INVESTIGATING L2 EXPLICIT KNOWLEDGE AND ITS REFLECTION IN READING AND WRITING PERFORMANCE OF TURKISH EFL LEARNERS: A CROSS-SECTIONAL STUDY WITH FIRST- AND FOURTH-YEAR ELT STUDENTS

Doktora Tezi

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ÖZET

AÇIK YABANCI DİL BİLGİSİ VE BU BİLGİNİN İNGİLİZCE ÖĞRETMENLİĞİ PROGRAMI BİRİNCİ VE DÖRDÜNCÜ SINIF ÖĞRENCİLERİN YABANCI DİLDE OKUMA VE YAZMA BECERİLERİNE YANSIMASININ İNCELENMESİ

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Bu çalışmanın amacı, Türkiye'de bir devlet üniversitesinde İngilizce Öğretmenliği bölümünde okuyan birinci ve dördüncü sınıf öğrencilerin, açık yabancı dil bilgisini oluşturan çözümlenmiş bilgi ve üstdil bilgi düzeylerini ölçmek; birinci ve dördüncü sınıf öğrencileri sahip oldukları yabancı dil açık bilgi düzeyi açısından karşılaştırmak ve bu bilgi düzeyi ile İngilizce okuduğunu anlama ve yazma becerileri arasında bir ilişki olup olmadığını, varsa bu ilişkinin ne düzeyde olduğunu ortaya koymaktır. Bu çalışmaya, 120 birinci sınıf ve 113 dördüncü sınıf öğrencisi olmak üzere, toplam 233 İngilizce Öğretmenliği Bölümü öğrencisi katılmıştır. Bu çalışmanın veri toplama araçları, açık yabancı dil bilgisini ölçmek amacıyla geliştirilmiş üç test (UGJT, LAT ve MKT) ve IELTS (International English Test System) sınavından uyarlanmış okuma ve yazma becerilerini ölçen iki ayrı testten oluşmaktadır. Çeşitli istatistik yöntemleri kullanılarak, toplanan veri analiz edilmiş ve şu sonuçlara ulaşılmıştır: dördüncü sınıf öğrencilerin açık yabancı dil bilgisi birinci sınıf öğrencilerden daha fazladır; yıl fark etmeksizin, İngilizce Öğretmenliği Bölümü'nde okuyan Türk öğrencilerin çözümlenmiş dilbilgisi, üstdil bilgisinden daha fazladır; katılımcıların çözümlenmiş dilbilgisi ile okuduğunu anlama ve yazma becerileri arasında, üstdil bilgisine oranla, daha yüksek bir ilişki bulunmuştur; ayrıca, çözümlenmiş dilbilgisi ve üstdil bilgisi birlikte, katılımcıların okuma becerisindeki varyasyonun %7.2'sini ve yazma becerisindeki varyasyonun da %10.2'sini açıklamaktadır. Elde edilen veriler, alan yazın ve daha önceki çalışmaların bulguları ışığında tartışılmıştır. Son olarak, İngilizceyi yabancı dil olarak öğrenen öğrenciler ve İngiliz dili öğretiminde rol alan paydaşlar için pedagojik önerilerde bulunulmuştur.

Anahtar Sözcükler: İngilizceyi yabancı dil olarak öğrenen öğrenciler, Açık yabancı dil bilgisi, Çözümlenmiş bilgi, Üstdil bilgisi, Okuma ve yazma becerileri.

ABSTRACT

INVESTIGATING L2 EXPLICIT KNOWLEDGE AND ITS REFLECTION IN READING AND WRITING PERFORMANCE OF TURKISH EFL LEARNERS: A CROSS-SECTIONAL STUDY WITH FIRST- AND FOURTH-YEAR ELT STUDENTS

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The current explanatory research study investigates the relationship between L2 explicit knowledge, comprised of analyzed knowledge and metalinguistic knowledge, and reading and writing performances of first- and fourth-year ELT majors studying at a large-scale state university in Turkey. A total of 233 Turkish EFL learners majoring at ELT department participated in the present study. Instruments for the present study consisted of three tests designed to measure explicit L2 knowledge: an untimed grammaticality judgment test (UGJT), a language analysis test (LAT) and a metalinguistic knowledge test (MKT); a standardized reading comprehension test of English (IELTS) and a writing task designed to assess general L2 writing proficiency (IELTS). Several statistical procedures were employed to analyze the data gathered, and the following findings were found. First, fourth-year Turkish EFL learners majoring at ELT have better explicit knowledge of English language than the first-year learners do. Second, Turkish EFL learners majoring at ELT, regardless of their year of study, have a lot more analyzed knowledge than metalinguistic knowledge. Furthermore, stronger correlations were found between analyzed knowledge and L2 proficiency than between metalinguistic knowledge and L2 proficiency. It was also found that analyzed knowledge and metalinguistic knowledge altogether explain 7.2 percent of the variance in reading, and 10.2 percent of the variance in writing among Turkish EFL learners majoring at ELT. The findings were discussed within the light of the literature reviewed and the findings of the previous research studies. Finally, some pedagogical implications were suggested for EFL learners and ELT practitioners.

Keywords: EFL learners, Explicit knowledge, Analyzed knowledge, Metalinguistic knowledge, Reading and writing skills.

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ETİK İLKE VE KURALLARA UYGUNLUK BEYANNAMESİ

Bu tezin bana ait, özgün bir çalışma olduğunu; çalışmamın hazırlık, veri toplama, analiz ve bilgilerin sunumu olmak üzere tüm aşamalarında bilimsel etik ilke ve kurallara uygun davrandığımı; bu çalışma kapsamında elde edilen tüm veri ve bilgiler için kaynak gösterdiğimi ve bu kaynaklara kaynakçada yer verdiğimi; bu çalışmanın Anadolu Üniversitesi tarafından kullanılan "bilimsel intihal tespit programı"yla tarandığını ve hiçbir şekilde "intihal içermediğini" beyan ederim. Herhangi bir zamanda, çalışmamla ilgili yaptığım bu beyana aykırı bir durumun saptanması durumunda, ortaya çıkacak tüm ahlaki ve hukuki sonuçları kabul ettiğimi bildiririm.

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STATEMENT OF COMPLIANCE WITH ETHICAL PRINCIPLES AND RULES

I hereby truthfully declare that this thesis is an original work prepared by me; that I have behaved in accordance with the scientific ethical principles and rules throughout the stages of preparation, data collection, analysis and presentation of my work; that I have cited the sources of all the data and information that could be obtained within the scope of this study, and included these sources in the references section; and that this study has been scanned for plagiarism with "scientific plagiarism detection program" used by Anadolu University, and that "it does not have any plagiarism" whatsoever. I also declare that, if a case contrary to my declaration is detected in my work at any time, I hereby express my consent to all the ethical and legal consequences that are involved.

Fatma AYDIN

TABLE OF CONTENTS

LIST OF TABLES

Page

LIST OF FIGURES

Page

LIST OF ABREVIATIONS

ACT	: Active Control of Thought
Ag.	: Subject-Verb Agreement
AUSFL	: Anadolu University School of Foreign Languages
BAWE	: British Academic Written English Corpus
CAE	: Cambridge Certificate in Advanced English
CAF	: Complexity-Accuracy-Fluency
CANAL-F	: Cognitive Ability for Novelty in Acquisition of Language (Foreign)
CFA	: Confirmatory Factor Analysis
CPE	: Cambridge Certificate of Proficiency in English
DELNA	: Diagnostic English Language Needs Assessment
EFA	: Exploratory Factor Analysis
EFL	: English as a Foreign Language
EI	: Elicited Oral Imitation Test
ELT	: English Language Teaching
GJT	: Grammaticality Judgment Test
HL	: Heritage Language
ID	: Item Discrimination
IELTS	: International English Language Testing System
IF	: Item Facility
KR20	: Kuder and Richardson Formula 20
L1	: Mother tongue
L2	: Second/foreign language
L3	: Third language
LAT	: Language Analysis Test
LLAMA	: Language Learning and Meaning Acquisition
LOTE	: Languages Other Than English
MA	: Master's degree
MC	: Multiple-choice
MKT	: Metalinguistic knowledge Test
MLAT	: Modern Languages Aptitude Test
NSs	: Native Speakers
OPT	: Oral Production Test

