars, as noted by Cohen (1998), is about whether strategy use is a conscious phenomenon or not. Cohen says that language learning strategies are not fully unconscious since learners can identify and explain them if asked and argues that this differs strategies from *processes*, fully unconscious phenomena of which learners are fully unaware. These ambiguities imply that “there is no complete agreement on exactly what strategies are; … how they should be defined, demarcated, and categorized” (Oxford, 1990, p. 17). For Oxford, a particular strategy is of neutral value. A strategy is positive only if it

- relates well to the L2 task at hand
- fits the particular student’s learning style preferences to one degree or another
- the student employs the strategy effectively and links it with other relevant strategies (Oxford, 2001, p. 362).

According to Oxford (1990, p. 9), the features of language learning strategies:

1. contribute to the main goal, communicative competence,
2. allow learners to become more self-directed,
3. expand the role of teachers,
4. are problem-oriented,
5. are specific actions taken by the learner,
6. involve many aspects of the learner, not just the cognitive,
7. support learning both directly and indirectly,
8. are not always observable,
9. are often conscious,
10. can be taught,
11. are flexible, and
12. are influenced by a variety of factors.

Bialystok (1978) provides one of the earliest studies on language learning strategies and suggests the following four different categories for language learning strategies:

- Formal practicing
- Functional practicing
- Monitoring
- Inferencing

According to Bialystok, the first two strategies aim at increasing exposure to target language; while *formal practicing* focuses on language structures and linguistic and grammatical properties of target language, *functional practice* includes learners' attempts to use language in more communicative purposes such as interacting with a native speaker of the target language and focuses on the meaning of the utterance rather than the form of it. The last two strategies, *monitoring* and *inferencing*, focus correspondingly on modifying and improving the output of the learner and adapting a previously-unknown language form or use.

Tarone (1980), who considers language learning strategies as learners' efforts to develop linguistic and socio-linguistic competencies in another language, believes that learners employ different strategies in the process of language learning and while using the language for communicative purposes. Thus, she groups language learning strategies in two main categories: *strategy of language use* and *language learning strategy*. Two sub-strategies under the former are *communication* and *production* strategies. "A mutual attempt of two interlocutors to agree on a meaning in situations where requisite meaning structures do not seem to be shared" is what communication strategy is, according to Tarone (p. 419), and the examples of which include paraphrasing, transferring, and avoidance. The latter, production strategy, is defined as "an attempt to use one's linguistic system efficiently and clearly, with a minimum of effort (p. 419) such as simplification, rehearsal, and discourse planning (Ellis, 1994).

In a similar vein, Rubin (1981) puts strategies in two different categories: the ones that directly contribute to language learning and the ones that do it indirectly. Rubin (1987) later extended her categorization and named three types of strategies that contribute directly or indirectly to language learning. Rubin's classification

includes *learning strategies*, *communication strategies*, and *social strategies*. Rubin divides learning strategies into two: Cognitive Learning Strategies and Metacognitive Learning Strategies. While the former refers to the actions taken “in learning or problem-solving that require direct analysis, transformation, or synthesis of learning materials” (p. 23), the latter is utilized to “oversee, regulate or self-direct language learning” (p. 25). Rubin further divides cognitive learning strategies into 6 subcategories (See Table 8). While Rubin’s communication strategies are used by speakers when they encounter with some difficulty or a misunderstanding throughout communication, social strategies are those activities learners use to provide themselves with chances to practice their language skills.

Table 8

Rubin’s cognitive strategies

Cognitive Learning Strategies	Examples
Clarification / Verification	Asking for an example of how to use a word or expression, repeats words to confirm understanding.
Monitoring	Corrects errors in own/other's pronunciation, vocabulary, spelling, grammar, and style.
Deductive Reasoning	Compares native/other language to target language; Groups words; looks for rule of co-occurrence.
Practice	Experiments with new sounds; Repeats sentences until pronounced easily; listens carefully and tries to imitate.
Memorization	Takes notes of new items, pronounces out loud, finds a mnemonic, and writes items repeatedly.
Guessing/Inductive Inferencing	Guesses meaning from key words, structures, pictures, context, etc.

Probably the most well-known language learning strategy taxonomy is that of Oxford. Oxford’s taxonomy of language learning strategies—which is “the most comprehensive classification of learning strategies to day” according to Ellis (1994, p. 539)—is summarized in Table 9 and Table 10.

Table 9

Oxford's Strategy Classification: Direct Strategies

Direct Strategies	Description
I. Memory Strategies	A. Creating mental linkages grouping • associating/elaborating • placing new words into context B. Applying images and sounds • Using imagery • Semantic mapping • using keywords • representing sounds in memory C. Reviewing well • structured viewing D. Employing action • using physical response or sensation • using mechanical techniques
II. Cognitive Strategies	A. Practicing • Repeating • Formally practicing with sounds and writing systems • Recognizing and using formulas and patterns • Recombining • Practicing naturalistically B. Receiving and sending messages strategies • Getting the idea quickly • Using sources for receiving and sending messages C. Analyzing and reasoning • Reasoning deductively • Analyzing expressions • Analyzing contrastively (across languages) • Translating • Transferring D. Creating structure for input and output • taking notes • summarizing • highlighting
III. Compensation strategies	A. Guessing intelligently • Using linguistic clues • Using other clues B. Overcoming limitations in speaking and writing • Stitching to mother tongue • Getting help • Using mime and gestures • Avoiding communication partially or totally • Selecting the topic • Adjusting or approximating the message

Table 10

Oxford's Strategy Classification: Indirect Strategies

Indirect Strategies	Description
I. Metacognitive Strategies	A. Centering your learning • Overview and linking with already known material • Paying attention • Delaying speech production to focus on listening B. Arranging and planning your learning • Arranging and planning your learning • Finding out about language learning • Organizing • Setting goals and objectives • Identifying purpose of language task • Planning for language task • Seeking practice opportunities C. Evaluating your learning • Self-monitoring • Self-evaluating
II. Affective Strategies	A. Lowering your anxiety • Using progressive relaxation, deep breathing or meditation • Using music • Using laughter B. Encouraging yourself • Making positive statements • Taking risks wisely • Rewarding yourself C. Taking your emotional temperature • Listening to your body • Using a checklist • Writing a language learning diary • Discussing your feelings with someone else
III. Social Strategies	A. Asking questions • Asking for clarifications or verification • Asking for correction B. Cooperating with others • Cooperating with others • Cooperating with proficient users of the new language C. Empathizing with others • Developing cultural understanding • Becoming aware of others' thoughts and feelings

Oxford's strategy classification system (adapted from Brown, 2001, pp. 141 – 142)

According to Oxford, principles included in memory strategies (also known as mnemonics) are based on making associations between new information and existing or background knowledge. It is this meaningful association that enable learners to code newly learnt information in the long-term memory so it can be

retrieved when needed for communicative purposes. Learners using memory strategies also group interrelated and meaningful pieces of target information; Oxford believes that meaningful classification “make the material easier to remember by reducing the number of discrete elements" (Oxford 1990, p. 40). Memory strategies particularly help learners when they encounter lexically challenging learning experiences. Oxford states that memory strategies seem not to be employed frequently when learners develop a proficiency level higher than elementary in target language.

Cognitive strategies are considered to be the most frequently used one among language learning strategies. Cognitive strategies refer to a group of cognitive processes including analyzing expressions, making translations, summarizing, and note taking. Yang (2005) claims that cognitive strategies are the most important strategies affecting learners’ abilities and independence. Oxford (1990) indicates that learners using cognitive strategies commonly choose a deductive way of reasoning and decode new expressions by breaking them down into smaller pieces. They also usually engage in making grammatical, phonological, and lexical comparisons, analyze the new information, detect its patterns, combine it with previous knowledge, and make interlingual translations as necessary. According to Rubin (1981), one common characteristic among good language learners is deductive reasoning to interpret new information by breaking it down into its smaller units.

Compensation strategies, as noted by Oxford (1990) include strategies such as guessing unknown words during listening or reading, and using circumlocution in speaking and writing. To be able to make correct guesses, learners use linguistic (i.e., similarities between the target language and mother tongue) and non-language-based cues (i.e., general word knowledge). Learners also might choose to avoid having a conversation or certain linguistic patterns in a conversation when difficulties are foreseen. Some recent studies (Afshar & Movassagh, 2017; Dehghannezhad & Mahmoodi, 2015) highlight the direct relationship between the use compensation strategies and levels of critical thinking ability. It should be this high-level-thinking skill that enables the users of this strategy to, as a compensatory tool, even coin new words in the target language to keep on using the language. Reasons behind individuals’ engaging in compensation strategies is a phenomenon

widely studied in other research fields, too. From a psychoanalytic perspective, for example, the reason why individuals adopt compensation strategies is to counter-balance weaknesses and insufficiencies that are real or assumed to be real in order to maintain self-images and fight anxiety (Jones-Smith, 2011; Miceli & Castelfranchi, 2012). Studies conducted in Clinical Psychology indicate that the use of compensation strategies is frequently seen among high self-esteem individuals (Wood & Dodgson, 1996) and with the ones having inferiority and superiority complexes (Linden & Hewitt, 2011).

Metacognitive strategies, another group of strategies also associated with high levels of critical thinking (Livingston, 1997), are simply considered as learners' controlling their own cognition (Oxford, 1990). The Greek prefix meta- (μετα-) means "beyond", while the word "cognition", originally coming from the Indo-European root word, *gno*- (meaning *to know*—also the root for this very word), means "mental process of knowing" So the term metacognition or metacognitive means "beyond knowing" or "transcending the process of knowing". No wonder, thus, metacognitive strategies, according to Schmitt (1997), involve "a conscious overview of the learning process and making decisions about planning, monitoring, or evaluating the best ways to study" (p. 205)—which clearly necessitates utilization of some higher-order thinking skills. Through metacognitive strategies, learners engage in self-monitoring and self-evaluation. In short, metacognitive strategies cover strategies that learners employ in order to plan, monitor, and evaluate their learning goals and processes (Chamot & O'Malley, 1996). Affective strategies enable learners to have a control over their emotions and motivation; they further help them lower anxiety levels and encourage to take risks. Keeping a language learning dairy and sharing their feelings with somebody else such as a friend or the teacher are also some affective strategies that learners use to enhance their language learning experiences through keeping their emotional challenges under control.

The last group of strategies in the strategy taxonomy of Oxford is social strategies. Social strategies require learners to empathize and cooperate with others. Hsiao and Oxford (2002) indicate that certain metacognitive processes—including learners' self-regulating and self-monitoring their learning—and all higher-order cognitive processes (i.e., analyzing or synthesizing) are, according to the

Vygotskian theory, acquired through learners' social interactions with more proficient learners which, as Hsiao and Oxford state, provide learners with the necessary scaffolding which guides learners as they increase their proficiency levels in the target language. Griffiths and Oxford (2014), state that Oxford, in order to "eliminate overlap and encourage greater theoretical cohesion", refined this taxonomy and categorized all subskills under four main strategies resulting: cognitive, affective, sociocultural-interactive, and metastrategies (p. 5).

Chapter 3
Methodology

This chapter initially presents a brief summary of the previous chapter, and focuses on the methodology used in the current study. It reiterates the research questions for the convenience of the readers and presents an overview of the design, and describes the setting, the participants, the types of data collection instruments utilized, and explains data analysis procedures.

Introduction

Considering the large body of contradicting findings reported in the cognitive style literature, developing a better understanding of how and why field dependent and field independent participants' levels of achievement in different skills in English, the use of their language learning strategies, and their language learning preferences differ still needs further investigation. This study aims to contribute to a better understanding of the potential effects of field dependence/independence cognitive styles on language learning styles, language learning strategies, and levels of language achievement. The context selected for this purpose is an English-medium state university located in Turkey—where over three million students are enrolled in a higher education institution (Altınsoy, 2011). The contributions of this study to the literature, even at a modest level, is important since it is the first study focusing on all these variable together in an EFL/EAP context in Turkey.

Foreign language learning achievement, as foreign language teaching and learning research suggests, is vastly affected by learners' individual predispositions. Language learning strategies, though still lacking a commonly accepted definition, have been one of the main foci in the field of language learning due to their potential effects on second language learning (Oxford, 2008). A plethora of research shows that the amount of language learning strategies employed by the language learner is positively interconnected with the level of language achievement; the more language learning strategies used, the higher the achievement (Ardasheva, 2016; Chamot & Küpper, 1989; Hu, Gu, Zhang, & Bai, 2009; O'Malley & Chamot, 1990; Oxford, 1990). Language learning styles, similar to language learning strategies in terms of both being influential on language achievement and lacking a widely recognized definition, is another phenomenon which has been receiving much

attention in the second language teaching and learning research. The term learning style refers to “observable learner preferences in the learning environment” and “extensions of personality types and cognitive styles in the learning environment” in this study (Wu, 2010, p. 15). Brown (2007) explains learning styles as “consistent and … enduring tendencies or preferences within an individual … which differentiate [people] from someone else” (p. 119). Oxford (2001) argues that learning styles are among the most influential dynamics that govern “how – and how well” learners learn a foreign language (p. 359).

Keefe (1979) explains field dependence/independence as the degree to which a person adopts an “analytical as opposed to global way of experiencing the environment (p. 9). Chapelle and Green (1992) indicates that field dependence and field independence have an influential role not only on the way individuals identify and process information but also the way they relate with their surroundings. Individuals with a field dependent cognitive style seem to experience difficulty in unscrambling information from its contextual surroundings while the field independent ones seem to have less difficulty in performing the same task (Guisande, Paramo, Tinajero, & Almeida, 2007). Ellis (2008, p. 662) categorizes the variables that are commonly associated with field dependence and field independence and states that field independence is more commonly observed among males, adolescents, and individualistic people in urban-technological societies with free structures. Field dependence, on the other hand, is more frequent among children, females, and group-centered people and in rural societies with rigid social structures. Effects of field dependence and field independence on learners’ achievements is widely studied in different academic spheres. Much research shows that field independence and dependence have an influential role on learners’ academic performance in different disciplines (Alamolhodaei, 2009; Brannan, White, & Long, 2016; Cameron & Dwyer, 2005; Roberge & Flexner, 1983; Smith, 2002; Tinajero & Paramo, 1997; Thakur, 1992).

Restatement of Research Questions

The following research questions were used in this study:

1) Is there any effect of field dependence/independence on participants' level of achievements in different language skills in English?

2) Is there any effect of field dependence/independence on participants' preferred language learning styles?

3) Is there any effect of field dependence/independence on participants' use of language learning strategies?

Hypotheses

Based on these research questions, the following null hypotheses were formulated and will be tested in this study:

***H_0*1a.** There is no relationship between achievement levels in while-listening skills and field dependence/independence cognitive styles.

***H_0*1b.** There is no relationship between achievement levels in listening and note taking skills scores and field dependence/independence cognitive styles.

***H_0*2.** There is no relationship between achievement levels in reading skills and field dependence/independence cognitive styles.

***H_0*3.** There is no relationship between achievement levels in speaking skills and field dependence/independence cognitive styles.

***H_0*4.** There is no relationship between achievement levels in vocabulary skills and field dependence/independence cognitive styles.

***H_0*5.** There is no relationship between achievement levels in writing skills and field dependence/independence cognitive styles.

***H_0*6a.** There is no relationship between the use of memory strategies and field dependence/independence cognitive styles.

***H_0*6b.** There is no relationship between the use of cognitive strategies and field dependence/independence cognitive styles.

***H_0*6c.** There is no relationship between the use of compensation strategies and field dependence/independence cognitive styles.

***H*$_0$6d.** There is no relationship between the use of metacognitive strategies and field dependence/independence cognitive styles.

***H*$_0$6e.** There is no relationship between the use of affective strategies and field dependence/independence cognitive styles.

***H*$_0$6f.** There is no relationship between the use of social strategies and field dependence/independence cognitive styles.

***H*$_0$ 7.** There is no relationship between participants' preferred learning styles and field dependence/independence cognitive styles.

Setting and Participants

Gall, Gall, and Borg (2007) state that researchers who are working on quantitative studies seem to be inclined to choose a sample based on convenience or availability, making convenient sampling a frequently adopted method in exploratory studies (Chawla & Sodhi, 2011). Owing to its exploratory nature and logistical reasons, this study adopted a convenience sampling method; participants (*n* = 123) were comprised of a heterogeneous group of males and females with differing cultural and educational backgrounds between the ages of 19 and 23. They were recruited on a voluntary basis from an English for Academic Purposes (EAP) class at an English-medium state university, Middle East Technical University, located in Ankara, Turkey. All participants in this study are considered to have a degree of English ranging from upper-intermediate to advanced; they all finished a one-year English preparatory school offered by the Department of Basic English as a prerequisite for their departmental course.

The university where this study was conducted requires all students who are entitled to undertake their undergraduate or graduate studies there to provide a certified documentary evidence for their English language proficiency level and, for that reason, offers a standardized English proficiency exam in September as a part of the registration process. The Department of Basic English (n.d.) explains the purpose of the proficiency exam as "to determine whether the students' proficiency in English is at a level that will enable them to follow courses offered in their respective fields of study and fulfil the requirements of the courses with relative ease" (para.1) and further states:

> Thus, the [exam] is mainly concerned with assessing students' proficiency in reading and understanding academic texts, their ability to follow lectures, take notes and make use of these notes, as well as their competence in composing academic texts of varying length. Therefore, the main focus of the [exam] is English for Academic Purposes and it may well serve the needs of students in other English-medium universities, provided it is recognized by their institutions. (para. 1)

The exam is designed, administered, and scored by the School of Foreign Languages. Students who fail to score a minimum of 59.5 out of 100 are required to attend the English Preparatory School for two academic semesters—or until they meet the minimum language proficiency requirement—before they can pass onto their departments to start with their undergraduate studies; the ones with a score of 59.5 or more are exempted from attending the English Preparatory School. The proficiency exam is offered twice in a year: in September before/during the registration week and in June, at the end of each academic year. Those who score less than 59.5 in the proficiency exam are required to take a placement test, and are appointed to an appropriate level of the intensive English program at the beginning of the semester. Students may also choose to submit the scores of another, internationally or governmentally recognized, official language exam result certifying that their language proficiency level meets the minimum requirement.

The proficiency exam is given in two separate sessions in the morning and in the afternoon. The morning session consists of a 30 multiple-choice listening comprehension and 30 multiple-choice reading comprehension questions, and it takes approximately 120 minutes. In the afternoon session, test takers answer open-ended language use questions and complete a note-taking and writing part; this section of the exam takes around 120 minutes. Multiple-choice questions are scored electronically by computer based on the number of correct responses, and there is no penalty for incorrect answers. Free-response, paragraph writing, and open-ended questions, due to standardization and reliability concerns, are sequentially scored by two faculty members, and the average is taken as the final score. If the raters' score discrepancy exceeds the permitted range set for each free-response/open-ended component of the test, a third rater evaluates the disagreed response(s) and resolves the discrepancy.

Students who provide certified documentary evidence of having met one of the categories below are exempt from taking the aforementioned preparatory courses:

TOEFL IBT: 75

TOEFL PBT: 537

IELTS: 6

Students who finish or are exempt from the preparatory school are required to take two 4-credit Academic English classes, 4 hours a week: ENG101 in the fall semester and ENG102 in the spring semester offered by the Department of Modern Languages (DML). The participants of the current study were enrolled in 4 different ENG102 classes. Students with a score of 85 in the proficiency exam, 106 in the TOEFL IBT, or 8.0 in the IELTS are exempted from ENG101. None of the participants were exempt from ENG101 or from attending the intensive English programs.

In the course outline, Eng102 class is described by the DML as follows:

> English 102 is a learner-centered, integrated-skills based course that will develop students in the four skills (reading, writing, listening and speaking) in an academic context. Tasks involving higher order thinking skills will require students not only to perform at knowledge and comprehension levels, but to synthesize and evaluate information, ideas and judgments as well. The variety of texts and perspectives presented through themes in and outside the class will facilitate their critical thinking process and thus enable students to become active and autonomous learners.

The DML holds multiple standardization meetings regularly in which the instructors teaching the same course get together to discuss and grade different student performances in different tasks using the rubric(s) developed by the DML Syllabus Committee of that particular course in coordination with the department administration and the Testing Committee. Majority of the instructors hold an MA Degree and some have completed their doctorate studies; all attend in-house training sessions intermittently held in which colleagues and experts from other

institutions are also occasionally invited to share their insights and experiences (Vanlı, 2013).

Type of the Study

In this study, the researcher chose the quantitative research approach represented by questionnaires. Quantitative research is “educational research in which the researcher decides what to study; asks specific, narrow questions; collects quantifiable data from participants; analyzes these numbers using statistics; and conducts the inquiry in an unbiased, objective manner” (Creswell, 2008, p. 46). Both descriptive and inferential statistics are employed in quantitative studies. In research, descriptive statistics are used to describe trends in the data collected from settings or events using numerical terms (Creswell, 2008; Creswell, 2012). The data analysis process of this study includes descriptive statistics including mean, the standard deviation, the variance, and the range. In addition to descriptive statistics, inferential statistics were also included since, as Leedy and Ormrod (2005) claim, it is the inferential statistics which help researchers “make reasonable guesses about a large unknown population by examining the sample that is known” (p. 253). Inferential statistics are simply defined as “a collection of methods for making inferences about the characteristics of the population from knowledge of the corresponding characteristics of the sample” (Hinkle, Wiersma, & Jurs, 2003, p. 13). Conclusions were drawn about the concerned population through inferential statistics (Creswell, 2009). The *t*-test for Independent Samples was chosen as the main preferred method since the comparison was made between two independent groups. Also, when the data distribution was not found to be normal, the Mann-Whitney *U* Test was employed to compare mean scores of the independent variables. As Cohen and Lea (2004) state, the Mann Whitney *U* test is a common alternative employed by researchers when using an Independent Samples *t*-test to analyze data is not suggested due to violations of the assumptions of normality and constant variance. An *alpha* level of .05 was used for all statistical tests.

Different questionnaires were employed during the data collection process. While students’ level of field dependence/independence and preferences in their use of strategies in language learning were analyzed with questionnaires adopted from previous related research conducted in different settings, their language

achievement levels in English were determined by the scores they received in their in-class graded tasks and in the standardized midterm and final exams they took. In this study, the independent variables are field dependent and field independent cognitive styles and the dependent variables are participants' achievement level in English, their language learning strategy use, and preferred learning styles. The statistical analyses were conducted by using the SPSS software program.

Instrumentation

Two different inventories, Rebecca Oxford's Strategy Inventory for Language Learning (SILL) (Oxford, 1990) and the BIG16 Learning Modality Inventory designed by Şimşek (2002), were respectively employed to determine participants' use of language learning strategies and preferred learning styles in order to answer the research questions of the current study. Creswell (2009) indicates that survey design provides "quantitative or numeric explanations of trends, attitudes, or opinions of a population by studying a sample of a particular population", which help researchers "make generalizations about that population" (p. 146). In addition, participants' cognitive styles (field dependence or field independence) were identified according to their scores on the Group Embedded Figures Test (GEFT) (Witkin, Oltman, Raskin & Karp, 1971). The GEFT is the most commonly employed instrument to identify field dependence and field independence (Chen & Macredie, 2004), and is considered a valid instrument for this aim (Hall, 2000).