PhD	: Doctor of Philosophy
PLAB	: Pimsleur Language Aptitude Battery
SLA	: Second Language Acquisition
SLEPT	: Secondary Level English Proficiency Test
SP	: Spelling
SPRT	: Self-paced Reading Test
TEFL	: Teaching English as a Foreign Language
TGJT	: Timed Grammaticality Judgment Test
TOEFL	: Test of English as a Foreign Language
TOEIC	: Test of English for International Communication
UGJT	: Untimed Grammaticality Judgment Test
VELC	: Visualizing English Language Competency
WIST	: Words in Sentences Test
WMT	: Working Memory Test
WWO	: Wrong Word order

1. INTRODUCTION

1.1. Background to the Study

The discrepancy regarding implicit/explicit learning and knowledge has its roots in cognitive psychology (Ellis, Loewen, Elder, Erlam, Philp & Reinders, 2009). Researchers adopting a cognitive approach to second language acquisition (SLA) put more emphasis on learning, and are interested in transition theories. They believe that it is possible to understand the second language (L2) acquisition process better by first understanding how the human brain processes and learns new information (Mitchell & Myles, 2004). SLA hypotheses, theories, and models which have been inspired by the cognitive perspective may be clustered into processing approaches and constructionist or emergentist approaches. Processing approaches can be exemplified as Information Processing model (McLaughlin, 1987; 1990), Active Control of Thought (ACT) model (Anderson, 1983; 1985), Processability Theory (Pienemann, 1999; 2003), Perceptual Saliency approach (Andersen, 1984, 1990; Slobin, 1985), Interaction Hypothesis (Long, 1983; 1996), Noticing Hypothesis (Schmidt, 2001) and Input Processing (VanPatten, 2004). Constructivist or emergentist views of language learning share a usage-based view of language development. According to the usage-based approaches, language learning is primarily based on the linguistic input, from which learners induce the L2 rules by employing general cognitive mechanisms. The major constructs of the usage-based approaches to SLA are constructions, which are pairings of form and meaning or function, associative language learning, rational cognitive processing, exemplar-based learning and emergent relations and patterns (VanPatten & Williams, 2015).

In cognitive psychology, explicit knowledge refers to conscious knowledge, or knowledge a person is aware of and normally can articulate. Implicit knowledge, on the other hand, is unconscious knowledge, or knowledge a person is unaware of and cannot articulate. It is maintained that most people may not know they have implicit knowledge unless they are under reflection and introspection. In SLA, the concepts of explicit and implicit knowledge have been applied the same way as in cognitive psychology, with the primary focus being on the relationship between explicit and implicit knowledge of language. Although it is widely recognized that learners must develop an implicit system, the role of explicit knowledge and how the implicit system comes to be are a matter for debate. Therefore, SLA research is primarily concerned with whether learners begin with

explicit knowledge that is converted to implicit knowledge or implicit knowledge is developed via unconscious processes and processing, and whether there is some kind of interface between explicit and implicit knowledge and, if so, what the nature of that interface is (VanPatten & Benati, 2010).

1.2. Statement of the Problem

Communicative language teaching has focused SLA practitioners' attention on communicative activities for the sake of enhancing learners' fluency (Renou, 2001). This teaching approach has underscored meaning as opposed to form or grammar, causing the role of accuracy and metalanguage being minimized (Steel and Alderson, 1994). As a result, explicit L2 instruction has been brushed aside (Gutiérrez, 2013). However, it is essential to recognize the differences between learning one's mother tongue and learning a second/foreign language. We learn our mother tongue without an awareness or knowledge about grammar (Renou, 2001). In learning a second/foreign language, however, emphasis on language form is essentially required for linguistic accuracy not to be interrupted (Renou, 2001). In addition, certain types of knowledge and skills in a foreign language may be difficult to acquire without instruction (Gutiérrez, 2013). In other words, implicit learning processes are sufficient for L1 acquisition, but not for L2 acquisition due to three main reasons, namely transfer, learned attention to language and automatization (Ellis, N., 2011). Consequently, communicative language teaching has been criticized recently for neglecting attention to forms of language, and SLA research has begun to underscore the developmental value of "enhanced noticing" and "consciousness raising" in L2. In addition, Gutiérrez (2016) notes that most language teachers, especially those who teach the target language in a foreign language environment, have the very opinion that L2 proficiency benefits from explicit knowledge (Elder & Manwaring, 2004; Mitchell & Hooper, 1991). However, whether there exists a significant relationship between explicit L2 knowledge and L2 proficiency is still a controversial issue in SLA. While some studies have found a strong correlation between both constructs, others have only found a weak, non-significant relationship. After all, the results are inconclusive and thus it is not clear how explicit knowledge contributes to SLA. Therefore, further research is needed on the relationship between explicit L2 knowledge and L2 proficiency in order to gain better and clearer insights into the role of explicit knowledge in SLA development.

The problem described above could be justified based on the significance of L2 explicit knowledge in SLA development, addressing to a number of researchers. To begin with, Berry (2005) points out that knowledge and use of metalanguage is likely to make the development of an L2 learner's metalinguistic awareness, which in turn is likely to foster second language development. Additionally, Zipke (2007) states that bilinguals' better ability to understand an unknown language compared to monolinguals may be attributed mostly to their greater metalinguistic awareness. Moreover, studies investigating learner strategies and good language learners reveal the benefits of metalinguistic skills such as treating language as a system and paying attention to form (Siegel, 2005). Furthermore, explicit knowledge facilitates implicit knowledge, which is an integral part of L2 acquisition, as N. Ellis (2005) asserts that the majority of language acquisition is implicit learning from usage, most knowledge is tacit knowledge and most learning is implicit. This occurs in three possible ways. First, explicit knowledge helps L2 learners notice some linguistic properties in the input that may go unnoticed. Second, explicit knowledge helps L2 learners compare what they have noticed in the input with what they produce in their outcome, which enhances the intake. Third, explicit knowledge helps L2 learners monitor their output from their implicit knowledge. In addition, L2 explicit knowledge may enable learners to establish links between form and meaning faster, which is likely to facilitate L2 acquisition. It may also provide saliency for certain grammar features, increasing the likeliness of learners noticing them. Besides, explicit L2 knowledge may be beneficial concerning linguistic problem solving where implicit knowledge is inadequate. It may help L2 learners through output production in the target language consciously as well, in which case explicit knowledge may turn into implicit learning through practice (R.Ellis, 1994; R. Ellis, 2009, & N. Ellis, 2011).

1.3. Significance of the Study

Previous research has come up with mixed results with regard to the role of L2 explicit knowledge in L2 proficiency. This is probably due to the different instruments used to measure these two constructs as well as the variety of the research settings and the target populations. Gutiérrez (2016) points out that any study examining the relationship between explicit knowledge and L2 proficiency needs to take into account the two dimensions of this construct, namely analyzed knowledge and metalanguage, separately, and it also needs to consider separate measures regarding the four skills

(listening, reading, speaking and writing), as well as measures of grammar and vocabulary. However, it seems clear from most of the previous research that the sub-components and thus the complex structure of both explicit knowledge and L2 proficiency have been overpassed. In this sense, the present study aims to provide a thorough understanding of explicit knowledge by measuring analyzed knowledge and knowledge of metalanguage as well. In relation to L2 proficiency, on the other hand, it is necessary to interpret the findings of the previous research cautiously. A review of related literature reveals that findings follow a pattern. First, explicit knowledge correlates with written proficiency, namely reading and writing, more strongly and highly than oral proficiency, namely speaking and listening. However, none of the previous studies differentiate between receptive written proficiency (reading) and productive written proficiency (writing). In this regard, the present study aims to investigate L2 explicit knowledge and its reflection in reading and writing performances among Turkish learners of English as a Foreign Language (EFL). Second, analyzed knowledge, operationalized as the ability to identify and correct errors in L2 sentences and verbalize the appropriate rule, has a stronger correlation with L2 proficiency in comparison with knowledge of metalanguage. However, this relationship does not provide us with any cause and effect relationship between explicit knowledge and L2 proficiency (reading and writing performance in the case of the present study). Therefore, the present study aims to find out whether explicit L2 knowledge, both as a composite construct and through its sub-components (analyzed knowledge and metalanguage) might be a predictor of reading and writing performances of Turkish EFL learners by means of statistical analyses other than correlation analysis.