The Group Embedded Figures Test (GEFT). Administered in a limited amount of time, takers of the GEFT are expected to locate 8 simple figures placed in 25 complex figures on the GEFT booklet. Test takers' field dependence and field independence traits are determined by the number of figures they correctly spot. The GEFT test adopted in the current study was purchased by the researcher from Mind Garden Inc. located in California, the US. The GEFT booklet has three sections presenting 25 complex test figures in addition to two sample figures; in each section, test takers are expected to locate simple geometric figure embedded in more complex ones. The target simple figures were presented on the back cover of the instrument and the test takers were allowed to look at them as often as necessary. Test takers were given a total of 12 minutes to complete all sections. A two-minute time period is allocated for the first section which has seven simple practice items.

Participants were required to find the simple figure with the same exact size and direction as it was shown on the back cover of the GEFT booklet within the more complex figure.

The results of section I is not scored; it is only to orient test takers to the questions and the format of the instrument. The second and the third sections have nine figures each; participants were given five minutes to complete each of these sections. The final GEFT scores were calculated based on participants' answers for Section II and III (18 items total). Those who scored the national mean or higher than that (12-18) were categorized as field independent (Witkin, Oltman, Raskin, & Karp, 1971). Each section was administrated with strict timing and regulation. Test takers were not allowed to talk to or help each other during the test, and they were told to stop answering the test even if they had not completed all the items after the time allocated for each section. The validity and reliability of the GEFT was established by the developers of the instrument, and according to psychometric data provided in the test manual, the reliability of the GEFT is established as .82 by administering the parallel forms of the test with the same time limits (Witkin, Oltman, Raskin & Karp, 1971). In 2014, MindSpring®, the publisher of the GEFT, introduced a software-based version of the test, allowing it to be administered and scored electronically.

There are varying methods formulated to assess the GEFT scores in the cognitive style research. Many research studies in the field, including that of the very first creators of the adopted assessment tool, classify those who score 11 or more correct answers out of 18 on the GEFT test as field independent and field dependent if the number of correctly identified figured is 11 or less (Abraham, 1985; Cunningham, Ridley, & Campbell, 1988; Ling & Salvendy, 2009; Lusk & Wright, 1981; Raptis, Fidas, & Avouris, 2016; Saadatmanesh, 2013; Witkin, Oltman, Raskin, & Karp 1971; Yoo & Yoo, 2015); the current research study divides the participants into field dependent and field independent groups in the same method.

The Strategy Inventory for Language Learning (SILL). This study utilized the Turkish version of Rebecca Oxford's Strategy Inventory for Language Learning (SILL) (Oxford, 1990) adapted by Cesur and Fer (2007) to identify the participants' preferred language learning strategies. The results of the reliability analysis for the

Turkish for version of the SILL report a Cronbach's alpha reliability coefficient of 0.92 for the total scale, and Cronbach's alpha fluctuating between 0.59 and 0.86 on subscales (Cesur & Fer, 2007).

The SILL test, which was originally designed for the United States Army Defense Language Institute, has two different versions: a 50-item scale for those learning English as a second or foreign language, and an 80-item scale for native English speakers learning a second or foreign language (Oxford, 1990). This current study employed the former, which takes between 20 – 30 minutes and requires test takers to read a statement and choose the best response that describes their learning strategies in a Likert scale from 1 (never or almost never true of me) to 5 (Always or almost always true of me). Oxford and Burry-Stock (1995) indicate that the frequency of use for each strategy can be determined by the mean scores, and they suggest a division of three frequency levels: low frequency (mean score < 2.5), medium frequency (2.5 < mean score < 3.4), and high frequency (mean > 3.4).

The SILL test is divided into two major categories: direct strategies and indirect strategies. The former includes behaviors with direct manipulation of the target language; the latter, on the other hand, are considered to be supportive but they do not manipulate the language. Direct and indirect strategies are separated into three subcategories as follows:

Direct strategies:

1. *Memory strategies* for more efficient remembering (Part A, 9 items)
2. *Cognitive strategies* for assisting mental processes (Part B, 14 items)
3. *Compensation strategies* for compensating for missing knowledge (Part C, 6 items)

Indirect strategies:

1. *Metacognitive strategies* for organizing and evaluating one's learning (Part D, 9 items)
2. *Affective strategies* for managing emotions (Part E, 6 items)
3. *Social strategies* for learning with others (Part F, 6 items)

The BIG16 Learning Modality Inventory. The third and the last data collection tool utilized in this study is the BIG16 Learning Modality Inventory which was designed by Şimşek (2002). Inspired by Barsch's (1996) *Barsch Learning Style Inventory,* the BIG16 Learning Modality Inventory is implemented to classify the participants' prevailing learning style, and it could, as Şimşek states, be used in determining learning modalities of students at the ages between 16-25. The inventory consists of 48 statements and focuses on three learning modalities: visual, auditory, and kinesthetic. Şimşek (2002) states a Cronbach's alpha reliability coefficient of 0.84 for the total scale, 0.68 for kinesthetic subscale, 0.77 for auditory subscale, and 0.79 for visual subscale. Internal consistency for the present sample was as follows: Kinesthetic 0.69, auditory 0.67, and visual 0.70 with a total scale of 0.83. The reliability coefficient is .853 in the whole inventory. Test takers are expected to select one of the following options for each statement in each modality: "Strongly agree = 2", "Agree = 1", "Hesitant = 0", "Disagree = -1", "Strongly disagree = -2". Questions in the inventory corresponding to each learning modality is distributed as follows:

Visual modality: 2, 4, 6, 12, 14, 20, 25, 28, 30, 35, 36, 37, 40, 43, 46, 48.

Auditory modality: 1, 3, 8, 9, 13, 17, 21, 22, 26, 29, 31, 33, 39, 42, 44, 47.

Kinesthetic modality: 5, 7, 10, 11, 15, 16, 18, 19, 23, 24, 27, 32, 34, 38, 41, 45.

Many of the studies in the field of field dependence and independence seem to consider and utilize their participants' final course grades as sole indicator for their language proficiency level. It is true that a student's final grade is a compact summary of his or her overall achievement level. However, since language is a labyrinthine and inter-woven organism and many non-linguistic factors might potentially affect a final course grade, this study will analyze separate language skill covered in the classrooms which set the context of this study only. As mentioned earlier in the limitations part, because of reliability concerns, this study chose to exclude the grades that students received in the tasks that may potentially not be graded, due to the nature of those tasks, based on the standards set on the course rubrics. Second, in the end of the semester, when all the grades are calculated,

some instructors may choose to use discretion and may round up the total final grades at the end of the term by a percent or two. Such changes have potential to affect the final letter grade a student receives in the course.

Foreign Language Achievements Levels. The participants' course assessment scores for each course component analyzed in this study were obtained from the course instructors with the written consent of the students. Each in-class graded-task is scored by the course instructor based on the departmentally-set criteria presented on the rubrics—except for the midterm and final exams. The Department of Modern Languages (DML) requires all students enrolled in the same course to take a standardized midterm and final exam. The exams are prepared by the DML Testing Committee composed of a group of volunteering course instructors, and given during the regular midterm and final weeks of the university. Each exam, as a departmental tradition, can be previewed by all intructors a week before it is administrated. This enables the Testing Committee members to receive feedback from other colleagues and make the necessary changes and adaptations if needed.

The midterm and the final exam packs of each section is scored by another instructor (not by the same course instructor for that particular section) offering the same course in the same term—a practice implemented by the DML administration to ensure a fair assessment of test takers' competence since the assessment objectivity is regarded as one of the principal concerns of the department. This exam-pack-swapping practice provides a certain level of anonymity for the test takers since, considering the fact that hundreds of students take that test, the instructor marking the papers would most probably have no background information about the identity of the test takers enrolled in the section the papers of which he or she is marking. This practice, in other words, minimizes, if not eliminates, the possibility of a biased scoring, as put by the University of Nebraska (2017): the overall impressions of that student's work might potentially affect the scoring of the test.

The DML also works diligently to ensure exam validity and reliability. In addition to providing a very detailed answer key to the questions asked, holding post-exam meetings to discuss the exam content and the answers; the Testing

Committee also uses computerized tools to assess the reading/text difficulty of each exam. The Testing Committee and the DML Research and Development Unit, in their jointly prepared report, explain their practices as follows:

> Testing Committee uses two computer tools, Coh-Metrix version 3.0 and Lexical Tutor version 8 VocabProfile when assessing the difficulty of the reading texts in the midterm and final exams. … In addition to the data provided by these tools, test writers evaluate the texts intuitively considering certain text characteristics that are not likely to be evaluated accurately by the available computer systems. … Currently, the difficulty level of the texts in the coursebook is used to set the baseline in the evaluation and selection of the texts to be used in the exams.
>
> (The Department of Modern Languages, n.d., para.1-2)

The components of the midterm and final exam, as well as the other assessed components and skills of the course are outlined in Table 11.

Table 11

Midterm and final exam content and objectives

Exam	Content & Objectives
Midterm	Listening Reading Writing
	listen for specific information listen for the main idea listen for implied ideas identify key ideas in a text identify figurative speech recognize the relationship between ideas in a text deduce the underlying meaning in sentences or parts of a text deduce the meaning of unknown vocabulary items identify referents in a text identify reference information practice using the APA citation rules practice borrowing ideas by paraphrasing, summarizing, quoting, and synthesizing use correct, appropriate language structures, vocabulary, and discourse markers

Final	Listening Writing	
		listen for specific information
		listen for the main idea
		listen for implied ideas
		listen and take notes
		identify bibliographical information
		write parts of a documented argumentative essay
		identify and select relevant sources
		evaluate, synthesize and use information from excerpts
		borrow ideas by paraphrasing, quoting, summarizing and synthesizing
		use correct, appropriate language structures, vocabulary and discourse markers
		use the APA citation rules

Listening. Participants' listening comprehension competencies were testes through two different testing modes: while listening and listening and note taking tests.

While Listening. The listening comprehension tested in the standardized midterm exam was a "while-listening performance test". According to Aryadoust (2012), while-listening performance tests—different from post-listening performance tests in which test takers listen, take notes, and use their notes to answer the questions they are given after the listening material is over—require test takers to read the test items and respond while they listen to listening material; in while-listening performance test, test takers "engage in the following simultaneous activities: (a) read test items, (b) listen to the oral text, (c) write or choose the answer, and (d) follow the oral text to move to the next test item" (p. 41). The track played in the exam, like all listening materials used in the midterm and final exams at the DML, was adopted from authentic materials and recorded in the recording studio available at the Department of Basic English by the members of the DML Testing Committee with the contribution of volunteering native and non-native course instructors. Students were given time to read the questions before the track was played, and the listening recording was played only once.

Listening and Note Taking. Participants' listening and note taking comprehension was tested in their standardized final exam. The track played in the exam was adopted from authentic materials and recorded by the members of the Testing Committee with the contribution of volunteering native and non-native course instructors in a recording studio available at the Department of Basic English. Test takers, before the track was played, was provided with note taking sheets on which some prompts relevant to the content of the listening material were available and were given time to read them. When the track was over, test takers received the exam booklets on which they had the questions they were expected to answer using their notes. The listening recording was played only once.

***Reading*.** The reading comprehension was tested through a standardized midterm exam. In the reading comprehension part of the exam, participants were given a 2-page-long academic reading text and were asked to answer 11 open-ended questions. Participants were required to use their own words to answer the comprehension questions; direct lifting of the answers from the text was not permissible. No part in the midterm exam had multiple choice questions.

Writing. The last part of the midterm exam, what is called Writing I in this study, was a writing a synthesis paragraph; test takers were to paraphrase two excerpts and write a synthesis of the ideas presented. Writing II and Writing III, on the other hand, were about composing an argumentative essay in parts and in whole respectively. As stated in the curriculum document, the DML adopts a *process approach* to essay writing in the courses offered, an approach its origin goes back to in Vygotskian social learning theory (Vanlı, 2013). As Vanlı states the idea of "writing as a social activity requires some kind of an interaction between the teacher and the student, which must pave the way for a better end product" (p.13). The essay writing principles of the DML is based on this notion; students are in close interaction with their course instructor throughout their essay writing process, the steps of which is outlined in Table 13. Table 12 outlines the organizational differences between the writing assessment of the final exam, writing two body paragraphs for an argumentative essay, and the essay writing component of the course.

Vocabulary. The participants were given two vocabulary tests at different times of the semester. The scope of the tests was limited to the lexical items that were either explicitly or implicitly covered as a part of the reading and listening components of the course. In each text, participants were given a short text and 10 sentences with blanks in them and were asked to complete the sentences with lexical items from the reading text. These tests aimed to assess the subjects' abilities in the following skills:

- Reading comprehension
- Retaining previously learned information
- Guessing the meaning of unknown lexical items

Table 12

Essay Writing: The Final Exam (Writing II) vs In-Class (Writing III)

	Approach Type	Exam Time	Word Limit	Citations	Topic Selection	Outlines & Feedback	Dictionary Use
Writing II	Product Approach	100 min.	400 – 500	3 academic articles were attached to the exam booklet. Ss are expected to cite from two of them.	2 thesis statements are given in the exam booklet. Ss are expected to pick one of them.	No outline. No feedback.	Not allowed.
Writing III	Process Approach	150 min.	800 – 1000	A minimum of 2 and a max of 5 different academic sources. Sources are found through the library databases.	10 essay topics offered. Ss are expected to pick one of them and formulate a thesis statement.	on the thesis statement, idea development, outline structure, and the quality of sources.	Regular dictionaries allowed.

Speaking. The speaking assessment is conducted in two different tasks: a debate and a role play activity. For the debate task, five days ahead of the assessment day, each student was assigned to different group of 4 or 5, each with a different stance on an argumentative topic. The debate took 2 class hours (100 minutes). For effective debate skills, an analytical cognitive processing is vital so that the debaters can simultaneously and instantaneously manage the following concerns (Snider, 2002):

- seeing the overall picture and being aware of the way each idea presented influence one another, and using those links to enhance analysis in the debate
- analyses of the counter arguments posed
- dynamism, enthusiasm, and commitment
- challenges that will be put forward
- social interaction with peers
- cooperation and collaboration
- listening and note taking
- time management

Kodotchigova (2002) states that there is no consensual definition for explaining what a role play is. The term is frequently used interchangeably with the terms *simulation* and *drama.* Kodotchigova indicates that role play is a drama-like activity in which players adopt different roles in an imagined situation and perform what might typically happen in that situation. As Thamarana and Narayana (2016) explain, players in a role play task are expected to take on a personal attitude, opinion, or role of someone else in a set context.

Giebert (2014) points out that role play activities help language learners experience the target language in different situations and provide them with "sustainable, holistic learning" environments enriched with physical and emotional involvement (p. 142). Both Razoni (2013) and Dailey (2009) conclude that role play activities provide a fun learning setting and an enjoyable framework which, as a consequence, diminishes anxiety levels learners might experience. For the role play activity in this study, five days ahead of the task, students were asked to partner with another student from the class for the role play task. Students were asked to create a *power* (the theme of the course)-related role play scenario. Each role play activity took 4 – 5 minutes for each pair.

Table 13

Essay Writing Process

Stage	Explanation
Thesis statement	Students compose their thesis statements in accordance with the theme of the course: Power. Students receive feedback.
1st outline	Students organize their ideas, write their topic sentences and supporting points, and receive written/oral feedback.
2nd outline	Students conduct research and find supporting points/examples/citations from academic articles for the ideas presented and approved on the 1st outline.
1st draft	Students are given 150 minutes to compose an 800 – 1000-word-long essay in the classroom. Dictionary use is allowed. Students receive written and/or oral feedback on their essay's content, organization, and language.
Final draft	Students revise their 1st draft out of class and submit the revised draft together with the first draft, the copy of the sources they used, and their outlines to the course instructor. The final draft of the student essays is graded according to the criteria set on the essay rubric, devised by the department Syllabus Committee. Students upload their final draft to Turnitin.com before the due date set by the course instructor.

Data Collection Process

Official approval to go ahead with the data collection was granted by the Hacettepe University Ethics Committee before the study took place. The course instructors were asked to leave the room during test administration process to lower the risk of coercion. From the ethics perspective, data collection should not start without obtaining official permissions from the target participants (Creswell, 2008). Thus, before starting the data collection, participants were given written consent forms in which they, as Leedy and Ormrod (2005) suggest, were informed about the essence of the study. In the consent form, the nature and the purpose of the study, issues of confidentiality, the role of the participants, and the contact information of the researcher were specified; subjects were asked to read and sign. The instruments were then administered only to participating volunteers. The statement of informed consent also stressed that participation in this study was totally

voluntary, and that choosing not to participate or withdrawing from the study at any point would have no effect on the participants. Out of 150 students approached, 133 students agreed to participate; of those, 10 of the participants were excluded from the data analysis since they submitted incomplete data. Consequently, a total of 123 sets of data were actually used for the statistical analysis.

A pilot study was carried out to foresee potential difficulties with the administration of the GEFT, and with the content and structure of the SILL and BIG16 Learning Modality Inventory. 15 students from two different ENG102 sections participated in the pilot study three weeks before the actual data collection sessions. Participants were encouraged to make comments on the comprehensibility of the collection tools, the instructions and ask questions about procedures and directions. No major problems arose during the pilot study; none of the participants experienced or raised any difficulty or discomfort while completing the GEFT, the SILL, and the BIG16 Learning Modality Inventory according to the instructions provided.

Data Analysis

All the data gathered was then entered into the software package Statistical Package for Social Sciences (SPSS) 24.0 for statistical testing, and an independent *t*-test was performed to investigate statistical differences in the mean scores of the two groups in order to determine if there is a significant difference between field dependent and field independent participants' language achievement, learning styles, and learning strategies. Black (2005) suggests that when comparing two groups, a *t*-test for Independent Samples should be employed if the compared samples more than 30, independent and are from the same populations. Similarly, Simon and Francis (2001) and De Veaux, Vellemean, and Bock (2011) points out that when there are two groups compared and these groups are independent of each other, statistical literature suggests that an Independent Samples *t*-test is an appropriate analysis tool.

Burns and Grove (2009) explain that as a parametric analysis technique, Independent Samples *t*-test is a commonly utilized to explore significant differences between measures of two sets of data collected from two different groups and when the scores in the two groups are not related. Likewise, as Salkind (2008) state, an Independent Samples *t*-test is a suitable data analysis technique in studies, as in

this current one, when only two groups are being compared and tested to detect significant differences. In short, the *t*-test is one of the most frequently statistical tests employed to compare the means of two groups (Vogt, 2007) because it, according to Gall, Gall, and Borg (2003), provides “accurate estimates of statistical significance” (p. 304).

The other reason why the Independent Samples *t*-test is considered an appropriate technique to analyze the target data is because the independent variable, field dependence/independence cognitive style is dichotomous and the dependent variables are metric. As a requirement for using Independent Samples *t*-test, it is necessary to examine the variances of each group to determine if equal variances exist. Before conducting the analysis, statistical assumptions of normality, homogeneity of variance, and homogeneity of covariance matrices were examined and addressed accordingly. The statistical test for homogeneity adopted in this study is Levene's test for equality of variances.

When any of the underlying assumptions for Independent Samples *t*-tests is not met, Lung and Lung (2013) explain that the results might be misleading, and they further point out that it is due to the non-normally distributed data why the assumptions for an Independent Samples *t*-test commonly fail. When the Levene’s Test of Homogeneity of Variance was conducted for the second vocabulary test in order to examine if there was equality of variance between the independent groups, it was found that participants’ scores gathered in the second vocabulary test did not follow the normal distribution; Levene’s F Statistic had a significance value of 0.038; therefore, the assumption of homogeneity of variance was not met. When a *t*-test analysis is not suggested because of violations of the assumptions of normality and constant variance, a Mann Whitney *U* test is frequently employed (Cohen & Lea, 2004). Thus, a nonparametric Mann-Whitney *U* test was also conducted to corroborate the results of the *t*-test for the second vocabulary test. Mann-Whitney *U* test, according to Roscoe (1975) is roughly as powerful as the *t*-test under common research conditions. An *alpha* level of 0.05 was established for all statistical tests conducted in this study.

Chapter 4
Findings

Introduction

In this chapter, statistical information based on the analyses of students' language assessment scores, their responses to the Turkish version of Rebecca Oxford's Strategy Inventory for Language Learning (SILL) (Oxford, 1990), adapted by Cesur and Fer (2007); and the BIG16 Learning Modality Inventory designed by Şimşek (2002) will be presented in relation to the participants' identified cognitive styles (field dependence or field independence) according to their scores on the Group Embedded Figures Test (GEFT) (Witkin, Oltman, Raskin & Karp, 1971). Regarding the reliability of the Turkish version of the SILL, Cesur and Fer The results of the reliability analysis for the Turkish for version of the SILL report a Cronbach's alpha reliability coefficient of 0.92 for the total scale, and Cronbach's alpha fluctuating between 0.59 and 0.86 on subscales (Cesur & Fer, 2007). The independent variable is the participants' cognitive style (field dependence and field independent) and the dependent variables are participants' assessment scores in their English classes, their strategy use and preferred learning styles in foreign language learning. For the convenience of the reader, first, a brief summary of the preceding chapter will be presented.

The participant pool consisted of 123 college students in this study. All participants were second year students and have varying demographic profiles and educational backgrounds; all were enrolled in an English for Academic purposes (EAP) class at a state university where the medium instruction is English. The participants first completed the GEFT test. In this three-section test, the participants' overall scores were calculated based on their answers for Section II and III (18 items total) and the ones who scored the national mean or higher than that (12-18) were categorized as field independent (Abraham, 1985; Cunningham, Ridley, & Campbell, 1988; Ling & Salvendy, 2009; Lusk & Wright, 1981; Raptis, Fidas, & Avouris, 2016; Saadatmanesh, 2013; Witkin, Oltman, Raskin, & Karp 1971; Yoo & Yoo, 2015).The psychometric data provided in the test manual indicates that the reliability of the GEFT is .82. The directions about the questions, the test procedure, scoring, and time limits indicated in the scoring template were strictly followed during

the administration and scoring of the GEFT. The participants' language achievement scores were obtained from their instructors; written consent of the participants were collected prior to data collection process. The results obtained from the SILL and BIG16, together with the aforementioned data, entered into the software, Statistical Package for Social Sciences (SPSS) 24.0, for statistical testing, and an Independent Samples *t*-test and Mann Whitney *U* test were performed to answer the following research questions:

1) Is there any effect of field dependence/independence on participants' level of achievements in different language skills in English?

2) Is there any effect of field dependence/independence on participants' preferred language learning styles?

3) Is there any effect of field dependence/independence on participants' use of language learning strategies?