In addition, research on L2 explicit knowledge and its relationship to L2 proficiency is scarce in Turkish EFL context, which suggests a gap in SLA research as far as Turkish EFL context is concerned. To our knowledge, there are only three directly related studies that are not free from limitations. Yeşilyurt (2005), to begin with, aimed to identify the relationship between metalinguistic knowledge and foreign language proficiency of ELT students. The findings of the study showed that metalinguistic knowledge has no significant roles in foreign language proficiency. However, speaking skill and vocabulary were not included in the L2 proficiency measure in Yeşilyurt (2005), and the different facets of explicit knowledge, namely analyzed knowledge and metalanguage, were not treated separately, which hinders the reliability and validity of the measurement of the

two constructs in this study. Furthermore, the small sample size (N=43) decreases the level of generalization of the results of the study. Erçetin and Alptekin (2013), on the other hand, explored the relationships between L2 explicit/implicit knowledge sources, L2 working memory (WM) capacity and L2 reading comprehension. Although the data collection instruments were carefully planned in this study, the small sample size (N=51) poses threats to the validity of the findings. Lastly, Aydın (2018) investigated the relationship between L2 metalinguistic knowledge and L2 achievement among intermediate-level adult Turkish EFL learners studying at a large-scale Turkish university. Metalinguistic knowledge was operationalized as the ability to correct a grammatically incorrect structure in English and explain why it is incorrect, and identify and explicitly state the grammatical role of parts of speech in L2 sentence. This indicates that use of metalanguage was limited to parts of speech only in this study. In other words, explicit knowledge was not treated thoroughly in Aydın (2018). Moreover, as in the two other studies, the small sample size (N=38) prevents us from generalizing the findings of this study to the whole population.

Furthermore, the present study will compare first- and fourth-year ELT majors in terms of their L2 explicit knowledge, which is another thing that makes the present study differ from the previous studies. This will enable us to figure out how L2 explicit knowledge varies across two different groups of English Language Teaching (ELT) majors, namely those who have just started their undergraduate study, and those who are about to finish it and start their profession, respectively. Such a comparison will help us find out whether the participants' undergraduate studies as ELT majors boost their explicit knowledge or not. In other words, the findings of the present study will help determine the role of ELT curriculum in the development of L2 explicit knowledge. By the same token, if a considerable relationship is found between L2 explicit knowledge and L2 proficiency, and if explicit knowledge explains some of the variance in reading and writing performances of the participants, a need will arise to focus more on analyzed L2 knowledge and use of metalanguage among prospective teachers of English. Fulfillment of this need will help us better equip prospective teachers of English with requirements of knowing a foreign language and their profession as well. All in all, the findings obtained in the present study may yield some implications for ELT practitioners including learners, teachers, material designers and curriculum designers.

1.4. Research Questions

The purpose of this quantitative study is to examine the two components of L2 explicit knowledge, namely analyzed knowledge and knowledge of metalanguage, and their relationship to reading and writing performances of first- and fourth-year ELT majors studying at a large-scale state university in Turkey. To this end, the present study intends to seek answers to the following research questions:

1) Is there a significant difference between 1st- and 4th-year Turkish EFL learners majoring at ELT in terms of the Explicit L2 Knowledge they have?
2) Is there a significant difference between Analyzed Explicit Knowledge and Metalinguistic Knowledge among 1st- and 4th-year Turkish EFL learners majoring at ELT?
3) What is the relationship between Explicit L2 Knowledge and reading and writing performances of 1st- and 4th-year Turkish EFL learners majoring at ELT?

1.5. Definitions of the Key Terms

Implicit L2 Knowledge: It is the knowledge *of* the foreign language (Han & Ellis, 1988). It is unconscious in nature and exists outside of awareness (VanPatten & Benati, 2015). It cannot easily be accessed separately from naturally occurring language behavious such as conversation (Han & Ellis, 1988). It is associated with the following characteristics: procedural, unverbalizable, unanalyzed and intuitive (R. Ellis, 1993, 1994, 2005, 2009).

Explicit L2 Knowledge: It is generally referred to as conscious knowledge, or knowledge a person is aware of and normally can articulate (VanPatten & Benati, 2015). It is he knowledge *about* the foreign language (Han & Ellis, 1988). Declarative knowledge is sometimes used as a synonym for explicit knowledge. Declarative knowledge is defined as some kind of conscious awareness of the rules and the skill of verbalizing what is known (VanPatten & Benati, 2015). It is associated with the following characteristics: verbalizable and analyzed, in addition to conscious and declarative (R. Ellis, 1993, 1994, 2005, 2009).

Analyzed Knowledge: Analyzed knowledge is the knowledge about L2 items and structures of which the learners are aware but not necessarily conscious (Han & Ellis, 1988).

Metalanguage: Metalanguage is defined as the language used to analyze or describe a language (Richards, Platt, & Weber, 1985).

Metalingual Knowledge: Metalingual knowledge is the knowledge of metalanguage (Ellis, 1994; Berry, 2005). Additionally, Dakowska (1993) and Ellis (1994) use the term "metalingual" for the knowledge and awareness of language, too. Berry (2005), however, uses the term "metalinguistic" for the knowledge and awareness of language.

Metalinguistic Knowledge: VanPatten and Benati (2015) define metalinguistic knowledge as conscious knowledge about language itself, usually manifested as the ability to talk about language. In other words, metalinguistic knowledge is the explicit knowledge of the language (Gutierrez, 2012). In this sense, metalinguistic knowledge and explicit knowledge are generally used interchangeably (Alderson, Clapham & Steel, 1997; Elder, 2009; Hu, 2002; Roehr, 2008, as cited in Gutierrez, 2012).

In the present study, explicit knowledge is the umbrella term. It consists of *analyzed knowledge*, which is "the knowledge about L2 items and structures of which the learners are aware but not necessarily conscious", and *metalanguage*, which refers to "the language used to analyze or describe a language". For the knowledge of metalanguage, *metalinguistic knowledge* (which is also used to refer to overall explicit knowledge in the literature reviewed) is preferred in the present study; however, the terms *knowledge of metalanguage* or *metalingual knowledge* are also used throughout the study.

2. LITERATURE REVIEW

The literature review will be handled in two main parts as theoretical background and empirical research on L2 explicit knowledge. The theoretical background covers interlanguage processing and knowledge types, interface of knowledge types, some psychological constructs and individual differences in SLA. The second part covers definition and measurement of L2 explicit knowledge along with a review of the previous research studies investigating the relationship between L2 explicit knowledge and L2 proficiency.

2.1. Theoretical Background

This section provides the background of the research problem in the present study. First, the nature of linguistic knowledge is clarified, and other knowledge types as well as explicit knowledge are explained. Second, the three ways to conceptualize the interface between the knowledge types are mentioned. Third, a brief summary of some psycholinguistic constructs that seem to be related to explicit L2 knowledge in terms of learning, storage and retrieval is provided. Lastly, language aptitude, one of the individual differences that second language acquisition is concerned with, is mentioned briefly, since it has a lot in common with explicit knowledge. Subsequently, explicit knowledge is explained in more detail with reference to what it is indeed and what it is not. It is also compared to its counterpart, implicit knowledge, for a better understanding. Finally, the measurement of L2 explicit knowledge is reviewed.

2.1.1. Interlanguage Processing and Knowledge Types

By definition, Ellis (2005) mentions two views regarding the nature of linguistic knowledge. The first view refers to Chomsky's universal principles, which are applicable to all languages, and some parameters, which vary across languages and work together so as to form a specific language from poor input. According to this view, these principles and parameters are activated through positive evidence or input and thus a person's linguistic knowledge is triggered. The second view is related to the works of connectionist theories of language learning in the sense that it does not make a difference between language knowledge and other kinds of knowledge. This second view considers linguistic knowledge as an outcome of piecemeal mental representation of rules emerging

with help of frequency and likeliness of happening of from-function mappings. These rules are achieved once learners have a long-term experience of learning a language.