To answer these questions, 7 null hypotheses were formulated: Hypotheses 1 – 5 are related to the first two questions: the relationship between field dependent/independent cognitive style and language achievement levels in different skills including speaking, writing, listening, reading, and vocabulary. Hypothesis 6, together with its subhypotheses is related to the second research question on the relationship between field-dependent/independent cognitive style and the use of learning strategies. Hypotheses 7, lastly, is related to the third research question: the relationship between field-dependent/independent cognitive styles and participants' preferred learning styles. Significance for all statistical tests conducted was set at the $p < 0.05$ level. Below is the list of null hypotheses tested:

***H*$_0$1a.** There is no relationship between achievement levels in while-listening skills and field dependence/independence cognitive styles.

H$_0$1b. There is no relationship between achievement levels in listening and note taking skills scores and field dependence/independence cognitive styles.

***H*$_0$2.** There is no relationship between achievement levels in reading skills and field dependence/independence cognitive styles.

***H*$_0$3.** There is no relationship between achievement levels in speaking skills and field dependence/independence cognitive styles.

***H*$_0$4.** There is no relationship between achievement levels in vocabulary skills and field dependence/independence cognitive styles.

***H*$_0$5.** There is no relationship between achievement levels in writing skills and field dependence/independence cognitive styles.

***H*$_0$6a.** There is no relationship between the use of memory strategies and field dependence/independence cognitive styles.

***H*$_0$6b.** There is no relationship between the use of cognitive strategies and field dependence/independence cognitive styles.

***H*$_0$6c.** There is no relationship between the use of compensation strategies and field dependence/independence cognitive styles.

***H*$_0$6d.** There is no relationship between the use of metacognitive strategies and field dependence/independence cognitive styles.

***H*$_0$6e.** There is no relationship between the use of affective strategies and field dependence/independence cognitive styles.

***H*$_0$6f.** There is no relationship between the use of social strategies and field dependence/independence cognitive styles.

***H*$_0$ 7.** There is no relationship between participants' preferred learning styles and field dependence/independence cognitive styles.

In order to answer the aforementioned research questions and test the hypotheses formulated, Independent Samples *t*-tests and Mann-Whitney *U* tests were utilized. An Independent Samples *t*-test (parametric test) was employed for normally distributed data to compare mean data gathered through the data collection tools. Additionally, the Mann-Whitney *U* Test (non-parametric test) was also used to verify mean scores when the data distribution was not normal (*p* value < 0.05). Hinkle, Wiersma, and Jurs (2003) state that the assumption of independent groups is met when the scores of the compared subjects are unrelated to each other. The independent variables in that study are field dependent and field independent cognitive styles and the dependent variables are participants' assessment scores in their English class, their language learning strategy use and preferred second language learning styles. Though the sample sizes were not identical, the size of the participants that this study recruited is appropriate for *t*-test for Independent

Samples, since it is robust enough to accommodate the differences. As Hinkle, Wiersma, and Jurs (2003) also indicate, the determination of homogeneity of variance is a necessity for the use of the statistical *t*-test for Independent Samples. The statistical test for homogeneity utilized in this study was Levene's test for equality of variances. When the assumptions for the Independent Samples *t*-test was not met, Mann-Whitney *U* nonparametric test was employed since as Cohen and Lea (2004) point out, the Mann Whitney *U* test is a commonly used alternative if using an Independent Samples *t*-test is not suggested due to violations of the assumptions.

For the scope of this study, the median score was adopted as the cut–off score; subjects scoring lower (0-11) than the national mean for the GEFT (11.4) were categorized as field dependent while the ones scoring the national mean (11.4) or higher (12-18) were categorized as field independent (Agree, King, Castro, Wiley, & Borzekowski, 2015; Ling & Salvendy, 2009; Lusk & Wright, 1981; Saadatmanesh, 2013; Witkin, Oltman, Raskin, & Karp 1971; Yoo & Yoo, 2015). Out of the 123 participants, 66 scored 11 or less and were classified as having field dependent cognitive style, and 57 participants had a score of 12 or more and were classified as having field independent cognitive style Table 14. The GEFT manual reports a split-half reliability estimate of 0.82 for both females and males according to Spearman-Brown formula (Witkin, Oltman, Raskin, & Karp, 1971, p. 1).

Table 14

Group Embedded Figures Test Score Categories

Cognitive Style	Scores	Number of participants
Field dependent	0 -11	66
Field independent	12 - 18	57

Results for the Language Achievement Scores

Null hypothesis 1a. There is no relationship between achievement levels in while-listening skills and field dependence/independence cognitive styles.

This test was conducted to compare listening comprehension scores of the field dependent and field independent participants in order to discover any

significant differences between the groups' achievement scores in *while-listening-performance* tasks. While-listening comprehension tests refer to those in which the questions are handed out to the test takers before the listening material is played to them. In other words, as Aryadoust (2012), explains in *while-listening performance* tests, test takers are expected to read and respond to test items as they listen to listening material, and therefore "engage in the following simultaneous activities: (a) read test items, (b) listen to the oral text, (c) write or choose the answer, and (d) follow the oral text to move to the next test item" (p. 41).

A *t*-test of Independent Samples was used to test this sub-hypothesis. For Independent Samples *t*-tests, it is necessary to examine the variances of each group to verify if equal variances exist, the statistical test for homogeneity used in this study was Levene's Test for Equality of Variances, and it was met (F = 3.108, p > .080); therefore, the statistics for equal variances was used.

Table 15

Descriptive Statistics for While-Listening Exam Scores

Skill		n	Mean	Std. Deviation	Std. Error Mean
While-listening	FD	66	1,5606	1,31417	,16176
	FI	57	2,0965	1,50428	,19925

Table 15 revealed that FI participants (N = 57) have a slightly higher mean score in *while-listening* scores: M = 2.0665 (SD = 1,50428). Conversely, the FD group, (N = 66) is associated with a lower achievement mean scores, M = 1,5606 (SD = 1,31417). In order to determine whether or not this mean difference was significant and to test the null hypothesis that FD and FI cognitive styles have no effect on participants' *while-listening* exam scores, a *t*-test for Independent Samples was used.

The *t*-test assumes homogeneity of variance (equal variances) between the means of the two groups being compared. The homogeneity of variance was tested by the Levene's test for equality of variances for both of the test results. This assumption was satisfied (F = 3.108, p = .080). As shown in Table 16, analysis

resulted in rejecting the null hypothesis: the significance value of .037 is not greater than p = .05, signifying that the variability of scores was significantly different.

Table 16

Independent Samples T-Test Results for While-Listening Test Scores

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	3,108	,080	-2,109	121	,037	-,53589	,25411	-1,03897	-,03280
Equal variances not assumed			-2,088	112,168	,039	-,53589	,25664	-1,04438	-,02739

Null hypothesis 1b. There is no relationship between achievement levels in listening and note taking skills and field dependence/independence cognitive styles.

In order to find out whether there is a statistically significant difference between FD/FI cognitive style and listening and note taking skills, data from the difference in field dependent and field independent participants' listening and note taking scores were analyzed. The homogeneity of variance was tested by the Levene's test for equality of variances. This assumption was satisfied F = .446, p > .505. Means and standard deviations of the difference are presented below (Table 17). It was again discovered that FI participants (N = 57) have a higher mean score in listening and note taking scores: M = 5,8421 (SD = 1,68808); the FD group (N = 66), on the other hand, performs a lower achievement mean score, M = 5,4394 (SD = 1,80707).

Table 17

Descriptive Statistics for Listening and Note Taking Scores

Skill		n	Mean	Std. Deviation	Std. Error Mean
Listening & Note taking	FD	66	5,4394	1,80707	,22243
	FI	57	5,8421	1,68808	,22359

When the difference between mean values are analyzed, however, no statistically significant difference was found (see Table 18); accept the null hypothesis of no significant difference at the .05 level of probability was found between FD and FI cognitive styles and listening and note taking achievement scores.

Table 18

Independent Samples T-Test Results for Listening and Note Taking Scores

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	,446	,505	-1,270	121	,206	-,40271	,31698	-1,03025	,22483
Equal variances not assumed			-1,277	120,235	,204	-,40271	,31539	-1,02715	,22173

Null Hypothesis 2. There is no relationship between achievement levels in reading skills and field dependence/independence cognitive styles.

The reading test assessed the subjects' abilities in the following skills:

- identifying key ideas in a text

- recognizing the relationship between ideas in a text
- deducing the underlying meaning in sentences or parts of a text
- deducing the meaning of unknown vocabulary items
- identifying referents in a text

As shown in Table 19, the mean of FI participants was higher than the mean of FD participants' test scores. The mean of FI participants' test scores was 8 (with the total points of 10) and the mean of FD participants' test scores was 7.3 (with the total points of 10). The variance between the individual scores of FD participants is 1.9 while the variance of individual scores FI participants is slightly higher: 2.17.

Table 19

Descriptive Statistics for Reading Scores

Skill		n	Mean	Std. Deviation	Std. Error Mean
Reading	FD	66	6.8788	2.40202	.29567
	FI	57	8.1053	2.42520	.32123

Whether or not this difference was significant was determined by conducting a *t*-test for Independent Samples. The results of the independent *t*-test are shown in Table 20. Since the results of the Levene's test showed that the variances are equal, ($F = .152$, $p > .698$), the *t*-test with assumed equal variance was used. As shown in Table 20, analysis resulted in rejecting the null hypothesis; $t(121) = 2.81$, $p = 0.006$.

Table 20

Independent Samples T-Test Results for Reading Assessment Scores

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	.152	.698	2.811	121	.006	1.22648	.43627	.36275	2.09020
Equal variances not assumed			2.809	118.070	.006	1.22648	.43658	.36193	2.09102

In other words, there is insufficient evidence to conclude that a difference between the mean scores of FD participants' reading achievement and FI participants' reading achievement exists.

Null Hypothesis 3. There is no relationship between achievement levels in speaking skills and field dependence/independence cognitive styles.

The participants' speaking achievement scores were gathered through two different modes: a debate and a role play activity. Means and standard deviations of the difference for each task are presented in Table 21.

Table 21

Descriptive Statistics for Speaking Assessment Scores

Skill		n	Mean	Std. Deviation	Std. Error Mean
Speaking I: Debate	FD	66	3,5682	1,07645	,13250
	FI	57	3,8202	1,03051	,13649
Speaking II: Role Play	FD	66	3,5303	1,36545	,16808
	FI	57	4,0088	1,12794	,14940

Group statistics show that field independent participants had a higher mean score in the debate task, yet they were outperformed by their field independent counterparts in the second speaking assessment mode: role play. In order to determine whether or not these mean differences were significant and to test the null hypothesis that FD and FI cognitive styles have no effect on the participants' levels of achievement in speaking skills, a *t*-test for Independent Samples was used for each test score. The homogeneity of variance was tested by the Levene's test for equality of variances. This assumption was satisfied: $F = .209$ $p > .649$. The results found are outlined in Table 22.

Table 22

Independent Samples T-Test Results for Speaking Assessment Scores

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Speaking I: Debate	Equal variances assumed	.209	.649	-1.320	121	.189	-.25199	.19084	-.62982	.12583
	Equal variances not assumed			-1.325	119.697	.188	-.25199	.19023	-.62865	.12466
Speaking II: Role P.	Equal variances assumed	1.075	.302	-2.098	121	.038	-.47847	.22803	-.92991	-.02702
	Equal variances not assumed			-2.128	120.777	.035	-.47847	.22488	-.92368	-.03326

The *t*-test assumes homogeneity of variance (equal variances) between the means of the two groups being compared. The homogeneity of variance was tested by the Levene's test for equality of variances for all of the test results. As shown in Table 22, analysis provide mixed support for the prediction of a negative relationship between field dependence/independence and achievement levels in speaking skills: the significance value of the first, the debate, task was greater than $p = .05$, signifying that scores were not significantly different. In the role play task, on the other hand, a significant difference was found in favor of the field dependent participants.

Null Hypothesis 4. There is no relationship between achievement levels in vocabulary skills and field dependence/independence cognitive styles.

The participants were given two vocabulary tests at different times of the semester. The scope of the tests was limited to the lexical items that were either explicitly or implicitly covered as a part of the reading and listening components of the course. In each text, participants were given a short text and 10 sentences with blanks in them and were asked to complete the sentences with lexical items from the reading text. These tests aimed to assess the subjects' abilities in the following skills:

- Reading comprehension
- Retaining previously learned information
- Guessing the meaning of unknown lexical items

Means and standard deviations of the difference are presented in Table 23.

Table 23

Descriptive Statistics for Vocabulary Test Scores

Skill		n	Mean	Std. Deviation	Std. Error Mean
Vocabulary I	FD	66	4,1212	1,36455	,16796
	FI	57	4,3684	1,27660	,16909
Vocabulary II	FD	66	3,8295	1,44858	,17831
	FI	57	4,2807	1,23570	,16367

Results show that field independent participants achieved higher scores in both vocabulary tests. In order to determine whether or not these mean differences were significant and to test the null hypothesis that FD and FI cognitive styles have no effect on the participants' levels of achievement in vocabulary tests, a *t*-test for Independent Samples was used for each test score.

Table 24

Independent Samples T-Test Results for Vocabulary Test Scores

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Vocab. I	Equal variances assumed	,408	,524	-1,032	121	,304	-,24721	,23951	-,72138	,22696
	Equal variances not assumed			-1,037	120,206	,302	-,24721	,23833	-,71909	,22467
Vocab. II	Equal variances assumed	4,416	,038	-1,842	121	,068	-,45116	,24487	-,93594	,03363
	Equal variances not assumed			-1,864	120,985	,065	-,45116	,24204	-,93033	,02802

Prior to analysis, equality of variance was assessed using Levene's test, and this assumption was met only for the first vocabulary test ($p > 0.05$). No significant difference was found in the achievement levels of the participants in the first vocabulary test. For the second vocabulary test, according to which there was also no significant difference between the participants' test scores, the assumption of equality of variance was not met ($p < 0.05$); as the data gathered for the second vocabulary test did not follow the normal distribution, a nonparametric Mann-Whitney *U* test was also conducted. The results of the test were consistent with the results of the Independent Samples *t*-test, yielding no significant differences for the vocabulary test which required guessing unknown lexical items in addition to retaining previously learned information ($0,059 > p = 0,05$). Therefore, the null hypothesis was not rejected.

Null Hypothesis 5. There is no relationship between achievement levels in writing skills and field dependence/independence cognitive styles.

The participants' writing achievement scores were gathered through three different writing assessments which progressively demanded more critical thinking skills out of the participants. The objectives of the tests given to the subjects to collect data analyzed are summarized in Table 25.

Table 25

Writing Assessments and Objectives

Writing assessment I: *Writing a synthesis of two excerpts*	Writing assessment II: *Writing two body paragraphs of an argumentative essay*	Writing assessment III: *Writing an argumentative essay*
• use the APA citation rules • borrow ideas by paraphrasing, summarizing, and synthesizing • use correct, appropriate language structures, vocabulary, and discourse markers	• write parts of a documented argumentative essay • evaluate, synthesize and use information from excerpts • borrow ideas by paraphrasing, quoting, summarizing and synthesizing • use correct, appropriate language structures, vocabulary and discourse markers • use the APA citation rules	• write an argumentative essay • learn, internalize, accept and carry out the stages in a process writing approach while writing paragraphs and/or essays • use appropriate language structures, vocabulary and discourse markers • evaluate sources for relevance and reliability • practice borrowing ideas by paraphrasing, summarizing, quoting, and synthesizing • use the APA citation rules

Results were analyzed to test the null hypothesis. Table 26 shows that the FD participants have a higher mean score in the first writing assessment: *M* = 6.10 (*SD* = 2,13126); FI group, on the other hand, is associated with a lower achievement mean score, *M* = 6.03 (*SD* = 1,75664). Yet, results show that FI participants outperformed their FD counterparts in the other two assessments with a mean score of 11.8 (*SD* = 1,80057) and 11 (*SD* = 3,55018) respectively.

Table 26

Descriptive Statistics for Writing Assessment Scores

Skill		n	Mean	Std. Deviation	Std. Error Mean
Writing I	FD	66	6,1023	2,13126	,26234
	FI	57	6,0351	1,75664	,23267
Writing II	FD	66	10,5417	3,01649	,37130
	FI	57	11,7982	1,80057	,23849
Writing III	FD	66	9,4773	3,64183	,44828
	FI	57	10,9009	3,55018	,47023

In order to determine whether or not these mean differences were significant and to test the null hypothesis that FD and FI cognitive styles have no effect on the participants' levels of achievement in writing assessments, a *t*-test for Independent Samples was used for each test score. The *t*-test assumes homogeneity of variance (equal variances) between the means of the two groups being compared. The homogeneity of variance was tested by the Levene's test for equality of variances for all of the test results. As shown in Table 27, analysis resulted in rejecting the null hypothesis: the significance values of the second and the third writing assessment were not greater than $p = .05$, signifying that scores were significantly different in the writings tasks that require more higher-thinking skills.

Table 27

Independent Samples T-Test Results for Writing Assessment Scores

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
W.A. I	Equal variances assumed	2,116	,148	,189	121	,850	,06719	,35563	-,63688	,77125
	Equal variances not assumed			,192	120,754	,848	,06719	,35066	-,62704	,76141
W.A. II	Equal variances assumed	,018	,893	-2,187	121	,031	-1,42360	,65089	-2,71222	-,13499
	Equal variances not assumed			-2,191	119,211	,030	-1,42360	,64967	-2,71000	-,13721
W.A. III	Equal variances assumed	1,992	,161	-2,749	121	,007	-1,25658	,45703	-2,16138	-,35178
	Equal variances not assumed			-2,847	108,300	,005	-1,25658	,44130	-2,13128	-,38188

Note. W.A. = Writing assessment

Results for the Language Learning Strategies

The following analyses were carried out in order to answer the research question about whether there is relationship between field dependence and field independence cognitive styles and the results gathered through Rebecca Oxford's Strategy Inventory for Language Learning (SILL) (Oxford, 1990). The SILL is composed of 50 items covering the six categories of learning strategies: memory,

cognitive, compensation, metacognitive, affective, and social. Oxford categorizes these strategies in two groups: direct strategies and indirect strategies. Direct strategies include behaviors with direct manipulation of the target language whereas indirect strategies include behaviors which are supportive but do not manipulate the language. The subcategories for direct and indirect strategies are as follows:

Direct strategies:

1. *Memory strategies* for more efficient remembering (Part A, 9 items)
2. *Cognitive strategies* for assisting mental processes (Part B, 14 items)
3. *Compensation strategies* for compensating for missing knowledge (Part C, 6 items)

Indirect strategies:

1. *Metacognitive strategies* for organizing and evaluating one's learning (Part D, 9 items)
2. *Affective strategies* for managing emotions (Part E, 6 items)
3. *Social strategies* for learning with others (Part F, 6 items)

The SILL takes between 20 – 30 minutes and requires test takers to read a statement and choose the best response that describes their learning strategies in a Likert scale from 1 (Never or almost never true of me) to 5 (Always or almost always true of me). The reliability of the SILL was tested using Cronbach's alpha, and it is reported to have a Cronbach's alpha of between .90 to .93 with an average .95 (Oxford, 1990).

Null Hypothesis 6a. There is no relationship between the use of memory strategies and field dependence/independence cognitive styles.

Oxford (1990) explains that memory strategies involve the cognitive "for storing new information in the memory and for retrieving them when needed" (p. 37). Oxford further divided memory strategies into four sub-strategies:

1. Creating mental linkages
2. Applying images and sounds
3. Reviewing well

4. Employing action.

Table 28 reveals that memory strategies are used at a medium level by FD and FI participants, and FI subjects had a slightly higher memory strategy use mean (*M* = 2,8676, *SD* = ,52288) score compared to their FD peers (*M* = 2,8148, *SD* =,56700). Both groups fall The FI memory strategy use mean was only .0528 points higher. The difference between mean values, however, were not statistically significant: *t*(120) = -.531, *p* = .597). Therefore, the null hypothesis was not rejected (Table 29).

Table 28

Descriptive Statistics for the Use of Memory Strategies

SILL		n	Mean	Std. Deviation	Std. Error Mean
Memory Strategies	FD	66	2,8148	,56700	,06979
	FI	56	2,8676	,52288	,06987

Table 29

Independent Samples T-Test Results for the Use of Memory Strategies

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
SILL: Mem.Str.	Equal variances assumed	,731	,394	-,531	120	,597	-,05274	,09942	-,24959	,14410
	Equal variances not assumed			-,534	119,144	,594	-,05274	,09876	-,24829	,14280

Note. Mem.Str. = Memory Strategies

Null Hypothesis 6b. There is no relationship between the use of cognitive strategies and field dependence/independence cognitive styles.

Cognitive strategies (items 10 to 23 on the SILL), in Oxford's (2003) words, "enable the learner to manipulate the language material in direct ways, e.g., through reasoning, analysis, note-taking, summarizing, synthesizing, outlining, reorganizing information to develop stronger schemas (knowledge structures), practicing in naturalistic settings, and practicing structures and sounds formally" (p. 12). The *t*-test of Independent Samples was employed to test the null hypothesis. The *t*-test assumes homogeneity of variance between the means of the two groups being compared. The homogeneity of variance was tested by the Levene's test for equality of variances, and homogeneity of variance was satisfied, $F = 1.449$, $p > .233$. Means and standard deviations of the difference are presented in Table 30. Results showed that there is a significant difference between individuals who scored low in the GEFT ($M = 3.05$, $SD = .56$) and high in the GEFT ($M = 3.23$, $SD = .47$) in their use of cognitive strategies ($t = -0.046$, $p < .05$). Thus, the null hypothesis, that cognitive styles of the participants has no effects on their cognitive strategy use, is rejected (Table 31).

Table 30

Descriptive Statistics for the Use of Cognitive Strategies

SILL		n	Mean	Std. Deviation	Std. Error Mean
Cognitive Strategies	FD	66	3,0450	,56068	,06902
	FI	56	3,2363	,47194	,06307

Table 31

Independent Samples T-Test Results for the Use of Cognitive Strategies

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
SILL: Cog. Str.	Equal variances assumed	1,440	,233	-2,017	120	,046	-,19123	,09482	-,37896	-,00349
	Equal variances not assumed			-2,045	119,995	,043	-,19123	,09349	-,37633	-,00612

Note. Cog. Str. = Cognitive Strategies

Null Hypothesis 6c. There is no relationship between the use of compensation strategies and field dependence/independence cognitive styles.

Oxford (1990) states that compensation strategies are necessary in order to overcome any potential insufficiency in learners' language competence and offers 10 sub-strategies under compensation strategies (p. 49):

- guessing by linguistic clues
- guessing by other clues
- switching to the mother tongue
- getting help
- using mime or gesture
- avoiding communication partially or totally
- selecting the topic
- adjusting or approximating the message
- coining a word
- using circumlocution or synonymy

These are similar to what Cohen (1998) calls "cover strategies" which "learners use to create the impression that they have control over material when

they do not" (p. 6). The *t*-test of Independent Samples was employed to test the null hypothesis. The *t*-test assumes homogeneity of variance between the means of the two groups being compared. The homogeneity of variance was tested by the Levene's test for equality of variances, and homogeneity of variance was satisfied, $F = 1.702$, $p = .195$. Means and standard deviations of the difference are presented below, in Table 32. Results indicate that compensation strategies are used at a medium level by FD and at a high level by FI participants. Statistical analysis indicated that there is a significant difference between individuals who scored low in the GEFT ($M = 3.26$, $SD = .48$) and high in the GEFT ($M = 3.51$, $SD = .66$) in their use of compensation strategies ($t = -0.018$, $p < .05$). The null hypothesis, that cognitive styles of the participants has no effects on their compensation strategy use, therefore, is rejected (Table 33).

Table 32

Descriptive Statistics for the Use of Compensation Strategies

SILL		n	Mean	Std. Deviation	Std. Error Mean
Compensation Strategies	FD	66	3,2626	,48925	,06022
	FI	56	3,5119	,66123	,08836

Table 33

Independent Samples T-Test Results for the Use of Compensation Strategies

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
SILL: Comp. Str.	Equal variances assumed	1,702	,195	-2,388	120	,018	-,24928	,10438	-,45594	-,04262
	Equal variances not assumed			-2,331	99,752	,022	-,24928	,10693	-,46144	-,03712

Note. Comp. Str. = Compensation strategies.

Null Hypothesis 6d. There is no relationship between the use of metacognitive strategies and field dependence/independence cognitive styles.

Metacognitive strategies, along with social strategies, and affective strategies, help learners have a control over and regulate their learning process and their emotional responses to the new knowledge. Metacognitive strategies, according to Oxford (1990), enable learners to manage the learning process, such as planning and evaluating their own learning process. In Oxford's taxonomy, metacognitive strategies can be broadly divided into three groups:

- centering your learning
- arranging and planning your learning
- evaluating your learning

Anderson (1991) proposes a further categorization for metacognitive strategies and divides them into five steps: preparing and planning for effective learning, selecting and using particular strategies, knowing how to monitoring strategy use, learning how to orchestrate various strategies, and evaluating strategy use and learning. The use of metacognitive strategies, as Anderson (2002)

emphasizes, help learners activate their thinking and help them achieve a better a performance in learning in general.

In order to discover whether there is a statistically significant difference between field dependent and field independent cognitive styles and the use metacognitive strategies, the differences in field dependent and field independent participants' responses in the D section of the SILL were analyzed. Results show that FI participants have a higher mean score (M = 3.32, SD = .74961) compared to that of FD subjects (M = 3.02, SD = .77534). Mean scores indicate that metacognitive strategies are used at a medium level by FD and FI participants. Means and standard deviations of the difference are presented in Table 34. The *t*-test of Independent Samples was employed to test the null hypothesis. The results of the independent *t*-test are shown in Table 35. Since the results of the Levene's test showed that the variances are roughly equal, the p-value of the *t*-test with assumed equal variance was used. As shown in Table 35, data analysis resulted in rejecting the null hypothesis: $t(120) = 2.14$, $p = .034$); significant ($p < 0.05$) differences were found in the use of metacognitive strategies between field dependent and field independent subjects.

Table 34

Descriptive Statistics for the Use of Metacognitive Strategies

SILL		n	Mean	Std. Deviation	Std. Error Mean
Metacognitive Strategies	FD	66	3.0236	.77534	.09544
	FI	56	3.3214	.74961	.10017

Table 35

Independent Samples T-Test Results for the Use of Metacognitive Strategies

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
SILL: Meta. Str.	Equal variances assumed	.037	.848	2.147	120	.034	.29786	.13874	.02316	.57256
	Equal variances not assumed			2.153	117.940	.033	.29786	.13836	.02387	.57184

Note. Meta. Str. = Metacognitive strategies.

Null Hypothesis 6e. There is no relationship between the use of affective strategies and field dependence/independence cognitive styles.

Oxford (1990) states that affective strategies refer “to the methods that help learners to regulate emotions, motivation and attitudes (p. 135). In other words, affective strategies, as Oxford further explains, is related to actions to control the emotional side of language learning. According to O’Malley and Chamot (1990) affective strategies include three sub-strategies: “question for clarification, cooperation, and self-talk” (p. 120). Oxford (1990, p.17), similarly, puts affective strategies into three main sub-strategies and exemplifies each of them as follows:

- Lowering your anxiety
    - Using progressive relaxation, deep breathing or meditation
    - Using music
    - Using laughter
- Encouraging yourself
    - Making positive statements
    - Taking risks wisely
    - Rewarding yourself

- Taking your emotional temperature
    - Listening to your body
    - Using a checklist
    - Writing a language learning diary
    - Discussing your feelings with someone else

Stem (1983) argues that affective learning strategies are about having a positive approach towards the target language tasks and coping with potential challenges related with emotional and motivational conditions.

Table 36 summarizes mean scores and standard deviation for the affective strategies category (items 39 – 44 of the SILL) and indicates that FD subjects had a higher affective strategy use mean (*M* = 2,6556, *SD* = ,66598) score compared to their FI peers (*M*= 2,5565, *SD* =,58021). Both groups are medium-level affective strategies users.

Table 36

Descriptive Statistics for the Use of Affective Strategies

SILL		n	Mean	Std. Deviation	Std. Error Mean
Affective Strategies	FD	66	2,6556	,66598	,08198
	FI	56	2,5565	,58021	,07753

In order to determine whether or not this mean difference was significant and to test the null hypothesis that FD and FI cognitive styles have no effect on the participants' use of affective strategies in their language learning experiences, a *t*-test for Independent Samples was employed. The *t*-test assumes homogeneity of variance (equal variances) between the means of the two groups being compared. The homogeneity of variance was tested by the Levene's test for equality of variances for all of the test results. Statistical analysis resulted in accepting the null hypothesis; the significance value was greater than $p = .05$, signifying that scores were not significantly different (Table 37).

Table 37

Independent Samples T-Test Results for the Use of Affective Strategies

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
SILL: Aff. Str.	Equal variances assumed	,725	,396	,868	120	,387	,09901	,11412	-,12694	,32496
	Equal variances not assumed			,877	119,908	,382	,09901	,11283	-,12440	,32241

Note. Aff. Str = Affective strategies

Null Hypothesis 6f. There is no relationship between the use of social strategies and field dependence/independence cognitive styles.

The last language learning strategy tested through the SILL is social strategies. Oxford (1990) elucidates that social strategies are related fundamentally to interactions of a language learner with the other speakers, including the native speakers, of the target language. These strategies include asking questions for clarification, cooperating with peers, and developing cultural understanding. Oxford categorizes and elaborates on each category as follows:

Social Strategies:

A. Asking questions

a) Asking for clarifications or verification

b) Asking for correction

B. Cooperating with others

a) Cooperating with others

b) Cooperating with proficient users of the new language

C. Empathizing with others

a) Developing cultural understanding

b) Becoming aware of others' thoughts and feelings

Table 38 reports that FI participants seem to use more social strategies: (*M* = 3.04, *SD* = .66186) compared to FD participants (*M* = 2.91, *SD* = .64134).

Table 38

Descriptive Statistics for the Use of Social Strategies

SILL		n	Mean	Std. Deviation	Std. Error Mean
Social Strategies	FD	66	2,9192	,64134	,07894
	FI	56	3,0482	,66186	,08844

Table 39 reports the inferential statistics calculated using the *t*-tests. The *t*-test assumes homogeneity of variance between the means of the two groups being compared, and it was tested by the Levene's test for equality of variances; homogeneity of variance was satisfied. Results showed that there is no significant difference between individuals who scored low in the GEFT and high in the GEFT in their use of social strategies, $t(120) = -.1.901$, $p = .277$). Mean scores indicate that social strategies are used at a medium level by FD and FI participants.

Table 39

Independent Samples T-Test Results for the Use of Social Strategies

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
SILL: Social Str.	Equal variances assumed	,002	,967	-1,091	120	,277	-,12902	,11824	-,36314	,10509
	Equal variances not assumed			-1,088	115,509	,279	-,12902	,11855	-,36384	,10580

Results for the Learning Styles

Null Hypothesis 7. There is no relationship between participants' preferred learning styles and field dependence/independence cognitive styles.

In the literature, the term learning style has a plethora of definitions in which varying terms and dimensions are cited to explain different learning style models. Learning style, which, according to Kaplan and Kies (1995), comprises of particular and noticeable behaviors that are innate and defined by Dunn and Dunn (1999) as "the way each person begins to concentrate on, process, internalize, and retain new and difficult academic information" (p. 11). Gergory (2005) considers a learning style "a lens that we as educators can use to help differentiate instruction to appeal, engage, and facilitate learning for different types of students who have different needs" (p. 2). Various factors such as age, achievement level, cultural background, individual's method of analysis, and gender are believed to have a control over the learning styles of individuals (Shaughnessy, 1998).

Tight (2010) asserts that various learning style models exist in the literature, each of which offer a different combination of learning style variables and adds: "one dimension that is common to most models is the perceptual modalities (specifically vision, hearing, and touch/movement)" (p. 794). Sousa (2006) explains that

individuals who learn best by sight are visual, those who prefer hearing as their preferred way of learning are auditory; and finally those who prefer touch or body movement in their learning are kinesthetic learners. In order to identify participants' preferred learning modality—kinesthetic, auditory, or visual—the current study employed BIG16 Learning Modality Inventory developed by Şimşek (2002). Şimşek reported a Cronbach's alpha reliability of 0.84, 0.68, 0.77, and 0.79 for the total scale, kinesthetic, auditory, and visual subscales respectively. Şimşek (2002) also notes that the inventory is an appropriate instrument to determine learning modalities of individuals between 16 and 25.

Table 40 reports mean scores and standard deviation for kinesthetic, auditory, and visual learning styles for field dependent and field independent participants. Results show that in auditory learning style FD participants had a higher mean score (*M* = 3,4417, *SD* = ,52169) than FI participants (*M* = 3,3858, *SD* = ,60275); in kinesthetic and visual learning styles, on the other hand, FI participants had a slightly higher mean score (kinesthetic *M* = 2,6556, *SD* = ,66598, visual *M* = 3,6510, *SD* =,72916) compared to their FD peers (kinesthetic *M* = 3,2527, *SD* = ,65314, visual *M* = 3,6279, *SD* = ,65944).

Table 40

Descriptive Statistics for the Preferred Learning Style

BIG16		n	Mean	Std. Deviation	Std. Error Mean
Kinesthetic	FD	65	3,2527	,65314	,08101
	FI	53	3,2845	,72200	,09917
Auditory	FD	65	3,4417	,52169	,06471
	FI	53	3,3858	,60275	,08279
Visual	FD	65	3,6279	,65944	,08179
	FI	53	3,6510	,72916	,10016

A *t*-test was performed to compare the means, and the difference between the means was found to be not significant at the .05 level. Thus, the null hypothesis

cannot be rejected; there was statistically no significant difference between the achievement levels in the GEFT test and participants' preferred learning styles. A summary of the results of the *t*-test is presented in Table 41.

Table 41

Independent Samples T-Test Results for the Use of Learning Styles

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	*t*	*df*	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Kinesthetic	Equal variances assumed	,041	,839	-,251	116	,802	-,03182	,12675	-,28287	,21923
	Equal variances not assumed			-,248	106,149	,804	-,03182	,12806	-,28570	,22206
Auditory	Equal variances assumed	,456	,501	,540	116	,590	,05590	,10355	-,14919	,26098
	Equal variances not assumed			,532	103,539	,596	,05590	,10508	-,15249	,26429
Visual	Equal variances assumed	,355	,552	-,181	116	,857	-,02314	,12799	-,27664	,23036
	Equal variances not assumed			-,179	106,133	,858	-,02314	,12931	-,27951	,23323

Summary

This chapter outlined the data as it was collected and analyzed in order to investigate whether or not significant mean differences exist between field dependent and field independent individuals in achievement levels in different language skills—including reading, writing, listening, speaking, and vocabulary; in use of language learning strategies (Oxford, 1990), and in language learning styles

(Şimşek, 2002). The participants were categorized as having inclinations of field dependence/ independence tendencies based on their scores on the GEFT.

Data analyses included three main research questions:

1) Is there any effect of field dependence/independence on participants' level of achievements in different language skills in English?

2) Is there any effect of field dependence/independence on participants' use of language learning strategies?

3) Is there any effect of field dependence/independence on participants' preferred language learning styles?

This study provided answers to each of the research questions posed, summarized as follows.

1) Is there any effect of field dependence/independence on participants' level of achievements in different language skills in English? A series of null hypotheses were tested in order to answer the first research question. Field dependent and field independent participants' achievement scores in reading, writing, speaking, listening, and vocabulary skills were analyzed through descriptive and inferential statistics. Skills under which more than one sub-skill was tested are explained below:

Writing tests:

I. Paraphrasing two excerpts and writing a synthesis paragraph
II. Writing two body paragraphs for a documented argumentative essay
III. Writing a 4-paragraph documented argumentative essay

Listening tests:

I. While-listening
II. Listening and note taking

Speaking tests:

I. Debate
II. Role play

Vocabulary tests:

I. Memory retention
II. Memory retention and guessing unknown vocabulary

Means and standard deviations of participants' scores were calculated and a *t*-test of Independent Samples was employed to determine significance at the .05 level.

Table 42

Summary of Descriptive Statistics and Independent T-Test and Mann-Whitney U Test Results for Language Skills Differences

Skills	Descriptive statistics		Independent Samples *t*-test results p. < 0.5	Mann-Whitney *U* test results p. < 0.5
	FD	FI		
Reading	*M* = 7,3182, SD= 1,92281	*M*= 8,0351, *SD* = 2,17916	*t*(121) = -2.81, *p.* = 0.006	-
Speaking I	*M* = 3,5682, SD = 1,07645	*M* = 3,8202, *SD* = 1,03051	*t*(121) = - 1.32, *p* = 0.189	-
Speaking II	*M* = 3,5303, *SD* = 1,36545	*M* = 4,0088, *SD* = 1,12794	*t*(121) = - 2.09, *p* = 0.038	-
Vocab. I	*M* = 4,1212, *SD* = 1,36455	*M* = 4,3684, *SD* = 1,27660	*t*(121) = - 1.03, *p* = 0.304	-
Vocab. II	*M* = 3,8295, *SD* = 1,44858	*M* = 4,2807, *SD* = 1,23570	*t*(121) = - 1.84, *p* = 0.068	*p* = 0.059
Writing I	*M* = 6,1023, *SD* = 2,13126	*M* = 6,0351, *SD* = 1,75664	*t*(121) = .189, *p* = 0.850	-
Writing II	*M* = 9,4773, *SD* = 3,64183	*M*= 10,9009, *SD* = 3,55018	*t*(121) = - 2.18, *p* = 0.031	-
Writing III	*M* = 10,5417, *SD* = 3,01649	*M* = 11,7982, *SD* = 1,80057	*t*(121) = - 2.74, *p* = 0.007	-
Listening I	*M* = 1,5606, *SD* = 1,31417	*M*= 2,0965, *SD* = 1,50428	*t*(121) = - 2.10, *p* = 0.037	-
Listening II	*M* = 5,4394, *SD* = 1,80707	*M* = 5,8421, *SD* = 1,68808	*t*(121) = - 1.27, *p* = 0.206	-

Though through affecting in subskill level in some cases, results indicate that there is a significant difference between field dependent and field independent individuals in the achievement levels in all language skills. Results, in other words, imply that as the tests require higher-order thinking skills, the achievement gap between the field dependent and field independent participants expands.

2) Is there any effect of field dependence/independence on participants' use of language learning strategies? In order to answer this research question, data collected through the Turkish version of Rebecca Oxford's Strategy Inventory for Language Learning (SILL) (Oxford, 1990) translated by Cesur and Fer (2002) was analyzed. Means and standard deviations of participants' responses for each specific part of the SILL were calculated and a *t*-test of Independent Samples was employed to determine significance at the .05 level. Significant differences were found; results show that there is a significant difference between field dependent and independent participants' use of cognitive [$t(120) = -2.01$, $p = 0.046$)], metacognitive [$t(120) = 2.14$, $p = .034$)], and compensation strategies [$t(120) = -2.38$, $p = 0.018$)]. The use of memory, affective, and social strategies, however, did not yield significant differences.

3) Is there any effect of field dependence/independence on participants' preferred language learning styles? This research question was answered through analyzing the data collected through the BIG16 Learning Modality Inventory, designed by Şimşek (2002). Means and standard deviations of participants' responses for each specific part of the SILL were calculated and another Independent Samples *t*-test was used to determine a significant difference between field dependent and field independent subjects. Yet, no significant differences in preferred learning styles for field independent and field dependent participants were uncovered; data analysis indicated that the null hypothesis is to be retained because there is not a statistically significant correlation between field dependence and field independence cognitive styles and visual, auditory, and kinesthetic learning styles. Table 43 outlines the results for the null hypotheses and shows if significant differences were found between field dependent and field independent participants in their language achievement levels, use of language learning strategies, and preferred learning styles.

Table 43

Summary of Statistical Analysis Results

Dependent variable		Result
Language Skills	Reading	Significant difference found - Null hypothesis rejected
	Writing	Significant difference found – Null hypothesis rejected
	Listening	Significant difference found – Null hypothesis rejected
	Speaking	Significant difference found – Null hypothesis rejected
	Vocabulary	No significant difference found – Null hypothesis retained
Language Learning Strategies	Memory	No significant difference found – Null hypothesis retained
	Cognitive	Significant difference found – Null hypothesis rejected
	Compensation	Significant difference found – Null hypothesis rejected
	Metacognitive	Significant difference found – Null hypothesis rejected
	Affective	No significant difference found – Null hypothesis retained
	Social	No significant difference found – Null hypothesis retained
Learning Styles	Visual	No significant difference found – Null hypothesis retained
	Auditory	No significant difference found – Null hypothesis retained
	Kinesthetic	No significant difference found – Null hypothesis retained

Chapter 5
Discussion and Conclusion

This chapter will first summarize the study, its methodology, the results found through statistical analyses in accordance with the research questions posed and hypotheses formulated together with an interpretation of these results. Findings will be discussed in relation to previous literature and analyzed why and how the current findings support or disconfirm previous literature. This chapter will also present what the findings potentially mean for the community of interest. Discussion will be divided into three main parts: 1) Field dependence/independence and foreign language achievement, 2) Field dependence/independence and language learning strategies, and 3) Field dependence/independence and learning styles.

Summary

The study examined if learners' field dependency or independency relates to their foreign language achievement levels, use of language learning strategies, and preferred learning styles. Inspired by the Gestalt School of German Psychology and as a result of Werner's (1948) organismic theory of development, Witkin and Asch (1948) proposed the construct of field dependence and field independence, a construct also known as the global-articulated continuum. According to Keefe (1979), field dependence/independence is related to the degree to which an individual adopts a more analytical way of experiencing his or her environment. Similarly, Selinker and Gass (2008) attribute field independence to more analytical individuals who are able to disregard any probable distractors in the context. Field independent individuals, compared to field dependent ones are better at solving complex problems, utilizing cognitive restructuring skills, and separating the relevant from the irrelevant (McMorris, 2005; Tinajero & Paramo, 1998). On the other hand, empirical data shows that field dependent individuals are more holistic and seem to be less attentive to details. It is due to those dispositions that make field dependent individuals less successful on tasks requiring specific data extraction from a complex whole (Lambert, 1981). One of the areas in which field dependent and field independent cognitive styles is extensively studied is second and foreign language teaching and learning. Brown (2007) believes that field independence is a more advantageous trait in a classroom-based language learning whereas a field

dependent cognitive style—possibly due to field dependent learners' arguably more outreaching, social, communicative, and emphatic characteristics—could potentially be more advantageous in authentic language learning in which the learner is exposed to the target language. Various studies favor field independence for higher language learning achievement levels (Alptekin & Atakan, 1990; Carter, 1988; Hansen, 1984; Hansen & Stansfield, 1983). Numerous researchers delved into Witkin's groundbreaking concept of field dependence/independence in their search for what is behind a "good language learner".

In the field of second language teaching and learning, another much-visited area in the search of "good learner" is language learning strategies, a research area that dates back to mid-1970s (Grenfell & Macaro, 2007). A vast body of research suggests that language learning strategies employed by the language learner are positively interconnected with the level of language achievement. Oxford (2001) states that second language learning strategies are certain actions or "thought processes" that individuals employ to assist their language learning experiences (p. 362), and according to Ellis (1994, p. 529) strategies are "consisted of mental or behavioral activity related to some specific stage in the overall process of language acquisition or language use". Oxford (2001) divides language learning strategies into two main categories and provides the following taxonomy:

Direct strategies:

1. *Memory strategies* for more efficient remembering.
2. *Cognitive strategies* for assisting mental processes.
3. *Compensation strategies* for compensating for missing knowledge.

Indirect strategies:

1. *Metacognitive strategies* for organizing and evaluating one's learning.
2. *Affective strategies* for managing emotions.
3. *Social strategies* for learning with others.

Similar to language learning strategies, language learning styles is another phenomenon which has been receiving much attention in the second language teaching and learning research. Brown (2007) believes that learning styles as constant and stable inclinations or preferences of an individual that differentiate each person from others. According to Oxford (2001) learning styles are one of the

most, if not the most, influential factors that determine the achievement levels in foreign language learning. In this study, learning style is defined as “observable learner preferences in the learning environment” and are believed to be the “extensions of personality types and cognitive styles in the learning environment” (Wu, 2010).

It is the aim of this study to contribute to a better understanding of the extent to which the field dependence/independence cognitive style affects individuals’ levels of language achievement, use of language learning strategies, and preferred learning styles through the statistical analysis of data gathered in a college level EFL context. A heterogeneous group of 123 participants (44 females and 79 males) between the ages of 19 and 23 was recruited through a convenience sampling. The participation was on voluntary basis and written consent of each participant was received prior to data collection. Out of 150 students approached, 133 students agreed to participate; 10 of those were excluded from the data analysis since they submitted incomplete data. Consequently, a total of 123 sets of data were actually used for the statistical analysis.

All participants were enrolled in an English for Academic Purposes (EAP) class at one of the top ranking state universities, Middle East Technical University, in Turkey, at which English is the medium of instruction. Middle East Technical University requires all its students to have a certain proficiency level of English; students must prove their proficiency levels either by submitting a TOEFL IBT score of 75 or an IELTS score of 6. The university also offers standardized proficiency exam administered by the School of Foreign Languages. The passing grade is a minimum of 59.5 out of 100. Students who cannot meet any of these requirements must attend to the English Preparatory School. Data for this research was collected from students enrolled in four different sections of a 4-credit, compulsory course: ENG102, English for Academic Purposes.

Different data collection methods were employed for the purpose of this study. Students’ field dependence/independence tendencies, their preferred learning styles, and preferences in their use of strategy in language learning were analyzed with tests and instruments adopted from previous related research conducted in different contexts. Participants’ achievement levels were determined

by their performances in in-class graded tasks and the standardized midterm and final exam scores they had to take as a part of the course requirements. In this study, the independent variables were field dependent and field independent cognitive styles and the dependent variables were participants' achievement levels in an EAP class, their use of language learning strategies, and preferred learning styles. The statistical analyses were conducted by using SPSS software program.