More specifically, second language knowledge can be represented in a number of ways. First, in his Monitor Model, Krashen (1982) assumes that there are two independent ways for L2 learners to develop knowledge of a second language, namely through acquisition and learning. Acquisition refers to the subconscious process in which the language acquirers are only aware of the fact that they are using the language for communication. The acquired competence is also subconscious just like the acquisition process itself. In other words, language acquirers are not consciously aware of the rules of that language. Instead, they feel that sentences are grammatically correct or incorrect. Learning, on the other hand, refers to conscious knowledge of a second language, which implies that learners know the rules, are aware of them, and are able to talk about them. Krashen (1982) maintains that knowledge obtained through acquisition and learning is internalized differently and thus used differently. The acquisition system, in which the focus is on meaning rather than form, is responsible for output production. The learned system, on the other hand, checks the correctness of the utterances.

Second frequent distinction regarding L2 knowledge types is the difference between declarative and procedural knowledge. Declarative knowledge is concerned with knowledge about something. In relation to language, declarative knowledge refers to such aspects of language as word knowledge such as meaning, collocation, synonyms, antonyms and pronunciation or knowledge of grammar rules. In general, this type of knowledge is relatively accessible to conscious awareness. In other words, we can retrieve this information when called upon to do so. Procedural knowledge, on the other hand, is concerned with motor and cognitive skills that involve sequencing information. In relation to language, procedural knowledge refers to such aspects of language as stringing words together and applying appropriate grammar rules to form and interpret sentences. Unlike declarative knowledge, procedural knowledge is relatively inaccessible.

Another distinction frequently made is between implicit and explicit knowledge, a distinction, which has its roots in psychology (Gass & Selinker, 2008). Implicit knowledge is simply "knowledge of language" (Han & Ellis, 1998:5). Implicit L2 behavior is evident in language behavior, and cannot be accessed independently of this behavior (Bialystok, 1990). Mathews, Buss, Stanley, Blanchard-Fields, Cho and Druhan (1989) maintain that implicit knowledge is memory-based rather than rule-based. Reber

(1989), however, claims that implicit knowledge may be rule-based to some extent depending on Berko (1958), who reveals that child language learners are able to apply rules that they have internalized to new languages (as cited in Han & Ellis, 1998). Explicit knowledge, on the other hand, is simply "knowledge about the L2" (Han & Ellis, 1998:5). Han and Ellis (1998) break down explicit knowledge into analyzed knowledge and metalanguage. Analyzed knowledge is the knowledge about the L2 items and structures of which learners are not fully conscious, whereas metalanguage is the language used to describe or analyze the language, of which learners are fully conscious. VanPatten and Benati (2010) state that declarative knowledge is sometimes used as a synonym for explicit knowledge. The two factors that distinguish implicit L2 knowledge from explicit L2 knowledge are accessibility and awareness (Han & Ellis, 1998). Implicit knowledge is easily accessed in tasks that require fluent language performance, is unanalyzed and thus held without awareness. Explicit knowledge, however, is not easily accessed without controlled effort and thus is employed in tasks requiring careful planning and monitoring. In addition to this, explicit knowledge is analyzed and model-based and consequently held consciously. Furthermore, explicit knowledge may involve metalingual knowledge.

2.1.2. Interface of Knowledge Types

There are three ways to conceptualize the interface between knowledge types, that is non-interface, strong interface and weak interface. Non-interface position is related to Krashen's acquisition-learning distinction. Krashen stated explicitly that what has been learned cannot become part of the acquired system. There are three objections to the non-interface position (Gass & Selinker, 2008). First, keeping any information about a second language in two separate systems is clearly an inefficient way for the brain to cope with different kinds of information. Second, if what has been learned didn't become part of the acquired system, as assumed by Krashen, those learners who learn language only in a formal setting and whose instruction is in the native language rather than the target language would never be able to generate utterances. Third, Krashen didn't provide any evidence or a means for determining whether learning and acquisition are indeed two separate systems or not.

A weak-interface model of L2 acquisition (Ellis, 1993; 1994) hypothesizes that explicit L2 knowledge may turn into implicit L2 knowledge. L2 learners who were able to acquire non-developmental features of an L2 via explicit knowledge and those who

were able to achieve mastery over grammatical features that they have not fully acquired thanks to formal instruction provide evidence for this hypothesis of the weak-interface model. This model also hypothesizes that implicit knowledge may turn into explicit knowledge, too. This occurs when L2 learners reflect on their implicit knowledge and thus analyze it. The weak-interface model is concerned with the neurobiology of implicit tallying, the neural correlates of consciousness and the relationship between learning and consciousness (Ellis, N., 2011). The weak-interface model of L2 acquisition also maintains that implicit knowledge benefits from explicit knowledge in a number of ways. For example, explicit knowledge enables L2 learners to notice some linguistic properties in the input that may go unnoticed. Second, L2 learners are able to compare what they have noticed in the input with what they produce in their outcome thanks to their explicit knowledge, which enhances the intake. Third, L2 learners are able to monitor their output from their implicit knowledge with help of their explicit knowledge. In other words, the weak-interface model proposes that explicit processing plays a role in SLA by means of noticing, noticing the gap (e.g. through corrective recasts) and guided output practice (Ellis, N., 2011).

Strong interface, lastly, posits that learning progresses from declarative knowledge to procedural knowledge and finally to automatization of procedural knowledge (DeKeyser, 1997). Evidence comes from a study (DeKeyser, 1997), in which participants were presented with four rules of an artificial language. One group received comprehension practice for two rules and production practice for the other two. A second group received production practice for the two rules that the first group had received comprehension practice on, and comprehension practice for the two rules that the first group had received production practice on. A third group had an equal amount of production and comprehension practice for all rules. Based on the reduced error rates and faster reaction times for those rules that the participants had practiced, it is reported that they proceeded from declarative knowledge to proceduralization and to automaticity. This suggests that declarative knowledge, operationalized as rule presentation in this case, leads to greater proceduralization and automaticity if it is followed by practice. This stands out as Skill Acquisition Theory in SLA literature. Skill Acquisition Theory claims that “learning of a wide array of skills are similar in the sense that they develop from initial representation of knowledge through initial changes in behavior to eventual fluent, spontaneous, and highly skilled behavior” (VanPatten & Benati, 2015: 85). It is not likely

for skills to be automatized unless they have first been under controlled processing, which leads to automatic processing. In L2 context, for example, learners first gain declarative knowledge about language by learning rules about language explicitly. Upon being engaged in appropriate practice, the skill becomes fine-tuned and more and more automatic. Whether rules are acquired implicitly or explicitly is another important concept in Skill Acquisition Theory. This depends on the complexity of the rule: simple rules can be learned explicitly, whereas more 'complex' ones can be acquired implicitly (DeKeyser, 1998).

2.1.3. Psycholinguistic Constructs in SLA

Some psycholinguistic constructs, such as attention, working memory and monitoring, may be related to explicit knowledge in terms of learning, storage and retrieval. To begin with, attention, which is simply "the concentration of the mental powers upon an object" according to the American Heritage Dictionary (as cited in VanPatten & Benati, 2015), is essential in understanding anything and everything in a foreign/second language (Schmidt, 2001). Tomlin and Villa (1994), who provide us with one of the early treatments of attention in the SLA literature, proposed three components to attention, namely alertness, orientation and detection. Alertness is the readiness to receive incoming stimuli; orientation is related to the direction of resources to stimulus, and detection is concerned with registration of stimulus. Detection is the major component and is what drives learning, whereas the other two contribute to the likelihood that detection will occur, and thus play a supporting role in attention. In this model, detection does not require awareness and, as a result, learning can occur without awareness. Schmidt (1990, 1993, 1994, 1995, 2001) proposed the Noticing Hypothesis, which presumes that awareness (through attention) is necessary for noticing which in turn is essential for learning. Robinson (1995, 1996) combined both approaches into an expanded model claiming that noticing is just a later stage in the model and that detection is prior to it.

There have been a number of studies considering the role of attention and awareness in language learning. Most studies show a connection between awareness and learning (e.g. Leow, 1997, 2000, 2001; Rosa and Leow, 2004; Rosa and O'Neill, 1999). Conversely, Williams (2005) found that learning could take place without awareness. In another study, Gass, Svetics, and Lemelin (2003) considered attention from the

perspective of its differential role on different parts of the grammar such as lexicon, morphosyntax and syntax. Learners were placed into a focused attention group or into a non-focused attention group. They found that learning occurred in both conditions. Focused attention was most beneficial for syntax and least for the lexicon. Furthermore, there was a diminished effect for proficiency, with focused attention having a greater effect in early stages of learning. These findings also indicate that it may be possible for learning to take place without attention. Currently, Leow and Donatelli (2017) maintains that the beneficial role of awareness in SLA is well-established; however, whether such a role is important is controversial, and research is still needed on the role of awareness in SLA.

Second, working memory refers to the structures and processes that humans use to store and manipulate information. What differentiates working memory from short-term memory is that the former focuses on the manipulation of information whereas the latter just focuses on the storage of information. Working memory consists of central executive, which is the overall supervisor and coordinator of information, articulatory loop, which stores phonological information, and visuo-spatial sketch pad, which, stores visual and spatial information (Baddeley, 2000). Research reveals that there is a relationship between working memory and language proficiency and language learning (e.g., Harrington & Sawyer, 1992; Miyake & Friedman, 1998 and Linck & Weiss, 2011).

Finally, monitoring refers to the learned system's monitoring and changing the output of the acquired system in Krashen's Monitor Model. In other words, the Monitor functions as a bridge between the acquired and learned systems in a situation of language use (Gass & Selinker, 2008). Krashen claims that there are three necessary conditions for the Monitor to be used. These are time, focus on form and know the rule. The Monitor can be used in both production and decoding (Gass & Selinker, 2008).

2.1.4. Individual Differences in SLA

Ellis, R. (1997) states that although the main concern of SLA is to describe and explain the universal aspects of L2 acquisition, SLA also acknowledges that there are individual differences in L2 acquisition. These differences refer to social factors that have to do with the context of learning and psychological dimensions of difference, which are many and various. Gass and Selinker (2008) list these differences as affect, namely language shock, culture shock, anxiety and affective filter; social distance, age

differences, motivation, personality and learning style, learning strategies and aptitude. Of these individual differences, aptitude stands out to be the most related to explicit knowledge.

Aptitude, simply put, refers to one's potential for learning new knowledge or new skills. When it comes to language aptitude, it refers to one's ability to learn another language. It goes without saying that there is no talk of language aptitude for learning one's first language, at least not for children without cognitive deficits (Gass & Selinker, 2008). J. B. Carroll is the name associated most with studies of second language learning aptitude. Carroll's (1981) model of language aptitude consists of phonemic coding ability, grammatical sensitivity, inductive language learning, and memory and learning. Phonemic coding ability is the ability to discriminate among foreign sounds and to encode them in such a manner that they can be recalled later. Grammatical sensitivity is the ability to recognize the functions of words in sentences. Inductive language learning ability is the ability to infer, induce, or abduct rules or generalizations about language from samples of the language. Memory and learning, finally, refers to the ability to make and recall associations between words and phrases in a native and a second language. Skehan (1998) questioned the appropriateness of separating grammatical sensitivity and inductive language-learning ability and suggested that these be combined into one ability: language analytic ability. Language-analytic ability can be defined as a learner's "capacity to infer rules of language and make linguistic generalizations or extrapolations" (Ranta, 2002: 161, referring to Skehan, 1998). Language-analytic ability has been either treated as a separate construct to begin with (e.g. Alderson, Clapham & Steel, 1997), or as an integrated component of metalinguistic knowledge (e.g. Elder, Warren, Hajek, Manwaring & Davies, 1999). However, research directly investigating the relationship between various components of language learning aptitude, metalinguistic knowledge, and the role of these notions with respect to L2 proficiency is limited (Roehr, 2006). Though not immediately concerned with the notion of metalinguistic knowledge, Erlam (2006) found that, in adolescent L1 English learners of L2 French, deductive instruction involving explicit rule explanation, form-focused activities, output practice, and corrective feedback seemed to minimize effects of individual learner differences in phonetic coding ability and language-analytic ability, operationalized by means of the words-in-sentences subtest of the Modern Language Aptitude Test (MLAT). By contrast, Ranta (2002) concluded that, in adolescent L1 French learners of L2 English, a

communicative classroom environment apparently could not counteract the effects of individual differences in language-analytic ability. Put differently, language-analytic ability seemed to impact on learner performance regardless of instructional condition. In Ranta's study, language-analytic ability was operationalized by means of a written L1 error detection and correction task. More recently, Roehr (2006) employed a narrowly focused measure of L2 proficiency and incorporated L2 language-analytic ability into a measure of metalinguistic knowledge. It was found that the linguistic and metalinguistic knowledge of advanced university-level L1 English learners of L2 German correlated strongly. Moreover, the outcome of a principal components analysis suggests that learners' ability to correct, describe, and explain highlighted L2 errors and their L2 language-analytic ability may constitute a single construct.

2.2. Research on L2 Explicit Knowledge

2.2.1. The definition of L2 explicit knowledge

R. Ellis (2004) indicates that it is necessary to define and measure explicit knowledge because some theories of L2 acquisition attached importance to this type of knowledge (e.g., Bialystok, 1994; R. Ellis, 1994a; Hulstijn, 2002; Krashen, 1981). He adds that the psychological and SLA literature is full of terms such as language awareness, metalinguistic phenomena/awareness/abilities/performance, analyzed knowledge, conscious knowledge, declarative knowledge/rules/memory, learned knowledge and explicit knowledge, which overlap in ways that are not clear. R. Ellis (2004) simply defines explicit knowledge as "the conscious awareness of what a language or language in general consists of and/or of the roles that it plays in human life" (p. 229). It is the declarative and often anomalous knowledge of such features of an L2 as the phonology, lexis, grammar, pragmatics, and socio-critics, which are labeled using the metalanguage. Therefore, L2 learners' declarative rules are often imprecise and inaccurate. In addition, L2 explicit knowledge is held consciously and is learnable and verbalizable. It is typically accessed through controlled processing when L2 learners experience some kind of linguistic difficulty in the use of the L2. In addition, the development of a learner's explicit knowledge can take place on two planes, namely breadth and depth, and learners vary in the breadth and depth of their L2 explicit knowledge (p.244-245). In sum, explicit knowledge is not an attitude, practice, activity

or pedagogic construct. Rather, it is conscious, declarative, generally accessible through controlled processing, potentially verbalizable and learnable (R. Ellis, 2004).

Ellis (1997) states that explicit knowledge consists of analyzed knowledge, which refers to "the knowledge about L2 items and structures of which the learners are aware but not necessarily conscious", and metalanguage, which is "the language used to analyze or describe a language" (Richards, Platt & Weber, 1985, as cited in Ellis, 1997). In this sense, it seems necessary to make a clarification of some other terms. Metalanguage, for example, is a language that is used to talk about, discuss, describe or make statements about a language. It may be used to talk about another language as well (Berry, 2005). Metalingual knowledge is the knowledge or awareness of metalanguage (Ellis, 1994; Berry, 2005). Metalinguistic knowledge, on the other hand, refers to the conscious knowledge about language itself, and is demonstrated as the ability to talk about language. For example, an English speaker who says that English is a very rigid language in terms of word order and it is almost impossible to find any word order other than subject-verb-object, is exhibiting some kind of metalinguistic knowledge because he or she is able to use terms like subject, object, rigid word order, and so on . Metalinguistic knowledge can also be defined as the explicit knowledge of the language (Gutiérrez, 2012). In this sense, metalinguistic knowledge and explicit knowledge are often used interchangeably (Alderson et al., 1997; Elder, 2009; Hu, 2002; Roehr, 2008, as cited in Gutiérrez, 2012).