The Turkish version of Rebecca Oxford's Strategy Inventory for Language Learning (SILL) (Oxford, 1990), adapted by Cesur and Fer (2007), and the BIG16 Learning Modality Inventory designed by Şimşek (2002), were respectively used in order to determine participants' use of language learning strategies and preferred learning styles. Participants were grouped as field dependent or field dependent based on their performances in the Group Embedded Figures Test (GEFT); the ones who scored 11 or more correct answers out of 18 on the GEFT test were grouped under the "field independence" category and if the number of correctly identified figures is 11 or less, it was accepted as an indication of a field dependent cognitive style (Agree, King, Castro, Wiley, & Borzekowski, 2015; Ling & Salvendy, 2009; Lusk & Wright, 1981; Saadatmanesh, 2013; Witkin, Oltman, Raskin, & Karp 1971; Yoo & Yoo, 2015).

The results obtained from the SILL, the BIG16, and participants' performance levels in all graded course tasks were entered into the software, Statistical Package for Social Sciences (SPSS) 24.0 for statistical testing, and an Independent Samples *t*-test and Mann Whitney *U* test were performed depending on the normality of the data to answer the research questions posed and hypotheses formulated. Results were mixed with some hypotheses supported, particularly in achievement levels and the use of language learning strategies demonstrating a meaningful relationship with field independence, while others were not supported. Table 44 outlines the research questions and the hypotheses tested, and Table 45 shows the results.

Table 44

Research Questions and Hypotheses

Research Questions	Null Hypotheses
1) Is there any effect of field dependence/independence on participants' level of achievements in different language skills in English?	***H*$_0$1a**) There is no relationship between achievement levels in while-listening skills and field dependence/independence cognitive styles. ***H*$_0$1b)** There is no relationship between achievement levels in listening and note taking skills and field dependence/independence cognitive styles. ***H*$_0$ 2)** There is no relationship between achievement levels in reading skills and field dependence/independence cognitive styles. ***H*$_0$ 3)** There is no relationship between achievement levels in speaking skills and field dependence/independence cognitive styles. ***H*$_0$ 4)** There is no relationship between achievement levels in vocabulary skills and field dependence/independence cognitive styles. ***H*$_0$ 5)** There is no relationship between achievement levels in writing skills and field dependence/independence cognitive styles.
2) Is there any effect of field dependence/independence on participants' use of language learning strategies?	***H*$_0$ 6a)** There is no relationship between the use of memory strategies and field dependence/independence cognitive styles. ***H*$_0$ 6b)** There is no relationship between the use of cognitive strategies and field dependence/independence cognitive styles. ***H*$_0$ 6c)** There is no relationship between the use of compensation strategies and field dependence/independence cognitive styles ***H*$_0$ 6d)** There is no relationship between the use of metacognitive strategies and field dependence/independence cognitive styles. ***H*$_0$ 6e)** There is no relationship between the use of affective strategies and field dependence/independence cognitive styles ***H*$_0$ 6f)** There is no relationship between the use of social strategies and field dependence/independence cognitive styles
3) Is there any effect of field dependence/independence on participants' preferred language learning styles?	***H*$_0$7)** There is no relationship between participants' preferred learning styles and field dependence/independence cognitive styles.

Table 45

Summary of Findings

Dependent Variable			Independent Samples *t*-test results *p*. < 0.5	Mann-Whitney *U* test results *p*.< 0.5	Result	Research questions tested
Language Skills	Reading		*t*(121) = -2.81, *p*. = 0.006	-	Null hypothesis rejected	1) Is there any effect of field dependence/independence on participants' level of achievements in different language skills in English?
	Writing	Test I	*t*(121) = .189, *p* = 0.850	-		
		Test II	*t*(121) = -2.18, *p* = 0.031	-	Null hypothesis rejected	
		Test III	*t*(121) = - 2.74, *p* = 0.007	-		
	Vocab.	Test I	*t*(121) = -1.03, *p* = 0.304	-	Null hypothesis retained	
		Test II	*t*(121) = -1.84, *p* = 0.068	*p* = 0.059		
	Speaking	Test I	*t*(121) = -1.32, *p* = 0.189	-	Null hypothesis rejected	
		Test II	*t*(121) = - 2.09, *p* = 0.038	-		
	Listening	Test I	*t*(121)= -2.10, *p* = 0.037	-	Null hypothesis rejected	
		Test II	*t*(121)= -1.27, *p* = 0.206	-		
Language Learning Strategies	Memory		*t*(120)= -.531, *p* = .597	-	Null hypothesis retained	2) Is there any effect of field dependence/independence on participants' use of language learning strategies?
	Cognitive		*t*(120) = -2.01, *p* =.046	-	Null hypothesis rejected	
	Compensation		*t*(120) = -2.38, *p* =.018	-	Null hypothesis rejected	
	Metacognitive		*t*(120) = 2.14, *p* = .034	-	Null hypothesis rejected	
	Affective		*t*(120) = .868, *p* = .387	-	Null hypothesis retained	
	Social		*t*(120) = -1.09, *p* =. 277	-	Null hypothesis retained	
Learning Styles	Visual		*t*(116) = -181, *p* = .857	-	Null hypothesis retained	3) Is there any effect of field dependence/independence on participants' preferred language learning styles?
	Auditory		*t*(116) = .540, *p* = .590	-	Null hypothesis retained	
	Kinesthetic		*t*(116) = - .251, *p* = .802	-	Null hypothesis retained	

Results showed that there was a meaningful relationship between field dependence and independence and foreign language achievement levels in all skills and subskills included in the scope of this study—except for vocabulary skills. All significant findings, except for the results for the role play assessment task, were reported to be congenial with a more field-independent processing style. Significant differences were also found between field dependence and independence and language learning strategies; results showed that there was a significant difference between field independence and cognitive [$t(120) = -2.01$, $p = 0.046$)], metacognitive [$t(120) = 2.14$, $p = .034$)], and compensation strategies [$t(120) = -2.38$, $p = 0.018$)]. The use of memory, affective, and social strategies, however, did not yield meaningful differences.

Finally, this study found no significant differences in preferred learning styles for field independence and field dependence; results indicated that the null hypotheses cannot be rejected since there was no meaningful difference between participants' cognitive style tendencies and visual, auditory, and kinesthetic learning styles. Table 44 outlines the results emerged from the analyses of the data collected for the purpose of this study.

Discussion

Discussion will be presented under three different headings: 1) Field dependence/independence and foreign language achievement, 2) Field dependence/independence and language learning strategies, and 3) Field dependence/independence and learning styles.

FDI and Foreign Language Achievement. Different headings will be used to present the discussion and interpretation of the relationships identified between field dependent and independent cognitive style and the language skills under the scope of the current study. In educational research, learning problems learners encounter usually are not related to the difficulty level of the target material, but usually to the mismatch between the cognitive style to which the learner is tended and the type and level of cognitive process needed to learn the target matter, as Keefe (1988) claims. It has long been recognized that learners' academic performance in various fields significantly interacts with their cognitive styles

(Alamolhodaei, 2009; Brannan, White, & Long, 2016; Cameron & Dwyer, 2005; Roberge & Flexer, 1983; Smith, 2002; Thakur, 1992; Tinajero & Paramo, 1997)—foreign and second language learning is no exception (Brown, 2001). This study analyzed participants' level in the English language in an English for Academic Purposes class. Findings suggests that there is a meaningful relationship with participants' performance in the GEFT test and their achievement levels in the following skills or subskills: reading, listening and note taking, writing argumentative texts, and speaking in role play activities. This study, on the other hand, found no significant relationship between vocabulary skills and cognitive style. While this result supports some of the previous research, it poses a direct disagreement with some of them.

FDI and Reading. Foreign language reading comprehension skills in academic setting require a higher-level, a deeper information processing (Grabe, 2009). As cited in Hermida (2009), Bowden and Marton, (2000) explain what a deeper level analysis to reading is as follows:

> A deep approach to reading is an approach where the reader uses higher-order cognitive skills such as the ability to analyze, synthesize, solve problems, and thinks meta-cognitively in order to negotiate meanings with the author and to construct new meaning from the text. The deep reader focuses on the author's message, on the ideas she is trying to convey, the line of argument, and the structure of the argument. The reader makes connections to already known concepts and principles and uses this understanding for problem solving in new contexts. Simply put, surface readers focus on the sign, i.e., the text itself, while deep readers focus on what is signified, i.e., the meaning of the text. (p. 25)

In view of these explanations, it is apparent that the requirements of the following objectives targeted in the reading test used in this study are of some higher-order thinking skills (see Table 11):

- recognize the relationship between ideas in a text
- deduce the underlying meaning in sentences or parts of a text
- deduce the meaning of unknown vocabulary items
- identify referents in a text

Data analysis found a statistically significant difference ($p < .005$) between the mean scores of the field independent (M = 8,1053) and field dependent participants (M = 6, 8788) in the reading test. Analytical information processing skills of field independent participants seem to rationalize this result. The neuropsychological literature on hemispheric specialization suggest that analytical tasks are processed by the left hemisphere (Stewart, 2005), and it is the field independent individuals that are left-brain dominant (Tinajero et al., 1993). The results of this study are consistent with theoretical predictions that field independent individuals achieve higher scores in tasks requiring more analytical and higher-order thinking skills (Baker & Dwyer, 2005; Ellis, 2008; Keefe, 1979; Goodenough & Karp, 1967; Richardson & Turner, 2000; Selinker & Gass, 2008; Witkin & Goodenough, 1981) and have higher reading comprehension skills (Branton, 2004; Davey & Menke 1989; Davey, 1990; Fehrenbach, 1994; Sabet & Mohammadi, 2003; Salmani-Nodoushan, 2007). As they are believed to possess a higher capacity of working memory, field independent participants' outperformance in the reading comprehension test also supports the notion claiming that a clear connection between the capacity of working memory and reading fluency exists (Daneman & Carpenter, 1980). Findings of this study, in short, support the idea that individuals' reading skills and reading comprehension abilities seem to be linked with their cognitive style tendencies (Rosa, 1991; Rosa, 1994), and it is the field dependent individuals who seem to have difficulty with reading comprehension (Shan & Niannian, 2006; Pitts & Thompson, 1982). In a nutshell, as Rosa (1994) concludes, "the roots of students' failure" in reading comprehension tasks can be also, if not solely, linked to the discrepancies in their cognitive styles.

The reason behind field dependent participants' lower achievement levels might be multifaceted. Hadfield, Maddux, and Love (1997) explain that the performance levels of individuals with a field dependent cognitive tendency seem to deteriorate in anxiety provoking situations. Reading comprehension scores of the participants were collected from a strictly-timed, high stakes midterm exam. This seems to qualify for what Hadfield, Maddux, and Love mean by anxiety provoking situation. Moreover, research shows that field dependents are less successful in extracting relevant information from a complex whole (Bahar & Hansell, 2000;

Lambert, 1981; Messick, 1978; Vernon, 1972) and in rearranging ideas from a text (Fehrenbach, 1994).

FDI and Listening. Listening skills were tested through two different listening comprehension tests: while-listening and listening and note taking. While-listening performance tests require test takers to read the test items and respond while they listen to listening material; in while-listening performance test, test takers "engage in the following simultaneous activities: (a) read test items, (b) listen to the oral text, (c) write or choose the answer, and (d) follow the oral text to move to the next test item" (Aryadoust, 2012, p. 41). The International English Language Testing System (IELTS^{TM}) and the Certificate in Advanced English (CAE) tests designed by the University of Cambridge ESOL (English for Speakers of Other Languages) Examination Syndicate are well known examples for while-listening performance tests.

According to Thornbury (2006, p. 123), the sub-skills of general listening skills include, but are not limited to, the following:

1. Segmenting the stream of speech into recognizable sounds.
2. Using stress and intonation cues to distinguish given information from new information.
3. Guessing meaning of unfamiliar words.
4. Guessing the meaning of unknown words through contextual clues.
5. Integrating incoming information into the mental picture (or schema) of the speech event.

Despite being widely associated with higher working memory capacity (Bahar & Hansell, 2000), with analytical ability of separating information into its parts (Richardson & Turner, 2000), and with superiority in selective attention, accuracy, speed of encoding information (Rickards, Fajen, Sullivan, & Gillespie, 1997); field independence cognitive style and achievement in a while-listening-performance test did not significantly interact in this study.

Previous research into the influences of the field dependence/independence on listening comprehension skills has produced sundry results. Much SLA research have indicated positive correlation between field independence and listening

comprehension (Alptekin & Atakan, 1990; Bialystok, 1992; Chapelle & Roberts, 1986; Hwang, 1997; Khodadady & Zeynaly, 2012) while some research (Kheirzadeh & Kassaian, 2011, for example) have reported no significant differences. Results from the current study showed no statistically significant differences between the while-listening performance assessment scores of field dependent and independent participants, adding further to the mixed results in the area of cognitive theory. The assumption postulated by cognitive style research that field independent individuals perform higher in listening comprehension tests cannot be *fully* upheld with the results from this study—at least for the while-listening-performance test. Participants' performance differences in the listening and note taking test, however, report a totally different and a more expected result.

Regarding the cognitive processes note takers need to engage in, Makany, Kemp, and Dror (2009) explain that:

> Note-takers not only need to comprehend and write down personally flavoured information but, before that, they also need to acquire and filter the incoming sources, organise and restructure existing knowledge structures and, most importantly, they must store and integrate the freshly processed material. (p. 2)

Similarly, Piolat, Olive, and Kellogg (2004) state that the time pressure note taking innately poses requires note takers both comprehend the target information quickly and record it in written form. All these necessitate ample working memory, meticulous paraphrasing, and reduced distractions (Grahame, 2016). Moreover, Bui and Myerson (2014) recently conclude that individuals with higher working memory ability could simply take more notes than the ones with a lower working memory ability. Given all the preconditions cited in the literature for efficient note-taking skills and how these coincide with the acknowledged characteristics of the field independence cognitive trait, it is no surprise that it is the field independent participants who displayed a better performance in this study and that this result was found statistically meaningful.

The findings of this study provide further evidence to support these earlier findings linking field independence with higher achievement levels in listening and note taking tests (Frank, 1984; Rickards et al., 1997; Stern & Hassanein, 1992) and

to the ones pointing out that field dependent individuals do not perform as well as field independents do in anxiety provoking situations (Hadfield, Maddux, & Love, 1997), have a less efficient working memory (Bahar & Hansell, 2000), are associated with slower response time (Davey, 1983), are more easily distracted by irrelevant details, (Witkin et al., 1977) and possess less analytical skills (Baker & Dwyer, 2005; Ellis, 2008; Keefe, 1979; Goodenough & Karp, 1967; Richardson & Turner, 2000; Selinker & Gass, 2008; Witkin & Goodenough, 1981).

FDI and Writing. Writing assessment of this study was conducted in three different yet interrelated tasks, each functioning as a springboard to the succeeding one. In the first writing assessment, the participants were provided with two excerpts, asked to paraphrase each of them, and compose a synthesis of the ideas presented in the given excerpts. *Synthesis* involves connecting different ideas, finding relations and links among ideas and tying them together (Troyka, Strom, Hesse, & Troyka, 2007). It simply requires a critical analysis of pieces to form a new whole—a skill field independent participants are generally, if not factually, associated with. Results of this study, however, failed to establish a statistically meaningful correlation between composing a synthesis paragraph and field dependence/independence. This finding is surprisingly contradicting with some of the fundamental precepts of field dependence/independence cognitive construct: Field independent individuals possess superior cognitive restructuring (Jones, 1993) and higher analytical skills enabling them to break the whole into its discrete parts (Richardson & Turner, 2000). The lack of support for this hypothesis needs to be interpreted with caution.

Academic writing skills entail complex issues that require critical thinking skills including paraphrasing and synthesizing, the foremost skills that the participants were required to use for the first writing assessment of the current research. In the literature, paraphrasing skill is commonly described as a cognitive skill (Katims & Harris, 1997), or a cognitive processing activity (Chung & Reigeluth,1992), or a deeper processing strategy (Pintrich & Schrauben, 1992) which is intellectually demanding (Khrismawan & Widiati, 2013) because of higher-order thinking skills it requires (Margolin, Ram, & Mashiah, 2013; Na & Mai, 2017). The same lexical repertoire might as well be employed to label and describe synthesizing skills (see Eagleton & Dobler, 2007; Moreillon, 2007; Stobaugh, 2013).

While these descriptive statements commonly coincide with how the cognitive theory characterizes individuals with field independent tendencies, one might wonder the reason why field independent participants failed to display outperforming paraphrasing and synthesizing skills compared to the field dependent participants; the answer for this confusion can be quite multifaceted.

First, there already seems to be confusion, if not a lack of consistency, in the literature with respect to the relationship between paraphrasing skills and the construct of field dependence/independence. Though requirements for effective paraphrasing skills undoubtedly match with the innate characteristics of field independence, many considers paraphrasing ability a field dependent trait. Lojova (2013), for instance, argues that highly field independent individuals would lack skills such as summarizing, reviewing, and paraphrasing. Sharp (2004), similarly, puts forward that individuals with field independent traits make less use of compensation strategies like paraphrasing. A quite similar ambiguity applies to synthesizing skills as well. Placed at the fifth level of the Bloom's taxonomy pyramid, synthesizing is a higher-order thinking skill which requires critical thinking and analytical processes—traits recognized as field independent characteristics—and is attributed to right-hemispheric processing (Robeck & Wallace, 1990)—a widely accepted characteristic of field *dependent* individuals (Brown, 2004). As the aptitude for paraphrasing and synthesizing seem not to be claimed by a particular cognitive trait in the cognitive theory literature in which several certain conclusive remarks exist, the lack of a statistically meaningful difference between the performance levels of field dependent and independent participants in a paraphrasing and synthesis assessment should not be so surprising.

Second, it is quite explicable that there might be, and potentially are, limitations to the conclusions drawn from the analyses because of epistemological, methodological, and theoretical assumptions in social sciences—where various potentially confounding variables intermingle. It is not possible for the researcher to keep every probable variation under control. This research study and its hypotheses were built on previous research premises and conclusions are drawn from a wide-ranging and diverse body of previous research. Assumed limitations and variables that were unaccounted for in the previous research, or a mismatch between the dynamics of this and the previous research from which conclusions are drawn might

potentially mislead the deductions and interpretations made based on the findings of this study. Last, one can also argue that either assumptions made and the hypothesis formulated for an alleged relationship between higher-order thinking and analytical skill tendencies and field dependence/independence were flawed in the first place, and there is no meaningful and consistent relationship between these two phenomena; or the assumptions and hypothesis were not flawed, yet this study failed to report a meaning correlation due to unnoticed methodological imprecisions.

Higher order writing skills, as put forward by Johnston, Ford, Mitchell, and Myles, (2011), contain building an academic argument, interacting with secondary sources, and know how to read effectively. The findings for the second (writing two documented body paragraphs of an argumentative essay) and the third (writing a documented argumentative essay) writing assessment of this study support the conclusion that field independent individuals achieve higher scores in tasks requiring more analytical thinking and higher-order thinking skills (See Table 25 for the organizational differences between the two assessment modes). Writing a college level academic essay requires an "Aristotelian, Western mode of thinking with a focus on style and organization" (Connor, 2003, p. 232) including multiple cognitive processes (Ransdell, Arecco, & Levy, 2001) which requires complex decoding of tacit understandings (Burke, 2008). Furthermore, Reed (2010) explains that a writer's ability to put forward an argumentation in an essay format necessitates higher order cognitive activities, including problem solving skills, reasoning, and making creative decisions—all are central dynamics of a successful argumentation in which the writer is expected to present convincing evidences for well-developed and academically defended arguments out of which mature conclusions are drawn (Alagözlü, 2007).

Kroll (2001), similarly, puts forward that constructing an effective written text is "a complex task" which involves concurrent control "over a number of language systems" (p. 230). This cognitively demanding task of writing an argumentative essay and all the effort it necessitates overload working memory and "its capacity to store verbal information as well as devote processes to writing" (Tindle & Longstaff, 2015, p. 148). Higher working memory, as Reed (2010) notes, is directly associated with writing fluency. In other words, one of the important characteristics of efficient writing, writing fluency, is hindered if working memory has limited

capacity (Baddeley, 1986). Therefore, the quality and fluency of individuals' writing are determined by individuals' dissimilarities in their working memory capacity (Ransdell & Levy, 1996). Horowitz (1986) names a group of strategies and suggests that success in academic writing is strictly associated with the ability of applying those strategies: selecting relevant information from text sources, reorganization and restructuring of the new information, and encoding information into academic language. The term encoding information in social sciences, as explained by Lavrakas (2008), refers to "the process of translating thoughts, ideas, or questions into words" (p. 232). In addition, it goes without saying that time management and organizational skill are essential to success in academic writing assessment tasks. All these impeccably coincide with the following traits associated with field independence in the literature:

- Selective attention, accuracy, speed of encoding information (Davey, 1983; Davis, 2001; Richardson & Turner, 2000)
- Ability to identify relevant material from excess information (Witkin & Goodenough, 1981)
- High(er) working memory capacity (Bahar & Hansell, 2000)
- Analytic (Selinker & Gass, 2008)
- Analytical way of processing information (Witkin, Goodenough, & Karp, 1967)
- Higher cognitive restructuring skills (McMorris, 2005)
- Being able to isolate facts and separating the relevant from the irrelevant (Tinajero & Paramo, 1998)
- Sorting signal or relevant information from "noise" or incidental information (Bahar & Hansell, 2000)
- Sense of time orientation (Tinajero et al., 1993)

These findings also support the previous research suggesting a meaningful relationship between field independence and higher achievement levels in foreign language writing skills (Graffin, 1983; Large, 1998; Shojaei & Kapfo, 2015; Tinajero & Paramo, 1998). Yet, it should be noted that none of these studies specifically investigate their participants' argumentative essay writing achievements in relation to their cognitive styles. In the literature, to the best of the researcher's knowledge, scant research on cognitive styles and writing achievement has been located in the

context of English for Academic Purposes. Nilforooshan and Afghari (2007), in their study conducted in an Iranian EFL context, compared the performance differences in three different writing modes: writing, narration, and argumentation. They conclude that field dependent participants were outperformed by their field independent counterparts in all writing tasks, and performance comparison between the two groups for the argumentation did not yield any statistically meaningful result. They explain that convincing the reader, the sole purpose in argumentative writing, can be achieved both deductively and inductively. The reason for this mismatch between the findings of this study and that of Nilforooshan and Afghari could be arising from different reasons including potential proficiency differences between the participants, the exposure of input and the amount of practice the participants had, and discrepancies between the evaluation criteria and rubrics used in both studies. Finally, the reason might also be due to a coincidental match or mismatch between the cognitive styles of the participating students and evaluator instructors—a factor that potentially affects the results found in cognitive studies (Samms, 2010; Zhang, 2007) and that neither of these studies have focused nor examined.

FDI and Vocabulary. If the construct of language proficiency was a matter of architecture, the fundamental building blocks would unquestionably be lexical items. Vocabulary is central to language teaching and learning and is of utmost importance to a language learner. Martin and Ellis (2012) explain that “vocabulary learning involves the sound patterns of words and their arbitrary mapping to meaning; grammatical patterns involve abstracting the relations between vocabulary items and identifying their functional significance” (p. 402). Similarly, Schmitt and Schmitt (1995) point out that learning a lexical item requires a deep and rich semantic processing including creating mental images for the target lexical items and grouping words that are conceptually associated together. It is this deep processing that, according to Schmitt and Schmitt, paves the way to learning. This cognitive activity obviously necessities, due to its “attention regulating function”, a solid working memory (Ellis, 1996; Kormos & Safar, 2008, p. 265). Though some recent studies concluded that it is the “whole-brained” individuals who perform better in vocabulary tests, (Alibeigi, 2017; Soyoof, Jokar, Razavizadeganc, & Morovata, 2014), or the right-brain seems like the one in charge of vocabulary learning (Niknam, & Saberi, 2017; Oflaz, 2011), brain-based research in SLA and FLE

generally concludes that vocabulary processing and learning is controlled by the left brain (Van Giesen, Bell, & Roubinek, 1987). However, all those findings, considering the fact that it is the field *in*dependents who are believed to have left-hemispheric dominance (Tinajero et al., 1993) and a higher working memory (Bahar & Hansell, 2000), do not support the results reported by Rostampour and Niroomand (2014), who concluded that "there was a credible and meaningful correlation between field dependence/independence cognitive styles and total vocabulary knowledge. Thus, the higher the scores of vocabulary knowledge test, the more field dependent the testees are" (p. 55). It is not just the study of Rostampour and Niroomand that report unexpected findings—field *in*dependent participants' outperformance—as to the relationship between cognitive domains and vocabulary achievement; the results reported in this very study also do not yield the consistency with the cognitive theory-related conclusions that can be inferred and extracted from the vocabulary learning and teaching literature. It is the contention of the researcher that a potential answer is, again, in the vocabulary learning and teaching literature itself.

Rubin (1981) lists a broad spectrum of vocabulary strategies that language learners, mostly the good ones, employ. It is those strategies that enable learners function in the target language despite the gaps in their vocabulary competency. According to Rubin, good language learners, for example, use their inductive inferencing strategies to guess the general meaning through the available cues such as context, topic of discourse; try to separate relevant cues from irrelevant one to infer meaning and grasp an overall picture and make inferences regarding the target material. Learners, also can employ, what Rubin calls, deductive reasoning strategies in order to decipher meaning of a lexical item by breaking it down into its smaller units, grouping words based on common suffixes or affixes, or inferring vocabulary by analogy (For details and other strategies, see Rubin, 1981 or Table 8). Anyone in the field of cognitive studies could easily spot the correlation between what lies under these two strategies Rubin postulates and the widely-accepted dispositions individuals possess depending on where they lie on the continuum of field dependence/independence. The reason why the vocabulary assessment results did not report a statistically significant finding could be because of the possibility of the participants employing different strategies, deductive or inductive—depending on their cognitive style, to achieve their goal. In the end, there is not a

panacea-like strategy; strategies can be equally beneficial and valuable depending on the personal tendencies and predispositions.

This non-significant result may also be due to some methodological limitations. Some state that there is a reliability concern in field dependent and independent research due to the way studies dichotomize their participants (Hunter & Schmidt, 2004). There seems to be two general tendencies in the way studies evaluate the GEFT scores: some, including the original field-dependent/independent research of Witkin and the current study, for instance, divide their subjects into field dependent or and field independent groups based on the median split (Abraham, 1985; Cunningham, Ridley, & Campbell, 1988; Ling & Salvendy, 2009; Lusk & Wright, 1981; Raptis, Fidas, & Avouris, 2016; Saadatmanesh, 2013; Witkin, Oltman, Raskin, & Karp 1971; Yoo & Yoo, 2015); some others, on the other hand, categorize their participants into three groups: field dependent, field neutral, and field independent (for example, Chen, Lin, & Lin, 2014) based on the number of correct answers they have on the GEFT. Some of these researchers choose to employ the two extreme ends only in their study. To the best of the researcher's knowledge, there is no previous research in the literature in which the same data collected from the same subjects was analyzed based on different evaluative approaches for the GEFT scores for comparison purposes—hence, leaving promising potentials for further research.

FDI and Speaking. The analyses of participants' speaking scores were based on their grades in two different speaking assessment tasks: a debate and a role play. The data analysis did not yield statistically significant results for the former; both field dependent and field independent participants seem to display similar performance levels. For the latter, on the other hand, results indicate significant performance differences in favor of field dependent subjects—the one and only case in which field dependents outperformed their field independent counterparts. So, what is or is not in a role play task that helped field dependent learners display their first, and actually the only, outperformance among the skills focused in this study?

A role-play, though lacking a consensual definition and interchangeably being used with the terms *simulation* and *drama* according to Kodotchigova (2002), is a

drama-like, in-class activity in which learners assume different roles in an imaginary situation and act out what might normally happen in that situation. In role play activities, players take on a personal attitude, opinion, or role of someone else in a set context (Thamarana & Narayana, 2016). Giebert (2014) states that “drama activities lend meaning to language structures by letting students experience the language in concrete situations” (p. 141) and further points out that they provide “sustainable, holistic learning” environment which “involve physical activity and emotional involvement” (p. 142). One of the most cited advantages of drama activities, according to Razoni (2013) and (Dailey, 2009), are that they create a fun learning environment and provide an enjoyable framework that reduces classroom anxiety. How all these paved the way for success for the field dependent participants can be associated with the following contrastive conclusions drawn from field dependent/independent research:

Field dependents perform better in non-anxiety-provoking situations.	Anderson (1988) Hadfield, Muddux, and Love (1997)
Field dependents possess strong social skills, are more attuned to social cues, and prefer collaboration.	Garton (1993)
Field dependents have a social orientation and like to learn through being with people, and tend to be more empathetic, more socially attuned.	Witkin et al. (1977)
Field independents lack social and interpersonal skills. Expressive, more friendly.	Witkin and Goodenough (1981)
Field depends are better at social and interpersonal relations, get along better with others, care more about social cues and prefer situations that help them get in contact with others.	Brown, 2004 Johnson, Prior, and Artuso (2000) Witkin and Goodenough (1981)
Field dependent individuals favor learning settings that are less structured.	Wooldridge (1995)

Field dependent learners are more sensitive to the learning settings, and have a more holistic approach.	Jonassen and Grabowski (1993)
Field independents feel more uncomfortable with interpersonal and self-analysis in front of others and have a stronger value of privacy and isolation.	Bales, Cohen, and Williamson (1979)
Field dependent learners need learning activities that are explicitly placed within a social context and they need interaction with peers.	Onyekuru (2015)

The results of the current study also support the findings of Sadler-Smith and Riding (1999) and Saracho (1997) concluding that individuals with more holistic cognitive traits would benefit more from and prefers to engage in role plays or similar dramatic plays.

Although a debate can potentially be considered and offered as a type of role play activity in the classroom which makes each debater to accept and display the proper role according to the stance assigned or picked, research shows that debate is relatively different from a role play activity and has a myriad of other additional requirements which are implicitly coded into the fundamentals of a role play and expected to be explicitly performed. For effective debate skills, a cognitive processing is of paramount importance to be able to simultaneously and instantaneously manage the following concerns (Snider, 2002):

- seeing the overall picture and being aware of the way each idea presented influence one another, and using those links to enhance analysis in the debate
- analyses of the counter arguments posed
- dynamism, enthusiasm, and commitment
- challenges that will be put forward
- social interaction with peers
- cooperation and collaboration
- listening and note taking
- time management

That the current study did not find any significant difference between the two groups might be because that those abovementioned requirements do not necessarily favor one group over the other. The reason underlying this similar, or statistically non-significantly different, performance level is possibly because that field dependents and independents, in a task as such, utilize different skills, cognitive traits and processes—each compensating or suffering from what is lacking. Not much research exists on the effects of field dependence and independence on academic debate skills. Hunt (1998) conducted a comprehensive ethnographic study to provide a better understanding of the relationship between the learning settings in a typical argumentation and debate course and learners' cognitive styles. Though the detailed and quantitative findings described in the study confirm the theoretical assumptions as to the cognitive discrepancies in the ways field dependent and independent process information and perform in academic debates, no statistical data regarding performance differences between the two groups, since it was not in the scope of the study, was reported.

FDI and Foreign Language Learning Strategies. The other category of data analyzed and presented in this study focused on exploring the relationship between the field-dependent/independent cognitive trait and the participants' use of foreign language learning strategies. While the use of compensation strategies by field independent participants with a mean score of 3.51 indicate a high level use of that strategy, both for field dependent and field independent participants an overall medium range of language learning strategies was found. This finding is in accordance with other studies conducted in EFL learning settings in Turkey concluding that Turkish EFL learners' use of language learning strategies fell within the medium range (Kurt & Atay, 2006; Merç, 2014).

The results provide mixed support for the prediction of a negative relationship between field dependence/independence and the strategies listed in the taxonomy of Oxford (1990). The data analysis found that field independent cognitive style was meaningfully related to three learning strategies: Cognitive (p = .046), Compensation (p = .018), and Metacognitive (p = .034). None of the strategies seem to be congenial with a more field dependent processing tendency. The results of the current study also showed that the null hypotheses regarding the relationship

between field dependent/independent cognitive style with three of the strategies on Oxford's taxonomy—memory, social, and affective strategies—are to be retained since no significant correlation between these three variables found.

Cognitive strategies, as the name itself suggests, is a collection of cognitive processes ranging from analyzing expressions to summarizing and is believed to be one of the most—even the *most,* as Yang (2005) claims—important strategy in terms of their effects on learning abilities and learner independence. Oxford (1990) indicates that learners using cognitive strategies commonly choose a deductive way of reasoning; decode new expressions by breaking them down into smaller pieces. They usually engage in making grammatical, phonological, and lexical comparisons; and note taking. They also analyze new information, detect its patterns, combine it with previous knowledge, and make interlingual translations as necessary. As mentioned in Chapter 2, one of the characteristics of good language learners, according to Rubin (1981), is employing deductive reasoning strategies in order to decode new information by breaking it down into its smaller units. Similarly, learners employ metacognitive strategies in second language learning in order to monitor, regulate, and plan their learning experiences. Metacognitive strategies are associated with higher-order and critical thinking skills and require a high level of working memory (Wenden, 1998).

Considering the multidimensional and intricate aspects of what we call language—quite arguably the greatest social construct of human civilization, the genesis of which is rooted in neuroscience—it is reasonable to claim that no specific strategy is, and should be, superior to another; different strategies are needed depending on the target content, other contextual requirements, and circumstances. Yet, studies that found these strategies, namely, cognitive and metacognitive strategies as the most influential phenomena on learning can be easily spotted in the literature (for example Meece, Bluemenfeld & Hoyle, 1998, or Yang, 2005). If this is really the case that metacognitive and cognitive strategies are what really seem to push learners ahead, it is of no surprise, then, that the current study found a meaningful relationship between cognitive and metacognitive strategies and field independence; it was the field independent participants who displayed higher achievement levels in all language skills under the scope of this study—except for one single task: the role play.

This finding can also be explained in accordance with the previous studies which conclude that field independents have a higher analytical way of processing information (Witkin, Goodenough, & Karp, 1967); a high(er) working memory capacity (Bahar & Hansell, 2000); better note-taking abilities (Frank, 1984; Rickards et al., 1997; Stern & Hassanein, 1992); better summarizing skills (Tinajero & Paramo, 1998); have a greater ability to self-monitor, regulate, and plan their learning processes (Martínez, Sanabria, & López, 2016; Ortega, 2009); higher accuracy in making translations (Motahari & Norouzi, 2015); and better organizing and structuring processes (Davis, 1991). All these aspects coincide with the processes underlying and governing cognitive and metacognitive strategies. The meaningful relationship found between field independence and the use of cognitive and metacognitive strategies in this study also supports the previous studies indicating that cognitive style is a determinant factor in strategy use (Abraham, 1983; Ehrman & Oxford, 1989; Shi, 2011) and, more specifically, that field independency seems to display statistically meaningful correlations with the use of cognitive and metacognitive strategies (Ahmady & Yamini, 2003; Jamieson & Chapelle, 1987; Tinajero, Lemos, Araujo, Ferraces, & Paramo, 2012). Thompson and Rubin (1996) state that using cognitive and metacognitive strategies concomitantly help learners "not only learn more but can also transfer strategies from task to task and continue to use strategies over time" (p. 332). The findings of this study seem to support this claim considering the meaningful relationship found between field independence and higher achievement levels in language skills. Also, this might support the view that there is a non-linear, a spiral, connection between language achievement and strategy use: learners' use of language learning strategies may help them increase their competencies in the target language which, as a result, will enhance their strategy use, and which consequently will further improve language competency. This, what Griffiths (2013) calls "the Tornado Effect", goes on in an ever-widening circle. The current study can also open up a possibility to confirm Messick (1994) who claims that field dependence can be a type of, what he calls, "metacognitive deficiency", which he sees as the fundamental reason why field dependents seem to be "less strategic in orientation, even when appropriate strategies are available in their cognitive repertoires" (p. 129).

The third and the last statistically meaningful relationship found in this part of the current research was between the field independence and the use of compensation strategies in Oxford's taxonomy of language learning strategies. There is a vast amount of evidence in the literature that a statistically significant relationship exists between individuals' field dependence and independence tendencies and their use of compensation strategies. Most of these, however, conclude that the use of compensation strategies correlates with field dependent cognitive trait (Ehrman & Oxford, 1989; Naimie, Abuzaid, Siraj, Shagholi, & Al Hejaili, 2010). There is also a large body of research advocating that no correlation exists between cognitive styles and the use of compensatory strategies (Ahmady & Yamini, 2003; Kim, 1992)—hence, contradicting the findings of the current study; no studies were located in the language learning and teaching literature concluding, even implicating, a significant relationship between field independence and compensation strategies.

In other words, this study did not confirm the assumption that compensation strategies are mostly preferred by learners with a field dependent cognitive style (Cohen, 1990). One might put forward different causes that could account for this conflict—including the ungeneralizable and limited data sample tested or some flawed methodological assumptions and procedures that distorted the current findings. It might even be claimed that this contradictory finding is potentially a matter of a conflict between theory and empirical research—something that should not be considered so unusual for social studies. Nonetheless, though not fully ignoring the probability of the aforementioned causes for this contradiction, it is the contention of the researcher that discussing the issue from a broader scope and visiting the not-so-visited—at least in foreign language research—aspects of Witkin's field independence cognitive construct might present more cogent points elucidating the possible underlying dynamics as to why the use of compensation strategies were related to field independence in the current study.

Field independent individuals are considered to have a high self-esteem and are generally seen as "demanding, inconsiderate, manipulating others as a means of achieving personal ends, cold and distant in relations with others" (Witkin & Goodenough, 1981, p. 44). Research in Psychology further reports a meaningful relationship between field independence and *social anxiety* (Murry, 1988)—which

simply is “the discomfort that is connected with the awareness of other people's evaluation of oneself as a social object” (Fenigstein, Scheier, & Buss, 1975, p. 522); this discomfort is frequently “in, or about, interpersonal situations” (Okazaki, 1997, p. 54). More recently, Dijk, van Emmerik, and Grasman, (2018) define social anxiety as “a proneness to act submissively in order to reduce conflict and avoid rejection by others” (p. 66). People who are socially anxious “overuse an ‘agonic mode’ in which the social world is perceived as hierarchical and conflictual, and underuse a ‘hedonic’ mode which includes affective schema's of communion, safety, agreeableness and warmth” (Trower & Gilbert, 1989 as cited in, Dijk, van Emmerik, & Grasman, 2018, p. 66). The Freudian perspective expects the advent of an ego-protective inclination, or in other words, ego-defense, when there is an anxiety threat.

Willemsen and Margolis (1996) states that ego defense observed when the mind tries to “compensate for the 'I am not.' It is formed when any of the basic ingredients required by the ego is lacking” (p. 31). From a psychoanalytic point of view, compensation is an ego-defense mechanism executed both consciously and unconsciously (Behrendt, 2007). An important, if not the most important, underlying motive for individuals employing compensation strategies, according to psychoanalysts, is to counterbalance real or assumed deficiencies and supposed weaknesses in order to maintain self-images and fight anxiety (Jones-Smith, 2011; Miceli & Castelfranchi, 2012). Research in Clinical Psychology points out that use of compensation strategies is a common concomitant with high self-esteem (Wood & Dodgson, 1996) and with inferiority and superiority complexes (Linden & Hewitt, 2011).

While field independence is commonly associated with a “strong ego” (Ferguson & Crowley, 1997; Rémy & Gilles, 2014), various studies, including the very first writings of Witkin on the field dependence/independence construct, explicitly relate field independence, especially extreme levels of field independence, to the common use of defense mechanisms—with a tendency to distort reality in the use of them—and even to paranoia (Lewis, 1971; Witkin, 1965; Witkin et al., 1979). Studies conducted out of language learning settings found significant relationship between field independence and defensiveness (i.e., Karp, Poster, & Goodman, 1963; Lewis, 1971). Furthermore, field independents’ impersonal orientation,

favoring non-social environments, being less affected by others' perceptions, and acting more egocentrically might, as noted by Witkin (1965), at some point, pave the way to the development of a narcissistic personality.

How might all these be potentially connected with the meaningful relationship found in this study between the use of compensation strategies and field independence? One might simply choose to dissociate all these abovementioned non-SLA/FLA literature regarding the notion of compensation, its inherent nexuses with ego-defense and cognitive styles, and conclude that "the reason why the use of compensation strategies are employed by field independents might be due to their analytic skills and high levels of working memory, which ostensibly help them foresee what will possible go wrong in their written or oral communications and assist them with compensating for gaps in their language" and ask for further research. Nonetheless, the parallelism between those abovementioned tendencies allegedly coded into a field independent mind and theoretical assumptions for compensation strategies cited in the fields of psychology, psychoanalysis, and clinical psychology is so remarkable that one might simply put forward the idea that the motivation for field independents' use of compensation strategies more than field dependent participants in this study might be more than a matter of a need and desire for language communication—it might have more of a face saving and ego-defending motive.

Horwitz, Horwitz, and Cope (1986) indicate that the presence of any kind of anxiety might have an impact on the strategies students employ in a language class for communication purposes; when learners feel anxious, they tend to avoid potential challenges in the target language. In other words, anxiety causes students to abandon the use of challenging linguistic expressions and encourages them keep their language outputs within the borders of their linguistic safe zones. In a less bold claim, one might indicate that this might, again together with the implications of the above-mentioned arguments, imply the existence of a possible anxiety factor (academic achievement concerns or competitiveness, for example) which makes the field independent participants, and possibly their egos, feel threatened, thus pushing them into various means of compensation. Present finding is of considerable significance because it provides a deeper understanding of, and more

intricate questions about, the processes governing the actions taken and reactions given by a field independent mind in foreign language learning settings.

This study did not find any meaningful relationship between cognitive style and the use of memory, social, and affective strategies. In other words, the commonly assumed conclusion that field dependent individuals use more social strategies due to their high(er) social skills while field independents seem to employ more memory skills as a result of their analytic way of information processing tendencies was not borne out in this study; field dependent subjects of the current study seem to employ as many memory strategies as their field independent counterparts, and the same is valid for the relationship between field independence and use of social skills. This is somewhat consistent with the previous research; studies conducted by Shih and Gamon (2003), Kim (1992) and Umar (1999), who did not find *any* meaningful relationship between cognitive styles and preferred learning strategies.

Oxford (1990) states that learners' success is highly determined by their affective states, and Kanagy (2008), in her research on the relationship between field independence and the ability to control emotional responses and reactions, found that field independence is meaningfully correlated with higher emotional regulatory abilities. Since the influence of affective skills on cognitive and social abilities is indisputable, and a stronger emotional control should yield higher success levels, and field independent individuals' academic success can potentially, and at least partly, be attributed to their success in controlling their affective states. Though this study found meaningful relationship between success in language skills and field independence, it, just like the studies conducted by Kim (1992) and Umar (1999), does not support the conclusions presented by Oxford and Kanagy. What might be the reason for this mismatch among the empirical and theoretical conclusions offered in those studies? Thought the lack of generalizability due to discrepancies in the contexts of studies might be one of these reasons, literature implies that the answer may be more of a cognitive aspect.

There has been an ongoing debate about whether cognitive styles are permanent *traits* or temporary *states* (Zhang & Sternberg, 2005). Timm (1999) believes that learning and cognitive style are fluid phenomena and learners seem

to adopt different approaches depending upon the task and situations they face. While some claim that field independence, or any cognitive style in general, is stable over time (Kolb, 1976; Witkin et al., 1977), some others, on the other hand, argue that it is malleable (Hayes & Allison, 1998; Leonard, Scholl, & Kowalski, 1999). If, as Timm indicate, cognitive style is not a permanent concept and, as Hayes and Allison claim, can be modified, one can thus claim that the reason why the finding in this study show no meaningful relationship between memory, social, and affective strategies and field dependence/independence cognitive style is a) because a cognitive style is an innately flexible phenomenon, and thus it is normal to find idiosyncratic and mismatching results in different studies or b) the cognitive style of the participants have been adapted due to cognitive style malleability and thus the results do not support much of the previous research on characteristics embedded in field dependence and field independence cognitive styles.

FDI and Learning Styles. Cognitive theory simply aims at outlining and shedding light on process of knowledge development (Korthagen, 2010). With that aim, a voluminous amount of research attempted to discover the predictable patterns in learning processes of different individuals categorized under a motley of different labels. A plethora of research indicates that the patterns of knowledge development and information processing, despite frequent inconsistent findings reported, seem to be different from each other depending on basic cognitive processing biases (Dwyer & Moore, 1994). The findings of this study, however showed that the null hypothesis is to be retained because there is not a statistically significant relationship between field dependent and independent cognitive style and learning styles—visual, auditory, and kinesthetic—identified by the BIG16 Learning Styles Inventory. Data analysis revealed a significance value for each learning style identified on the inventory higher than an alpha level of 0.05: Visual: p =.857, auditory: p = .590, and kinesthetic: p = .802. To the best of the researcher's knowledge, this is the first study which adopted the BIG16 Learning Styles Inventory in the area field-dependent/independent research, and these findings emerged in this study are consistent with the previous studies which used different inventories to identify their participants' learning styles and concluded the concepts of cognitive style tendencies and learning styles are independent from each other (DeBell & Crystal, 2005; Heitmeyer, 1985; Kini, 1993; Sadler-Smith, 2001). In addition to

supporting these previous studies with the same conclusion, that fact that the Independent Samples *t*-test applied in this study found no significant mean differences between the participants' scores on the GEFT and the BIG16 Learning Style Inventory might some other implications.