Analyzed knowledge and metalanguage differ from each other in the sense that the former is derived from implicit knowledge, whereas the latter is learnt through instruction or observation. In addition, they can exist independently of one another. Within this regard, it seems necessary to provide the distinction between explicit knowledge and, *its counterpart*, implicit knowledge. Implicit and explicit knowledge simply refer to "knowledge of language" and "knowledge about language", respectively (Ellis, 1997). These two types of knowledge differ from each other in the sense that implicit knowledge represents the L2 knowledge that is present in the learner' mind, whereas explicit knowledge refers to how this knowledge is internalized. In other words, the former is a product, while the latter is a process. Both knowledge types have their own characteristics, which may vary across scholars, though. According to Bialystok (1990) and Mathews, et al. (1989), for example, implicit knowledge is unanalyzed, memory-based and easily accessible. Reber (1989), however, claims that some implicit knowledge can be abstract, structured and rule-based.

When explicit knowledge and implicit knowledge are compared, R. Ellis (2004) notes that explicit knowledge typically involves controlled processes (although some other researchers (e.g., DeKeyser, 2003) acknowledge that explicit knowledge may be proceduralized to the extent that it cannot be easily distinguished from implicit knowledge), whereas implicit knowledge is available for automatic use. Moreover, explicit knowledge appears phylogenetically and ontogenetically later than implicit knowledge, and it involves different access mechanisms. Furthermore, explicit knowledge is neurologically distinct from implicit knowledge. Ellis (2004) also notes that although it is controversial whether the two types of knowledge are to be seen as dichotomous or continuous, neurological evidence and current connectionist models of linguistic knowledge point to a dichotomy. Additionally, the question of the separateness of the representation of the two types of knowledge is independent from the question of whether the processes of implicit and explicit learning are similar or different, which is another controversial issue. However, it is likely that learning processes and knowledge types are correlated to some degree, at least. Even though there is controversy concerning the interface of explicit and implicit knowledge at the level of learning, it is widely accepted that they interact at the level of performance.

The distinction between these two knowledge types is important because it is related to modeling learning difficulty. Ellis (2006) maintains that whether some grammatical structures are acquired explicitly or implicitly plays a role in this learning difficulty. In other words, he claims that the grammatical structures that are easier to acquire explicitly may be difficult to acquire implicitly and vice versa. According to Ellis (2004, 2005, 2006), we can distinguish implicit and explicit knowledge of an L2 in terms of seven principal dimensions, which fall into two categories as representation dimensions and processing dimensions. The representation dimensions are awareness, type of knowledge and systematicity and certainty of L2 knowledge, while the processing dimensions are accessibility of knowledge, use of L2 knowledge, self-report and learnability. Based on these representations, it is possible to list the differences between implicit knowledge and explicit knowledge as follow:

- Explicit knowledge involves conscious awareness, whereas implicit knowledge involves unconscious awareness.
- Explicit knowledge involves declarative knowledge, which consists of facts about the grammar, and thus is encyclopedic in nature. Implicit knowledge, on the other

hand, involves procedural knowledge, which can be easily accessed.

- Explicit knowledge is often imprecise, inaccurate and inconstant, whereas implicit knowledge is systematic.
- Explicit knowledge allows for controlled processing, whereas implicit knowledge allows for automatic processing.
- Explicit knowledge is used when learners have plenty of time, whereas implicit knowledge is often used under time pressure.
- Explicit knowledge is potentially verbalizable.
- Explicit knowledge is learnable at any age, but implicit knowledge is not.

  Therefore, explicit knowledge tasks should:

  - encourage learners to respond using rules,
  - be performed without any time pressure,
  - call for a primary focus on form,
  - invite the use of metalinguistic knowledge.

  Implicit knowledge tasks, on the other hand, should:

  - tap into what learners intuitively feel to be correct
  - be performed under time pressure
  - call for a primary focus on meaning
  - not invite the use of metalinguistic knowledge.

2.2.2. Measuring L2 explicit knowledge

Primarily, Rebuschat (2013) lists three main measures of L2 explicit knowledge. These are retrospective verbal reports, direct and indirect tests and subjective measures. Retrospective verbal reports require learners to verbalize any rules or patterns that they might have noticed while performing the experimental tasks. It is necessary to use a detailed, structured questionnaire to prompt learners to report how they performed the task. A direct test explicitly instructs learners to make use of their acquired knowledge (e.g. a generation task), while an indirect test assesses learners' performance without instructing them to use their knowledge (e.g. a reaction time task). It is worth noting that the measures of L2 explicit knowledge used in the current study fall into this second category. Lastly, subjective measures consist of subjects' confidence ratings. For example, Rebuschat and Williams (2012) administered a grammaticality judgment test in an artificial language and asked the participants to report how confident they were in each

grammaticality judgment and to indicate the basis of their judgment. They found a correlation between confidence and accuracy and reported that intuition as a source of judgment yielded better performance.

Considering that L2 explicit knowledge consists of analyzed knowledge and knowledge of metalanguage, measurement of this knowledge representation would be incomplete without measuring its sub-components separately. It is stated that the measurement of analyzed knowledge should be the primary goal in testing explicit knowledge. A test providing a measure of learners' knowledge of metalanguage, on the other hand, is of secondary importance although there are studies demonstrating that such knowledge is also an integral part of L2 proficiency and/or has an influence in L2 acquisition (Ellis, 2004). Given the primary role of the measurement of analyzed knowledge in measuring L2 explicit knowledge, it is worth beginning with analyzed knowledge.

R. Ellis (2004) maintains that an ideal test of analyzed knowledge should distinguish between the measurement of learners' explicit L2 knowledge and their ability to construct such knowledge for a given context. It is possible to infer from this sentence that there are two main concepts to consider in an attempt to measure analyzed knowledge as a part of L2 explicit knowledge:

1. learners' general L2 explicit knowledge and
2. their ability to construct such knowledge for a given context.

The former can be measured through grammaticality judgment tests, while the latter can be measured through language aptitude tests (R. Ellis, 2004). Language aptitude tests ask learners to find the word in a sentence that has the same function as a key word underlined in another sentence, and thus they tap grammatical sensitivity. Grammaticality judgment tests, on the other hand, ask learners to

(a) find out the error in an ungrammatical sentence,

(b) correct the error, and

(c) utter the grammatical rule that has been violated.

Learners can also be asked to

(d) indicate the degree of certainty of their judgment.

Ellis (2004) maintains that a GJT potentially involves three principal processing operations:

1. Semantic processing (i.e., understanding the meaning of a sentence)

2. Noticing (i.e., searching to establish whether something is formally incorrect in the sentence)
3. Reflecting (i.e., considering what is incorrect about the sentence and, possibly, why it is incorrect)

R. Ellis (2004) further maintains that the likelihood of a GJT's providing a measure of explicit knowledge can be increased if:

- learners are given time to judge sentences and to correct ungrammatical sentences,
- learners' responses to the ungrammatical sentences on the test (or the sentences the learner has judged as ungrammatical) are considered separately from their responses to the grammatical sentences, and
- learners' uncertainty in judging individual sentences is taken into account.

Apart from grammaticality judgment tests and language aptitude tests, R. Ellis (2004) implies that other tests can also be developed to measure analyzed knowledge as part of L2 explicit knowledge. It is possible to develop *these other tests* through

- measuring learners' awareness of the linguistic differences between L1 and L2, and
- identifying whether learners are more or less aware of the markedness and /or prototypicality of L2 forms.

However, it is worth noting that none of the previous research studies employed tests measuring learners' awareness of the linguistic differences between L1 and L2, or of the markedness and/or prototypicality of L2 forms. In other words, previous research studies attempted to measure analyzed knowledge through grammaticality judgment tests and/or language aptitude tests.