Initially, Riding and Cheema (1991) suggest that what is called learning style is a flexible and even a fluid phenomenon that can be altered through individual strategies. Cognitive style, on the other hand, is thought to be a relatively stable characteristic of an individual which does not change based on situational factors. This mismatch between a constant trait and a flexible style might explain the reason for the non-significant relationship detected in this and some other studies. Second, it might be a matter of another mismatch—this time between the GEFT and the BIG16 Learning Style Inventory. That is, it can be claimed that what the GEFT assesses might not actually be compatible with what the learning styles inventory utilized in this study tests. In other words, the competencies and tendencies identified through locating a simple figure embedded in a more complex figure in a limited time might not have any influential factors on the three modalities identified in the BIG16 Learning Styles Inventory. Additionally, literature lacks studies that employed the BIG16 Learning Style Inventory in similar research studies in similar contexts. Therefore, no comparisons can be made between the results found in this study and instrumentally and contextually similar studies. These should not be taken as a validity or reliability concern regarding neither instruments; it might only be a matter of untransferability of skills identified. Similar concerns regarding a possible untransferability of the GEFT-identified skills to different domains, for example, were previously voiced in some other studies in the literature (see Castang, 2017). Third, maybe it *is* actually a matter of reliability or validity because the GEFT does not test what it actually claims to test; this is not a never-asserted claim in the area of cognitive styles research (Griffiths & Sheen, 1992).

Last but not least, the findings in this part of the study are all non-significant maybe because the findings lend support to the claims of British scholar Frank Coffield. Perhaps, Coffield is right; the concept what has researchers been calling *learning styles* for decades is actually scientifically flawed and seriously lacks empirical evidence, and, as he says in his harsh and though-provoking criticism, "It

is high time that the teaching profession moved on from these pre-scientific instruments that carry the real danger of labelling and trapping students and adults into fixed categories that have little or no research evidence to back them" (Coffield, 2013, p. 3).

Implications and Recommendations

This study, together with bringing up several theoretical questions, extends the present literature in cognitive theory and foreign language learning and teaching by providing some further data and deducting implications from a not-so-commonly-studied setting regarding the relationship between field dependence/independence cognitive style and foreign language achievement, language learning strategies, and learning styles. According to Reiff (1996), traditional western education usually demands for more "analytic, competitive, individualistic, field-independent cognitive style" (p. 231). This decidedly creates an unfair play for many students populating modern classrooms today—including the field dependent participants of this research who are enrolled in an American-founded higher education institution valuing and demanding strict western educational norms. It is clear both in the literature review and in the findings reported in this study that a learner's high performance levels in the GEFT is a predictor factor of higher language achievement scores in most, if not all, foreign language skills. In other words, individuals seem to be able to transfer the unique characteristics embedded in their cognitive styles to second language learning settings—yet, this transferability of those characteristics seem to have some bias problems, favoring field independent learners more than field dependent ones. As classroom-based modern language teaching and learning environments, also the most common testing settings for what is learnt and what is not in a classroom, foster and require critical and analytical thinking skills, the gap between the field dependent and field independent individuals will continue to widen—unless teaching practitioners become more aware of the influences of one's cognitive biases on academic success.

To address this concern, there seems to be some steps to take: a) educators can give priority to increasing prospective language teachers' awareness of cognitive styles. Researchers in the field of cognitive theory can conduct longitudinal, or simply more, studies regarding the malleability of cognitive styles

and reflect the findings of these future studies on the educational approaches and methods followed in teacher training programs. Verifying and extending the claims about the teachability of cognitive style awareness and malleability of cognitive styles of the researchers such as Rosenfeld and Rosenfeld (2004); Leonard, Scholl, and Kowalski (1999); and Hayes and Allison (1998) might potentially set up new directions in the teaching and learning philosophies followed in many corners of educational practices. b) and/or creating a more cognitive style-friendly learning materials and assessment modes keeping learners' individual cognitive vulnerabilities and biases in mind. The latter seems to be a more challenging task—not only because it would pose huge logistic demands but it also would require a tremendously fine calibration between cognitive styles; as commonly voiced in the literature, every time educationalist try to make learning experience more suitable and fruitful for one group, it is inevitable that their attempts will potentially make things worse for some other group.

More specifically and from a practical perspective speaking, these findings shed further light on the need of language instructors' paying attention to their learners' dominant cognitive traits and the way their information processing tendencies determine their success in the classroom environment. English for Academic Purposes contexts found in many university settings, where the content revolves predominantly around critical and analytical skills and at the end of which assessment is mostly carried out through relatively subjective assessment modes—such as writing essays or giving academic presentations—any potential mismatch between learners' cognitive skills and the course content, course requirements, and means of assessment should raise seriously objectivity concerns. The fact that everything about such a course, including all in or out of class graded tasks, rubrics, course content, is strictly regulated and standardized should—actually, according to the literature review and the findings of this study, *does*—not mean objectivity concerns are minimized. Frank and Keene (1993) suggests that field dependent EAP learners' needs can be addressed if the learning settings focus more on teaching categorization, adopting a thematic organization, providing clear sign posts in note taking tasks. Though all these methods are already explicitly focused and implemented as a part of the teaching philosophy in the language course which set the context for this study, the guidance Frank and Keene claim that field dependent

learners need does not seem to be effectively assisting their learning experiences even if it is provided, as in the case of the context of this study—bringing up questions regarding the effectiveness of those pedagogic suggestions put forward and also drawing attention to a possibly existing gap between the in-class implementation of the descriptions presented on the course outlines. It is also recommended that additional pre-service and in-service training on the language learning strategy concept should be offered to currently employed instructors who thus can develop further skills necessary to practically combine their teaching with the concept of language learning strategy.

Additionally, in the light of these findings, if the way knowledge is processed affects the outcomes, it is reasonable to claim that the way it is assessed will also affect the outcomes. This brings up further objectivity concerns not only for language learning and teaching environments but for the whole educational and professional spectrum. The literature states that a mismatch between the learners' cognitive style and that of the instructor can poses certain challenges both for students and the instructor (Pizzamigho & Zoccolotti, 1986). Similarly, Saracho (2001), for example, shows that individuals' differences in field dependent/independent cognitive style have a direct effect on their teacher preferences. A coincidental match between the cognitive tendencies of learners and teachers may be advantaging some learners while a possible mismatch may disadvantage some others. Following this logic, it can be indicated that any mismatch between the instructors' cognitive processing biases and the assessment modes or the grading criteria (analytic vs. holistic rubric, for instance) should be another concern to educators. Therefore, an ideal learning environment should sustain a match not only between learners' cognitive styles and the content input but also between the instructors' cognitive dispositions and the nature of the materials and tools they utilize to assess, evaluate, and teach their students. For this reason, instructors need to be aware of their own cognitive styles and to be provided with appropriate testing materials. Considering the fact that every semester around 4000 students are required to take the same EAP class in the institution where the data of this study was collected, these implications are urgent because what is at stake here is the success of individuals—the ultimate goal of every educational setting.

It is of course true that academic achievement can be affected by so many imperceptible, unpredictable, and even inevitable factors. It is unattainable to expect it from practitioners that all these factors are kept under control. However, significant academic performance differences between field independent and field dependent individuals which are repeatedly echoed in the literature imply that the cognitive parameters brought into learning settings by individuals' mental tendencies and dispositions are perceptible, predictable, and potentially preventable. Perhaps, many, if not all, students who are considered unsuccessful or at risk in foreign language classrooms are so because the rules governing their cognitive world simply conflicts with the dynamics of the educational cosmos where they are expected to evolve and advance.

This study also provides valuable information regarding how or if field dependence or field independence way of cognitive processing interrelates with two other important educational domains, language learning strategies and learning styles, which are considered to be of utmost importance for effective learning. Not much research is available in the literature that makes a comparison of these variables in relation to field dependence/independence within the same research study through the analysis of a data sample collected from the same population, the language achievement levels of which is also available to deepen this comparison. Probably, one of the most interesting findings of this study was that inferential statistics reported no statistically meaningful relationships between field dependence and independence—which were found to be affecting participants' achievement levels—and visual, auditory, and kinesthetic learning styles, which are concepts that are important for successful language learning if effectively addressed. There are important theoretical and educational implications of this finding.

Findings show that the construct of learning styles was not affected by participants' cognitive styles in this study, despite much research use these two terms interchangeably in the literature. First, from a pedagogical point of view, considering this pendulum swing with these two variables of the current research suggests that addressing language learners' learning style-related differences is not necessarily needed among the practical strategies that should be formulated and employed to close the gap arguably created by cognitive processing tendencies of

learners in language classrooms. Yet, this does not mean that learning styles should be ignored in the classroom. A voluminous amount of valuable research highlight the need for differentiating learning in accordance with learners' learning styles. Therefore, the need for teaching practitioners to have a better understanding of their students' learning style preferences should still be considered valid.

If the reasons blurring the differences between field dependent and independent learners' preferred learning style are better understood, better educational implementation can be suggested. This discovery process can be implemented through interviews, in-class observations, or think-aloud protocols. The lack of relationship between field dependent/independent cognitive styles and preferred learning styles may also claim that what actually matters for learning may not be the way how the target piece of information is delivered and received—through visual, auditory, or kinesthetic means; what matters most may be how this piece of information is decoded and processed—globally or analytically. If this highly-debatable implication is the case, this again highlights the necessity of focusing on discovering alternative ways to assist learners' needs in relation to the cognitive processing tendencies they have. This can be possible only if educational practitioners first shed light on the cognitive tendencies that the students populating classrooms possess. Similarly, as Sternberg and Zhang (2005) state, instructors who are aware of their own learning and teaching style tendencies can better enhance their classroom teaching practices and better accommodate different learning styles in their classrooms. Therefore, it would be beneficial for teachers to discover their own learning styles, too.

Theoretically speaking, that the learning styles are not influenced by field dependence/independence might be a sign for a compatibility issue between the GEFT and the BIG16 Learning Style Inventory. This might potentially discourage other researchers from employing these two tools together in the same research. However, similar results were found with other learning inventories, including The Kolb Learning Inventory. Thus, this may have other implications regarding the construct of learning styles theory in general. Strong criticism has been directed against the theoretical foundations of learning styles, some (Coffield, 2012 for example) argue that the literature failed to provide solid evidence for its validity, reliability, and influences on learning. These assertions can best be supported or

discredited in real-life teaching and learning settings. Educators should specifically focus on accommodating different learning styles and differentiating input material used in teaching and learning environments and observe the outcomes of this differentiation.

The findings of this study also indicate that performance on the GEFT is also a predictor for the use of some of the language learning strategies classified on Rebecca Oxford's Strategy Inventory for Language Learning (SILL) (Oxford, 1990), for the use of cognitive, metacognitive, and compensation strategies to be precise—all positively connected with possessing a field independent cognitive trait. The positive effects of strategy use on language learning has long been recognized; it is believed that employing different language learning strategies, separately or eclectically depending on the task, is a common trait of good language learners (O'Malley & Chamot, 1990). Given that the results found in this study regarding the relationship between cognitive style and the use of language learnings strategies yielded a similar conclusion with the findings about how cognitive style seems to be an influential factor for language achievement—that is a field independence dominance—some further implications can be drawn.

Results show that use of less, even none, language learning strategies and lower achievement levels in language skills seem to be congenial with a more field dependent processing style. This can explain, at least in part, the reason for the field-independence outperformance detected in the data analysis of this study. From a pedagogic perspective, this has implications regarding the need for the implementation of a strategy-based instruction for field dependent learners to help them develop awareness and tendencies to utilize different learning strategies in and out of the language classroom. Assuming that what the literature says about the possible effects of strategy training and strategy use in language classrooms and about the malleability of cognitive processing biases are accurate, it is necessary that teacher education programs equip their students, the future teachers, with necessary skills and competencies as to strategy and cognitive style training so that they can create such a strategy-use-fostering learning environment in their future classrooms in which they encourage their students to monitor and reflect on their learning experiences. This might better meet the innate needs of learners with a field dependent cognitive style.

While the study reports a meaningful relationship between cognitive style and cognitive, metacognitive, and compensation strategies, no relationship was found between field dependence/independence and the use of memory, social, and affective strategies. That means that the cognitive processes to which field dependent and independent individuals are more inclined have no influence on the subskills coded in these learning strategies. This is an important finding for cognitive theory research because the reason for this result might be because of a possible cognitive flexibility that the participants had in a domain that is commonly accepted as a fixed trait by a broad range of literature. Also, the reason why the field independent participants seem to employ compensation strategies more than the others might be multifaceted. As this might mean that field independent individuals make a great use of their foreseeing, analytical, and higher-order thinking skills in order to fill the gaps in the language competencies, it may also suggest a high anxiety level among field independent participants—which, according to Krashen's (1985) affective filter hypothesis, is a serious hindrance for learning. Therefore, it is important to discover the anxiety levels of participants through the use of appropriate inventories throughout the semester.

Based on all these findings of this study, there may be a strong case for enabling students to have the opportunities to explore their own cognitive and learning styles to foster their language learning experiences. This should be done by providing learners with different style inventories; learners should have the options and be allowed to pick the inventory they find more practical. That can easily be accomplished online; schools can easily digitize some of the well know style and strategy inventories and make them available for their students on the Internet.

Undoubtedly, the contributions and suggestions of this research study are pretty modest; its findings, nevertheless, certainly provide confirmation to some of the assertions and assumptions in the cognitive styles research, and raise new questions that should be addressed in future work. The results presented in this study provide educators with pedagogical insights as to how cognitive style affects students' learning directly and indirectly.

Limitations

This study, even though every necessary point was taken into consideration in order to eliminate reliability and validity concerns, has inevitable limitations which were conjectured to influence the study and are pervasive to research of this kind. The following limitations unquestionably affect the generalizability of the findings of this study:

1. The initial and most obvious limitation relates to the sample size. The findings in this study are limited to a certain number of second language learners in Turkey and to a single institution located in the capital city, Ankara. Hence, it is an irrefutable fact that the findings gathered in this study cannot be generalized and regarded as extensible to all students in Turkey and in different corners of the world.
2. Threats to internal validity existed in this study given that participants performance levels could not be isolated to their field dependent or field independent cognitive styles since various factors could have influenced their performance levels including, but not limited to, their background knowledge, previous experiences, or psychological readiness.
3. Population chosen for study might be another limitation. Students enrolled at the university which served as the context for this study may present unique characteristics that distinguish them from their counterparts at other universities in the country. Owing to its prestigious reputation in the country, Middle East Technical University accepts only the students who are in the top 1 percent of the approximately 1.5 million candidates taking the National University Entrance Examination each year in Turkey.
4. The instruments employed for identifying participants' tendencies in learning strategy use and learning styles may have limited the findings of this study. The participants' field dependence and independence cognitive traits were identified based on their scores on the GEFT. Other instruments designed for the same purpose may have potentially yielded different results.

5. Another limitation of this study is the lack of previous studies on field dependence/independence tendency of the Turkish language learners of English and its possible effects on learners' learning and progress. This makes comparison across studies with similar backgrounds difficult.
6. This study adopted a median split method to evaluate scores of the GEFT. Though this is a common method employed by various research studies (Abraham, 1985; Cunningham, Ridley, & Campbell, 1988; Ling & Salvendy, 2009; Lusk & Wright, 1981; Raptis, Fidas, & Avouris, 2016; Saadatmanesh, 2013; Witkin, Oltman, Raskin, & Karp 1971; Yoo & Yoo, 2015), using a different evaluative approach might have yielded different results.
7. Though graded based on the criteria set on specific rubrics, assessing essay and speaking is a relatively subjective phenomenon. Ur (1996) states that no matter how clear the criteria and standards are specified, there is always a possibility of rater effect. Ur says, "Even if you agree on criteria, some testers will be stricter in applying them, others more lenient. It will be difficult to get reliable, consistent assessment" (p. 134).
8. Additionally, to guarantee a reliable oral assessment, the same performance should be evaluated by two or more raters; the scores should be combined and assigned to the same student. This was not the case in this study.
9. In different parts of this study, some labeling, generalizing, and categorizing expressions can be observed; this is owing to the theoretical assumptions accumulated in the literature; considering that suggesting categories is one of the aims of cognitive research, these expressions should not come as a surprise to the reader.

Suggestions for Future Research

The aim of this study was to explore if there was a significant relationship between field dependence/independence cognitive style and language achievement levels, use of language learning strategies, and preferred learning styles. Though the findings of this study provided significant support for some conclusions reported

in the previous research concerning the possible relations between those variables, it is true that these findings have brought up more questions than they have answered. It should be noted that this study, due to its descriptive nature, focused only on exploring possible relationships among different domains and variables; there are other important issues, such as the causes of these relationships for example, that were not touched on as they were out of the scope of this research. On the basis of the results and implications of this study, the following are recommendations that may be suggested to future researchers interested in cognitive styles:

1. The present study should be replicated at the same and at other universities with a larger sample of students since it had a limited scope in terms of number of participants and research context. A larger sample will obviously contribute toward reliability.
2. Variables such as sex, educational background, or motivation orientations (intrinsic, integrative, extrinsic, or instrumental) were out of the scope of this study. Considering the lack of cognitive style research conducted in Turkey, follow-up studies analyzing the effect of some of these variables will be a good asset to the literature. This will strengthen our understanding of how individuals' cognitive styles intermingle with other domains and factors.
3. The same study might also be replicated with the use of a different instrumentation methodology, for example using a different tool to identify field dependence and field independence tendencies or another style inventory to discover the preferred learning styles of its subjects.
4. Grammatical competence had to be excluded from the variables of this study since it was not one of the components of the course in which the data was collected. Analyzing how the relationship between field dependence/independence and a language domain in which both top-down or bottom-up teaching and learning have valuable contributions depending on context and learner profiles may yield interesting results for cognitive styles research.

5. Another issue that needs investigation is the extent to which the context selected had an impact on the results. It might be interesting to carry out the same study but this time in a non-foreign-language-related classroom and observe if the interaction of field dependence/independence cognitive theory and, for example, preferred learning styles would be similar or not.
6. The cognitive style tendency of instructors and its effect on the way they teach in EAP classes is another promising area of research. A comparison of potential effects of the teaching preferences of field dependent and independent instructors in EAP classes on field dependent and independent students' achievement levels or use of language strategies would undeniably contribute to a better understanding of cognitive styles' effects on teaching and learning.
7. A more standardized measure, an internationally accepted, accredited test for Academic English, may be taken as the criteria for the achievement levels in future studies. This might provide a more consistent standard based on which the potential effects of field dependence and field independence might be compared.
8. Overall proficiency in a language incontestably requires pragmatic competence in that language, too. While pragmatics is usually associated with social skills and with effective oral communication skills, some studies found its positive effects on more analytical language domains, such as writing skills (see Alagözlü & Büyüköztürk, 2009). Future studies should investigate how, or if, learners' pragmatic competency in a foreign language is affected by field dependence and independence cognitive style.

Conclusion

We *do* know that language is a multifaceted, multilayered, and a complex construct; it is demanding to learn it at every phase of it. We have a tremendous amount of language teaching and learning research accumulated since the ancient Egyptians declared the Phrygian language as the *original* language of humankind after, quite possibly, the very first language-related research conducted on the face

of Earth. Since then, language teachers, educationalists, and teaching practitioners all over the world have been doing their best and working hard to guide learners from all walks of life in their language learning experiences. We know it will not be as though the *Tower of Babel* never happened anytime soon, but we know we have taken important step: We know that every learner is unique; their innate cognitive abilities, tendencies, and biases obviously affect, even determine, their ultimate level of language achievement. We know about learning styles, learning strategies and that these, together with the involvement of numerous other actors, display an invisible, a chaotically harmonious mental dance on the cognitive stage of a learner. Yet, there is one question that we cannot fully answer until we fully understand all these above: *How?*

How all these factors cooperate together, fight against each other, help or hinder, support or oppose each other in what we call language learning—that we still don't know because we still have a long way to go. We need further, deeper studies to shed light on the complex mechanisms underlying learning a language, the most complex one of all human behaviors. Perhaps, then we will understand; as we unfold these mechanisms, as we tear down every bastion of mystery of language learning blocking our understanding one by one with more and more empirical evidence, we will then *understand*. In short, providing a modest contribution to our millennia-old attempts to figure out this remarkable phenomenon called language learning so that we can maybe better answer at least some of our "how" questions was the sole purpose of this exploratory study—the genesis of which lays in the following Aristotelian prophetic quote:

Those who *know*, *do*. Those that *understand*, *teach*.

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APPENDIX – A: Midterm Exam Cover Page & Content Information

If you do not complete the information on this page, your paper will not be graded.

Name Surname: _____

Student Number: _____

Section: _____

Instructor's Name: _____

ENG 102 MIDTERM EXAMINATION

April 16, 2016

The purpose of this exam is to assess students' ability to

- **listen for specific information**
- **listen for main idea**
- **listen for implied ideas**
- **identify key ideas in a text**
- **recognize the relationship between ideas in a text**
- **deduce the underlying meaning in sentences or parts of a text**
- **deduce the meaning of unknown vocabulary items**
- **identify referents in a text**
- **identify reference information**
- **use APA citation rules**
- **borrow ideas by paraphrasing, summarizing, and synthesizing**
- **use correct, appropriate language structures, vocabulary, and discourse markers**

Total Points: 25

Time Allowed: 110 minutes

Content of the Midterm Examination:

Part I. While-Listening: In this section, you will listen to a recording once and answer the questions.

Part II. Reading Comprehension: In this section, you will read a text and answer questions about it. This section includes comprehension and reference questions as well as identifying vocabulary using context clues.

Part III. Synthesizing: In this section, you will write a synthesis of two excerpts. You will be required to paraphrase the ideas and give in-text reference.

Part IV. Summarizing: In this section, you will write a summary of a long-text. You will be required to paraphrase the ideas and give in-text reference.

APPENDIX – B: Final Exam Cover Page & Content Information

If you do not complete the information on this page, your paper will not be graded.

Name Surname: _____

Student Number: _____

Section: _____

Instructor's Name: _____

ENG 102 FINAL EXAMINATION

June 03, 2016

The purpose of this exam is to assess students' ability to

- **listen for specific information**
- **listen for the main idea**
- **listen for implied ideas**
- **listen and take notes**
- **identify bibliographical information**
- **write parts of a documented argumentative essay**
- **identify and select relevant sources**
- **evaluate, synthesize and use information from excerpts**
- **borrow ideas by paraphrasing, quoting, summarizing and synthesizing**
- **use correct, appropriate language structures, vocabulary and discourse markers**
- **use APA citation rules**

Total Points: 25

Time Allowed: 120 minutes

Content of the Final Examination:

Part I. Listening and Note-taking: In this section, you will listen to a recording once and take notes. Then you will use your notes to answer the questions.

Part II. Essay Writing: In this section, you will choose a thesis statement from two alternatives and write two body paragraphs for an argumentative essay. You will also need to integrate ideas from several excerpts into your essay and give in-text reference.

Part III. Borrowing Information: In this section, you will analyze some end-text references and match them with their descriptions.

APPENDIX – C: BIG16 Learning Modality Inventory (Şimşek, 2002)

Öğrenme Biçemleri Envanteri Aşağıdaki ifadelerden her birine katılma düzeyinizi, karşılarında bulunan seçeneklerden birisini işaretleyerek belirtiniz. Verilen ifadenin, nasıl yapmanız gerektiği ya da başkalarının neler yaptığı değil, sadece sizin yaptıklarınızı ne kadar tasvir ettiğini işaretleyiniz. Maddeler üzerinde çok fazla düşünmeyiniz. Maddeleri yapabildiğiniz kadar hızlı şekilde, çok zaman harcamadan ve dikkatlice işaretleyip bir sonraki maddeye geçiniz. Anketi cevaplandırmak yaklaşık 10-15 dk. Alır.