When it comes to measuring the knowledge of metalanguage, which is of value to learners because it provides an awareness of explicit knowledge and opportunities for an easier access to it (R. Ellis, 2004), it is important to measure both depth and breadth of metalingual constructs. This can be accomplished by developing a scale of metalingual understanding. It is also important to measure the identification of metalingual constructs in a variety of sentence types in terms of grammatical complexity for a more comprehensive measurement of the depth of metalingual constructs. Additionally, R. Ellis (2004) maintains that a test of metalanguage may achieve greater validity if it measures receptive rather than productive knowledge of metalanguage.

To sum up, it is necessary to measure both analyzed knowledge and knowledge of metalanguage in order to provide a comprehensive measurement of L2 explicit knowledge. Measuring analyzed knowledge requires measuring learners' general L2 explicit knowledge and their ability to construct such knowledge for a given context. These can be accomplished employing grammaticality judgment tests and language aptitude tests, respectively. Additionally, measuring learners' awareness of the linguistic differences between L1 and L2 and of the markedness and/or prototypicality of L2 forms may also measure analyzed knowledge as part of L2 explicit knowledge. Measuring the knowledge of metalanguage, on the other hand, requires measuring both depth and breadth of metalingual constructs. Besides, identification of metalingual constructs in a variety of sentence types in terms of grammatical complexity is important for measuring the depth. Lastly, measuring both receptive and productive knowledge of metalanguage is likely to yield better findings.

Before proceeding with a closer look into these different types of tests of L2 explicit knowledge in detail, it is worth mentioning an initial study (Han & Ellis, 1998), in which an attempt was made to develop measures of L2 learners' implicit and explicit knowledge of verb complementation structures. In this study, implicit knowledge was measured using and oral production test (OPT) and a timed grammaticality judgment test (TGJT), while explicit knowledge was measured using an untimed grammaticality judgment test (UGJT) and a following interview for which the participants were asked to state a rule to justify their decision. Subsequently, the Marsden study (Ellis, 2005; Ellis, et al., 2009) built on the Han and Ellis (1998) study, was designed to develop a battery of tests that would provide relatively separate measures of implicit and explicit knowledge. As a consequence, these two studies have provided basis for the current tests of explicit and implicit knowledge.

2.2.2.1.Grammaticality judgment tests

Grammaticality judgment tests (GJTs) consist of a number of grammatical and ungrammatical sentences and learners are asked to determine whether they are well formed or deviant (Ellis, 1991). In a GJT, learners may be further asked to find the error, correct it and state why it is incorrect. GJTs have been popular for some practical and theoretical reasons (Gutiérrez, 2013). Gutiérrez (2013) notes two main practical reasons why GJTs have been popular in L2 research. First, they allow us to test learners'

knowledge of L2 structures that they do not or rarely produce, thus making it somehow possible to gain insights into learners' L2 competence. In other words, GJTs provide us with an opportunity to vision the rest of the iceberg, metaphorically considering that production is the tip of the iceberg. Second, it is easy to administer GJTs to a large number of learners at once. When it comes to the theoretical reasons, Vafaee, Kachisnke and Suzuki (2016) indicate that it is currently acknowledged that GJTs are a measure of linguistic performance although they do not provide a direct window into the learners' linguistic competence. Vafaee, Kachisnke and Suzuki (2016) also note that the nature of learners' knowledge, whether explicit or implicit or a combination of both, affects their judgment on GJTs. In other words, it is assumed that GJTs represent L2 learners' explicit and/or implicit knowledge or a combination of the both. However, there may be concerns with regard to the validity of GJTs. In other words, it may be a controversial issue whether or to what extent GJTs do indeed test explicit and implicit L2 knowledge (considering that validity is concerned with whether or to what extent a testing instrument really tests what it has been designed to test).

Two aspects of GJTs that have been examined in relation to how they affect learners' judgments in terms of using implicit or explicit knowledge are time pressure and task stimulus. Several studies yielded findings indicating that untimed GJTs measure explicit knowledge, whereas timed GJTs measure implicit knowledge (e.g., Bowles, 2011; R. Ellis, 2005; R. Ellis & Loewen, 2007). It has also been shown that, regardless of time condition, participant responses to different GJT stimulus types, namely grammatical and ungrammatical sentences, tap into implicit knowledge and explicit knowledge, respectively (Gutiérrez, 2013). These findings have been obtained as a result of several factor-analytic validity investigations. It began with Rod Ellis, who conducted a psychometric study of a battery of tests designed to provide relatively independent measures of explicit and implicit knowledge (2005). These tests were an oral imitation test involving grammatical and ungrammatical sentences, an oral narration test, a timed GJT, an untimed GJT with the same content, and a metalinguistic knowledge test. An exploratory factor analysis (EFA) showed that the scores from the oral imitation test, oral narration test and the timed GJT loaded on Factor 1, which was interpreted as corresponding to implicit knowledge, whereas the scores from ungrammatical sentences in the untimed GJT and total scores from the metalinguistic knowledge test loaded on Factor 2, which was interpreted as corresponding to explicit knowledge. However, Ellis

was criticized because his use of factor analysis in the study was methodologically flawed and a confirmatory factor analysis (CFA) should have been used rather than EFA (Isemonger, 2007). The problem was that Ellis approached the factor analysis with an *a priori hypothesis*. In other words, he had a prior hypothesis implying that the measures would measure the distinct constructs of explicit knowledge and implicit knowledge, which required use of CFA rather than EFA (Isemonger, 2007). Although it was noted that EFA has been widely used in applied linguistics studies with similar purposes (e.g. Schmidt, Boraie, and Kassabgy, 1996; Skehan and Foster, 1997; Wintergerst, DeCapua, and Itzen, 2001), Ellis and Loewen (2007) reanalyzed the data used in Ellis (2005) through a CFA accepting Isemonger's criticism. This time they were again criticized for the lack of an adequate rival model identification, which is the last stage of CFA along with initial model specification, parameter identification and estimation, data-model fit assessment and possible model modification (Vafaee, Kachisnke and Suzuki, 2016). In the meantime, Bowles (2011) designed a battery of tests in Spanish closely following Ellis's (2005) guidelines and tested them on Spanish native speakers (NSs), L2 learners, and Heritage Language (HL) learners. She found that explicit and implicit knowledge are two distinct concepts, and imitation test, oral narrative test and timed GJT measure implicit knowledge, whereas untimed GJT and metalinguistic knowledge test measure explicit knowledge, confirming the findings in Ellis (2005) and Ellis and Loewen (2007). However, Bowles did not examine any rival CFA models against her two-factor model, either. Gutiérrez (2013) examined whether or not L2 learners draw on different types of knowledge in judging grammatical and ungrammatical sentences in timed and untimed GJTs with a group of Spanish L2 learners. In other words, the author simultaneously examined the role of time pressure on GJTs (timed and untimed) and the types of test items (grammatical and ungrammatical) in order to scrutinize GJTs as measures of implicit and explicit knowledge. The data were collected using a timed GJT, an untimed GJT, and a metalinguistic knowledge test, which were designed following the guidelines in Ellis (2005). Gutiérrez conducted both an EFA and a CFA with two rival models. In the first model of the CFA, both the grammatical and ungrammatical sentences of the timed GJT loaded on the construct of implicit knowledge, and the grammatical and ungrammatical sentences of the untimed GJT and the MKT loaded on the construct of explicit knowledge. In the second model, the grammatical sentences in the GJTs loaded on the construct of implicit knowledge regardless of time pressure, and the ungrammatical

sentences of the GJTs and the MKT loaded on the explicit knowledge construct. The analyses yielded a better fit for the second model, which indicates that regardless of time pressure, grammaticality of the stimulus is what distinguishes between the use of implicit knowledge and explicit knowledge in performing GJTs. However, Gutiérrez's study has some limitations having to with the factor analysis. First, it is stated that in a two-factor model three measures per factor are recommended. However, in the present study, even if the scores on the GJTs were split into grammatical and ungrammatical, there would be two measures of implicit knowledge and three measures of explicit knowledge along with MKT, which is ideally inadequate. Second, considering that the minimum sample size ranges between 100 and 500 in a study conducting factor analysis, the sample size of the current study (N=49) is not sufficient.