	Kesinlikle Katılıyorum	Katılıyorum	Kararsızım	Katılmıyorum	Kesinlikle Katılmıyorum
1. Arkadaşlarımı dinlemekten ve onlara bir şeyler anlatmaktan hoşlanırım.					
2. Başkalarını izleyerek öğrenmeyi severim.					
3. Bazı şeyleri unutmamak için, kendi kendime yüksek sesle tekrarlamaya ihtiyaç duyarım.					
4. Bir bütüne ait parçaları bir araya getirirken, yardımcı resim ya da çizimlere ihtiyaç duyarım.					
5. Bir ders saati boyunca sınıfta oturmak bana sıkıcı gelir.					
6. Bir haritadaki ayrıntıları genellikle zorlanmadan anlayabilirim.					
7. Bir şeyler anlatırken genellikle vücut dilini kullanırım.					
8. Bir şeyler ezberlerken kendimce kafiyeler ya da şarkılar uydurmayı severim.					
9. Bir şeyler okumayı ya da yazmayı severim.					
10. Bir şeyler tamir etmekten hoşlanırım.					
11. Bir yere otururken, oturmadan önce genellikle ellerimle dokunurum.					
12. Birbirine benzeyen ve benzemeyen geometrik şekilleri kolayca ayırt edebilirim.					
13. Birbirine yakın da olsalar, farklı melodileri ve sesleri kolayca ayırt edebilirim.					
14. Birisini dinlerken kağıt üzerine, dinlediklerime ilişkin şekiller çizmeyi severim.					
15. Çalışırken arada kalkıp dolaşırsam, daha iyi öğrendiğimi düşünürüm.					
16. Çalışırken kalkıp dolaşmaya ihtiyaç duyarım ve sık sık ara veririm.					
17. Çocukken öğrendiğim şarkıları genellikle iyi hatırlarım.					
18. Dans, spor ve aerobik gibi fiziksel koordinasyon gerektiren etkinliklerden hoşlanırım.					
19. Derste bir problemi yerimde ve kağıt üzerinde çözmektense, kalkıp tahtada çözmeyi tercih ederim.					
20. Derste öğretmenin, önemli bilgileri not ettirmesini isterim.					
21. Dinlediğim kişinin sarfettiği belli sözcükleri ve ses tonunu birkaç gün sonra bile hatırlayabilirim.					
22. Dinlediklerimi çoğu kez sesli olarak tekrarlarım.					
23. Dokunduğum ve kullandığım nesneleri sonradan daha iyi hatırlarım.					
24. Elle yapılan çalışmalarda 25. n hoşlanırım.					
26. En kolay hatırladığım şeyler, basılı ya da resim olarak gördüklerimdir.					
27. Farklı aksanla konuşan insanların söylediklerini anlamakta çok zorlanmam.					

28. Fiziksel sporlar ya da egzersizlerden hoşlanırım.					
	Kesinlikle Katılıyorum	Katılıyorum	Kararsızım	Katılmıyorum	Kesinlikle Katılmıyorum
29. Gördüğüm bir şekli, doğru şekilde kağıda çizebilirim.					
30. Herhangi bir şeyi en iyi, birisi anlatarak açıkladığında öğrenirim.					
31. İncelediğim bir fotoğraftaki yüzleri ve diğer görsel ayrıntıları sonradan rahatlıkla hatırlayabilirim.					
32. Kendi sesimi teybe kaydedip-dinleyerek öğrenmekten hoşlanırım.					
33. Konuşmadan, işaretlerle iletişim kurmayı severim.					
34. Küçük grup tartışmalarını severim.					
35. Makine ve araç kullanmakta başarılıyımdır.					
36. Nesnelerin büyüklüklerini, şekillerini ve renklerini kolaylıkla hatırlayabilirim.					
37. Okuduğum ya da dinlediğim şeyleri, unutmamak için, genellikle yazarım.					
38. Okuduğum ya da duyduğum şeyleri, zihnimde kolaylıkla canlandırabilirim.					
39. Pantomim yapmayı severim.					
40. Radyodan yayınlanan bir hikayede geçen olayları takip edebilirim.					
41. Renkler konusunda gözüm iyidir.					
42. Resim ya da heykel yapmayı severim.					
43. Sözlü açıklamaları, yazılı olanlara göre daha iyi anlarım.					
44. Tarif edilen yerleri en iyi, belirli bina ya da ağaç gibi işaretler verildiğinde bulabilirim.					
45. Teypten verilen bir dersi anlayabilirim.					
46. Uygulamalı çalışmalar içeren dersleri severim.					
47. Yazılı açıklamaları, sözlü olanlara göre daha iyi anlarım.					
48. Yazılış ve okunuşu farklı bir sözcük duyduğumda, o sözcüğün harflerini tek tek kodlayabilirim.					
49. Yeni bilgileri çizelge ya da çizimler halinde gördüğümde daha iyi öğrenirim.					

APPENDIX – D: Strategy Inventory for Language Learning (SILL) (Oxford, 1990)

Dil Öğrenme Stratejileri Envanteri İngilizce'yi Yabancı Dil olarak öğrenenler için hazırlanmıştır. Bu envanterde İngilizce öğrenmeye ilişkin ifadeler okuyacaksınız. Her ifadenin sizin için ne kadar doğru ya da geçerli olduğunu, derecelendirmeye bakarak, 1, 2, 3, 4, 5' ten birini yazınız. Verilen ifadenin, nasıl yapmanız gerektiği ya da başkalarının neler yaptığı değil, sadece sizin yaptıklarınızı ne kadar tasvir ettiğini işaretleyiniz. Maddeler üzerinde çok fazla düşünmeyiniz. Maddeleri yapabildiğiniz kadar hızlı şekilde, çok zaman harcamadan ve dikkatlice işaretleyip bir sonraki maddeye geçiniz. Anketi cevaplandırmak yaklaşık 10-15 dk. alır.

	Hiçbir zaman doğru değil	Nadiren doğru	Bazen doğru	Sık sık doğru	Her zaman doğru
Bölüm A					
1. İngilizce'de bildiklerimle yeni öğrendiklerim arasında ilişki kurarım.	1	2	3	4	5
2. Yeni öğrendiğim kelimeleri hatırlamak için bir cümlede kullanırım.	1	2	3	4	5
3. Yeni öğrendiğim kelimeleri akılda tutmak için kelimenin telaffuzuyla aklıma getirdiği bir resim ya da şekil arasında bağlantı kurarım.	1	2	3	4	5
4. Yeni bir kelimeyi o sözcüğün kullanılabileceği bir sahneyi ya da durumu aklımda canlandırarak, hatırlarım.	1	2	3	4	5
5. Yeni kelimeleri aklımda tutmak için, onları ses benzerliği olan kelimelerle ilişkilendiririm.	1	2	3	4	5
6. Yeni öğrendiğim kelimeleri aklımda tutmak için küçük kartlara yazarım.	1	2	3	4	5
7. Yeni Kelimeleri vücut dili kullanarak zihnimde canlandırırım	1	2	3	4	5
8. İngilizce derslerinde öğrendiklerimi sık sık tekrar ederim.	1	2	3	4	5
9. Yeni kelime ve kelime gruplarını ilk karşılaştığım yerleri (kitap, tahta ya da herhangi bir işaret levhasını) aklıma getirerek, hatırlarım.	1	2	3	4	5
Bölüm B					
10. Yeni sözcükleri birkaç kez yazarak, ya da söyleyerek, tekrarlarım.	1	2	3	4	5
11. Anadili İngilizce olan kişiler gibi konuşmaya çalışırım.	1	2	3	4	5
12. Anadilimde bulunmayan İngilizce'deki "th /θ / hw " gibi sesleri çıkararak, telaffuz alıştırması yaparım.	1	2	3	4	5
13. Bildiğim kelimeleri cümlelerde farklı şekillerde kullanırım.	1	2	3	4	5
14. İngilizce sohbetleri ben başlatırım.	1	2	3	4	5
15. T.V.'de İngilizce programlar ya da İngilizce filmler izlerim.	1	2	3	4	5
16. İngilizce okumaktan hoşlanırım.	1	2	3	4	5
17. İngilizce mesaj, mektup veya rapor yazarım.	1	2	3	4	5
18. İngilizce bir metne ilk başta bir göz atarım, daha sonra metnin tamamını dikkatlice okurum.	1	2	3	4	5
19. Yeni öğrendiğim İngilizce kelimelerin benzerlerini Türkçe'de ararım.	1	2	3	4	5
20. İngilizce'de tekrarlanan kalıplar bulmaya çalışırım.	1	2	3	4	5
21. İngilizce bir kelimenin, bildiğim kök ve eklerine ayırarak anlamını çıkarırım.	1	2	3	4	5
22. Kelimesi kelimesine çeviri yapmamaya çalışırım.	1	2	3	4	5
23. Dinlediğim ya da okuduğum metnin özetini çıkarırım.	1	2	3	4	5

Bölüm C	**Hiç**	**Nadiren**	**Bazen**	**Sık sık**	**Her zaman**
24. Bilmediğim İngilizce kelimelerin anlamını, tahmin ederek bulmaya çalışırım.	1	2	3	4	5
25. İngilizce konuşurken bir sözcük aklıma gelmediğinde, el kol hareketleriyle anlatmaya çalışırım.	1	2	3	4	5
26. Uygun ve doğru kelimeyi bilmediğim durumlarda kafamdan yeni sözcükler uydururum	1	2	3	4	5
27. Okurken her bilmediğim kelimeye sözlükten bakmadan, okumayı sürdürürüm.	1	2	3	4	5
28. Konuşma sırasında karşımdakinin söyleyeceği bir sonraki cümleyi tahmin etmeye çalışırım.	1	2	3	4	5
29. Herhangi bir kelimeyi hatırlayamadığımda, aynı anlamı taşıyan başka bir kelime ya da ifade kullanırım.	1	2	3	4	5

Bölüm D	Hiç	Nadiren	Bazen	Sık sık	Her zaman
30. İngilizce'mi kullanmak için her fırsatı değerlendiririm.	1	2	3	4	5
31. Yaptığım yanlışların farkına varır ve bunlardan daha doğru İngilizce kullanmak için faydalanırım.	1	2	3	4	5
32. İngilizce konuşan bir kişi duyduğumda dikkatimi ona veririm.	1	2	3	4	5
33. "İngilizce'yi daha iyi nasıl öğrenirim? " sorusunun yanıtını araştırırım.	1	2	3	4	5
34. İngilizce çalışmaya yeterli zaman ayırmak için zamanımı planlarım.	1	2	3	4	5
35. İngilizce konuşabileceğim kişilerle tanışmak için fırsat kollarım.	1	2	3	4	5
36. İngilizce okumak için, elimden geldiği kadar fırsat yaratırım.	1	2	3	4	5
37. İngilizce'de becerilerimi nasıl geliştireceğim konusunda hedeflerim var.	1	2	3	4	5
38. İngilizce'mi ne kadar ilerlettiğimi değerlendiririm.	1	2	3	4	5

Bölüm E	**Hiç**	**Nadiren**	**Bazen**	**Sık sık**	**Her zaman**
39. İngilizce'mi kullanırken tedirgin ve kaygılı olduğum anlar rahatlamaya çalışırım.	1	2	3	4	5
40. Yanlış yaparım diye kaygılandığımda bile İngilizce konuşmaya gayret ederim.	1	2	3	4	5
41. İngilizce'de başarılı olduğum zamanlar kendimi ödüllendiririm.	1	2	3	4	5
42. İngilizce çalışırken ya da kullanırken gergin ve kaygılı isem, bunun farkına varırım.	1	2	3	4	5
43. Dil öğrenirken yaşadığım duyguları bir yere yazarım.	1	2	3	4	5
44. İngilizce çalışırken nasıl ya da neler hissettiğimi başka birine anlatırım.	1	2	3	4	5

Bölüm F	**Hiç**	**Nadiren**	**Bazen**	**Sık sık**	**Her zaman**
45. Herhangi bir şeyi anlamadığımda, karşımdaki kişiden daha yavaş konuşmasını ya da söylediklerini tekrar etmesini isterim.	1	2	3	4	5
46. Konuşurken karşımdakinin yanlışlarımı düzeltmesini isterim.	1	2	3	4	5

47. Okulda arkadaşlarımla İngilizce konuşurum.	1	2	3	4	5
48. İhtiyaç duyduğumda İngilizce konuşan kişilerden yardım isterim.	1	2	3	4	5
49. Derste İngilizce sorular sormaya gayret ederim.	1	2	3	4	5
50. İngilizce konuşanların kültürü hakkında bilgi edinmeye çalışırım.	1	2	3	4	5

APPENDIX – E: Gönüllü Katılım Formu

Bu çalışma, Orta Doğu Teknik Üniversitesi'nde Öğretim Görevlisi Özgür Köse tarafından Hacettepe Üniversitesi'nde devam etmekte olduğu doktora tez çalışmaları kapsamında Doç. Dr. Arif Sarıçoban danışmanlığında yürütülmektedir. Çalışmanın amacı, Türkiye'deki İngilizce öğrenen hazırlık sınıflarındaki üniversite öğrencilerinin kişilik tipleri ve öğrenme stratejileri ve dil becerileri arasında bağlantılar olup olmadığını tespit etmektir. Çalışmanın odaklanacağı ve referans alacağı kişilik tipi yanlızca *alan bağımlı ve alan bağımsız* kişilik tiplerini içermektedir. Katılımcıların ne derece *alan bağımlı* ya da *alan bağımsız* bireyler olduğu ve ne tür öğrenme stratejileri benimsedikleri, yaklaşık 30 dakika süren, üç farklı anket ile tespit edilecektir.

Bu çalışmaya katılım tamimiyle gönüllülük temelinde olmalıdır. Cevaplarınız tamimiyle gizli tutulacak ve sadece araştırmacı tarafından değerlendirilecektir; elde edilecek bilgiler araştırmacının doktora tezinde kullanılacaktır. Anketler genel olarak kişisel rahatsızlık verecek soruları içermemektedir. Ancak, katılım sırasında sorulardan ya da herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz cevaplama işini yarıda bırakıp çıkmakta serbestsiniz. Böyle bir durumda, anketi uygulayan kişiye, anketleri tamamlamadığınızı söylemek yeterli olacaktır. Anketler sonunda, bu çalışmayla ilgili sorularınız cevaplanacaktır.

Bu çalışmaya katıldığınız için şimdiden teşekkür ederiz.

Çalışma hakkında daha fazla bilgi almak için Hacettepe Üniversitesi, İngiliz Dili Eğitimi Bölümü öğretim üyelerinden Doç. Dr. Arif Sarıçoban (E-posta: arifs@hacettepe.edu.tr) ya da okutman Özgür Köse (ODTÜ, Modern Diller Bölümü, 118; E-posta: ozkose@metu.edu.tr) ile iletişim kurabilirsiniz.

Bu çalışmaya tamamen gönüllü olarak katılıyorum ve istediğim zaman yarıda kesip çıkabileceğimi biliyorum. Verdiğim bilgilerin araştırmacının doktora tez çalışmalarında kullanılmasını kabul ediyorum. (Formu doldurup imzaladıktan sonra uygulayıcıya geri veriniz).

İsim Soyad Tarih İmza

----/----/----

APPENDIX – F: Ethics Committee Approval

T.C.
HACETTEPE ÜNİVERSİTESİ
Rektörlük

Sayı : 35853172/433-476

29 Şubat 2016

EĞİTİM BİLİMLERİ ENSTİTÜ MÜDÜRLÜĞÜNE

İlgi: 25.01.2016 tarih ve 191 sayılı yazınız.

Enstitünüz Yabancı Diller Eğitimi Anabilim Dalı İngiliz Dili Eğitimi Bilim Dalı doktora programı öğrencilerinden **Özgür KÖSE**'nin **Doç. Dr. Arif SARIÇOBAN** danışmanlığında yürüttüğü **"Alan Bağımlı ve Alan Bağımsız Öğrencilerin Öğrenme Biçem ve Stratejileri ile Yabancı Dil Öğrenim Başarısı Arasındaki İlişki"** başlıklı tez çalışması, Üniversitemiz Senatosu Etik Komisyonunun **09 Şubat 2016** tarihinde yapmış olduğu toplantıda incelenmiş olup, etik açıdan uygun bulunmuştur.

Bilgilerinizi ve gereğini rica ederim.

Prof. Dr. A. Haluk ÖZEN
Rektör

Hacettepe Üniversitesi Rektörlük 06100 Sıhhiye-Ankara
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Ayrıntılı Bilgi için:
Yazı İşleri Müdürlüğü
0 (312) 305 1008

APPENDIX – G: Declaration of Ethical Conduct

I hereby declare that…

- I have prepared this thesis in accordance with the thesis writing guidelines of the Graduate School of Educational Sciences of Hacettepe University;
- all information and documents in the thesis/dissertation have been obtained in accordance with academic regulations;
- all audio visual and written information and results have been presented in compliance with scientific and ethical standards;
- in case of using other people's work, related studies have been cited in accordance with scientific and ethical standards;
- all cited studies have been fully and decently referenced and included in the list of References;
- I did not do any distortion and/or manipulation on the data set,
- and **NO** part of this work was presented as a part of any other thesis study at this or any other university.

22/06/18

Özgür KÖSE

APPENDIX – H: Dissertation Originality Report

June 1, 2018

HACETTEPE UNIVERSITY

Graduate School of Educational Sciences

to the Department of Foreign Language Education

Dissertation Title: Field Dependence/Independence, Learning Strategies, Learning Styles, and Foreign Language Achievement

The whole dissertation that includes the *title page, introduction, main chapters, conclusions and bibliography section* is checked by using **Turnitin** plagiarism detection software taking the requested filtering options into consideration. According to the originality report, obtained data are as below.

Time Submitted	Page Count	Character Count	Date of Thesis Defense	Similarity Index	Submission ID
May 28, 2018	218	342,600	June 22, 2018	16%	969507531

Filtering options applied:

1. Bibliography excluded
2. Quotes included
3. Match size up to 5 words excluded

I declare that I have carefully read Hacettepe University Graduate School of Educational Sciences Guidelines for Obtaining and Using Dissertation Originality Reports; that according to the maximum similarity index values specified in the Guidelines, my dissertation does not include any form of plagiarism; that in any future detection of possible infringement of the regulations I accept all legal responsibility; and that all the information I have provided is correct to the best of my knowledge.

I respectfully submit this for approval.

Name Last name:	ÖZGÜR KÖSE
Student No.:	N09148897
Department:	the Department of Foreign Language Education
Program:	English Language Teaching
Status:	☐ Masters ☒ Ph.D. ☐ Integrated Ph.D.

Signature

ADVISOR APPROVAL

APPROVED

Assoc. Prof. Dr. Nuray ALAGÖZLÜ

APPENDIX – I: Yayımlama ve Fikrî Mülkiyet Hakları Beyanı

Enstitü tarafından onaylanan lisansüstü tezimin/raporumun tamamını veya herhangi bir kısmını, basılı (kâğıt) ve elektronik formatta arşivleme ve aşağıda verilen koşullarla kullanıma açma iznini Hacettepe Üniversitesine verdiğimi bildiririm. Bu izinle Üniversiteye verilen kullanım hakları dışındaki tüm fikri mülkiyet haklarım bende kalacak, tezimin tamamının ya da bir bölümünün gelecekteki çalışmalarda (makale, kitap, lisans ve patent vb.) kullanım hakları bana ait olacaktır.

Tezin kendi orijinal çalışmam olduğunu, başkalarının haklarını ihlal etmediğimi ve tezimin tek yetkili sahibi olduğumu beyan ve taahhüt ederim. Tezimde yer alan telif hakkı bulunan ve sahiplerinden yazılı izin alınarak kullanılması zorunlu metinlerin yazılı izin alınarak kullandığımı ve istenildiğinde suretlerini Üniversiteye teslim etmeyi taahhüt ederim.

Yükseköğretim Kurulu tarafından yayınlanan **"Lisansüstü Tezlerin Elektronik Ortamda Toplanması, Düzenlenmesi ve Erişime Açılmasına ilişkin Yönerge"** kapsamında tezim aşağıda belirtilen koşullar haricince YÖK Ulusal Tez Merkezi / H.Ü. Kütüphaneleri Açık Erişim Sisteminde erişime açılır.

- Enstitü/Fakülte yönetim kurulu kararı ile tezimin erişime açılması mezuniyet tarihinden itibaren 2 yıl ertelenmiştir. (1)
- Enstitü/Fakülte yönetim kurulunun gerekçeli kararı ile tezimin erişime açılması mezuniyet tarihimden itibaren … ay ertelenmiştir. (2)
- Tezimle ilgili gizlilik kararı verilmiştir. (3)

26 / 07 / 2018

Özgür Köse

"Lisansüstü Tezlerin Elektronik Ortamda Toplanması, Düzenlenmesi ve Erişime Açılmasına İlişkin Yönerge"

(1) Madde 6. 1. Lisansüstü tezle ilgili patent başvurusu yapılması veya patent alma *sürecinin devam etmesi durumunda, tez danışmanının önerisi ve enstitü anabilim dalının uygun görüşü Üzerine enstitü veya fakülte yönetim kurulu iki yıl süre ile tezin erişime açılmasının ertelenmesine karar verebilir.*

(2) Madde 6.2. Yeni teknik, materyal ve metotların kullanıldığı, henüz makaleye dönüşmemiş veya patent gibi yöntemlerle korunmamış ve internetten paylaşılması durumunda 3. şahıslara veya kurumlara haksız kazanç; imkânı oluşturabilecek bilgi ve bulguları içeren tezler hakkında tez danışmanın önerisi ve enstitü anabilim dalının uygun görüşü üzerine enstitü veya fakülte yönetim kurulunun gerekçeli kararı ile altı ayı aşmamak üzere tezin erişime açılması engellenebilir.

(3) Madde 7. 1. Ulusal çıkarları veya güvenliği ilgilendiren, emniyet, istihbarat, savunma ve güvenlik, sağlık vb. konulara ilişkin lisansüstü tezlerle ilgili gizlilik kararı, tezin yapıldığı kurum tarafından verilir. Kurum ve kuruluşlarla yapılan işbirliği protokolü çerçevesinde hazırlanan lisansüstü tezlere ilişkin gizlilik kararı ise, ilgili kurum ve kuruluşun önerisi ile enstitü veya fakültenin uygun görüşü Üzerine üniversite yönetim kurulu tarafından verilir. Gizlilik kararı verilen tezler Yükseköğretim Kuruluna bildirilir.*
Madde 7.2. Gizlilik kararı verilen tezler gizlilik süresince enstitü veya fakülte tarafından gizlilik kuralları çerçevesinde muhafaza edilir, gizlilik kararının kaldırılması halinde Tez Otomasyon Sistemine yüklenir

** Tez danışmanının önerisi ve enstitü anabilim dalının uygun görüşü üzerine enstitü veya fakülte yönetim kurulu tarafından karar verilir.*