In contrast to Ellis (2005), Ellis and Loewen (2007), Bowles (2011) and Gutiérrez (2013), Vafaee, Kachisnke and Suzuki (2016) state "that GJTs are too coarse to be measures of implicit knowledge, and that manipulating their time conditions and sentence grammaticality does not render them distinct measures of implicit knowledge and explicit knowledge" (p.2). They assert that GJTs fall closer to the explicit end on a continuum from being more explicit to more implicit. Vafaee, Kachisnke and Suzuki (2016) maintain that online grammatical processing which has often been examined through reaction time measures such as self-paced reading tests (SPRT) and word-monitoring tasks (WMT) are promising measures for tapping into implicit knowledge for two main reasons. First, the online nature of such tasks prevents test takers from relying on their explicit knowledge. Second, they draw learners' attention to meaning because sentences in such tasks are followed by comprehension questions about the content of the sentence, unlike GJTs that draw attention to form only. Vafaee, Kachisnke and Suzuki (2016) tested several CFA models in order to validate different measures of explicit and implicit knowledge, namely timed and untimed GJTs, MKT, SPRT and WMT with a group of Chinese ESL learners. The CFA produced the best fitting two-factor model consisting of explicit knowledge loaded onto the ungrammatical sentences of both the timed and untimed GJTs and the MKT and of implicit knowledge loaded onto the WMT and SPRT.

In summary, the findings of the five research studies mentioned above point out that grammaticality judgment tests, preferably untimed ones, prove to be a valid measure of explicit knowledge, which is the concern of the present study, although it is not the case for implicit knowledge. However, it is worth noting that an untimed GJT in which

test takers are asked to judge the grammaticality of the sentences and to provide a correction for those that they deem ungrammatical should be preferred, and only error correction of ungrammatical sentences should be considered for scoring for two main reasons. First, previous research reveals that judgment of ungrammatical sentences seems to be a better indicator of explicit knowledge compared to the judgment of grammatical ones. Second, judgments only do not show whether learners actually know the reason for the ungrammaticality of a particular sentence. As noted by Renou (2001), "simply deciding whether a sentence is grammatical or not does not reflect analyzed knowledge because it can be done without (...) being aware of the basis of judgement" (p. 251). Similarly, Bialystok and Ryan, (1985) state that providing a correction for the erroneous element in an ungrammatical sentence requires learners to access their explicit knowledge, which shows that the learner truly knows the source of the ungrammaticality.

2.2.2.2. Language aptitude tests

Measuring language learning aptitude is not the main concern of the present study. However, as previous studies have shown (e.g. Abrahamsson & Hyltenstam 2008; Roehr 2008; Bylund, Abrahamsson, & Hyltenstam 2010), explicit metalinguistic awareness is positively related to general language aptitude or the analytical component. Therefore, it sounds reasonable to employ appropriate parts of the aptitude tests that will be mentioned below in order to measure L2 explicit knowledge -analyzed knowledge specifically-.

Language aptitude is generally defined as the ability to succeed in learning a second or foreign language if appropriate teaching and experience is provided (Carroll 1973). It has been one of the most researched individual difference variables in L2 acquisition research (Wistner, 2014). The topic of language aptitude has been discussed to a great extent in L2 acquisition, and consequently, controversies have emerged over the essence of this concept (Ma, Yao and Zhang, 2018). For example, it was traditionally viewed as an innate and stable cognitive capacity (Carroll 1965); however, several researchers believed that it was a fluid, dynamic, and potentially trainable construct challenging its innateness and stability (e.g. McLaughlin, 1995; Robinson, 2001; Sternberg, 2002) (as cited in Ma et al, 2017). In addition, there has been considerable variation among researchers about what components make up language learning aptitude, which has given rise to a number of different aptitude tests (Rogers, Meara, Barnett-Legh, Curry and Davie, 2017). Despite this variation, the overall purpose of these tests is to ascertain the

extent to which learners exhibit abilities in various processes related to foreign language learning (Wistner, 2014).

The first of these tests is Modern Languages Aptitude Test (MLAT), designed by Carroll and Sapon (1959). It consists of five subtests. Part 1, Number Learning, tests timed associative learning and asks test takers to learn the names of 1-, 2-, and 3-digit numbers in a new language and transcribe the numbers that they hear. Part 2, Phonetic Script, targets phonemic coding ability and requires test takers to study a phonetic script and choose the word that they hear from choices written in phonetic script. Part 3, Spelling Cues, is concerned with participants' L1 vocabulary knowledge and their ability to handle novel spellings of known words. Part 4, Words in Sentences, tests language analytic ability and grammatical sensitivity. For the accomplishment of this part, test takers are expected to choose a word in a sentence that has the same grammatical function as another word given in another sentence. Part 5, Paired Associates, tests rote memory learning and asks test takers to study a list of vocabulary items in an unknown language and their English equivalents and complete a multiple-choice test of the word pairs. Wistner (2014) reports that the MLAT has been used in a good number of studies over the last five decades, and it is widely accepted as a valid test of language aptitude. Additionally, Ma et al. (2017) note that the MLAT can be applied to both formal and informal learning contexts.

The second language aptitude test is Pimsleur Language Aptitude Battery (PLAB), developed by Pimsleur (1966). It consists of six sections. In Part 1, test takers report the grades they received in a variety of school subjects, as it is believed that success in some school subjects is predictive of success is other subjects. Part 2 is concerned with test takers' interest in learning a foreign language. For the accomplishment of Part 3, test takers choose the correct synonym for a specified adjective. Part 4, Language Analysis, tests language analytic ability and inductive language learning ability. In this section, test takers study words and phrases in an unknown language and their English equivalents and complete a multiple choice translation test. Part 5, Sound Discrimination, tests the ability to discriminate among sounds in a foreign language. Finally, Part 6, Sound-Symbol Association, tests test takers' ability to make sound-symbol associations. It is worth mentioning that the PLAB is relatively more suitable for younger learners (grades 6-12) rather than adults (https://lltf.net/aptitude-tests/language-aptitude-tests/pimsleur-language-aptitude-battery/).

The third one is Cognitive Ability for Novelty in Acquisition of Language (Foreign) (CANAL-F), designed by Grigornko, Sternberg, and Ehrman (2000), who reconceptualized language aptitude within a psychological theory of knowledge acquisition. This test is based on five processes of language acquisition, namely selective encoding, accidental encoding, selective comparison, selective transfer and selective combination. It is composed of five parts. Part 1 targets learning meanings of neologism from context and asks test takers to read paragraphs and answer multiple-choice questions to show that they have understood the meanings of the unknown words. Part 2 requires understanding the meanings of passages in which unknown words are embedded. Part 2 is similar to Part 1, but in the former, test takers are tested on their oral and reading comprehension through a variety of item types such as understanding the main idea and details and making inferences. Section 3 targets continuous paired-associate learning and asks test takers to memorize and recall word pairs. Section 4 is a test of sentential inference in which test takers complete a multiple-choice test on sentences translated from English to Ursulu language and vice versa. In Section 5, test takers learn the rules of Ursulu language from input and are tested on their immediate recall of those rules.

Lastly, LLAMA aptitude tests were developed by Meara (2005) as part of a research training program for MA students at Swansea University. They are based on the components of the MLAT (Carroll and Sapon, 1959); however, it is reported that the LLAMA tests are shorter, free and language neutral (Rogers et al., 2017). They consist of four sub-tests. LLAMA B targets vocabulary learning and asks test takers to attach unfamiliar names to unfamiliar objects. LLAMA D targets sound recognition and asks test takers to identify the sound patterns in speech. LLAMA E targets sound-symbol correspondence and tests test takers' phonemic coding ability. Finally, LLAMA F is a test of grammatical inferencing in which test takers are asked to learn the rules of an unknown language and are tested on those rules.

Some subtests of the language aptitude tests mentioned above (e.g. Words in Sentences of the MLAT, Language Analysis of the PLAB, Sections 4 and 5 of the CANAL-F and LLAMA F) seem to be congruent with measures of analyzed knowledge as part of explicit knowledge. Some research studies investigating explicit knowledge, therefore, have employed these tests to measure L2 explicit knowledge. For example, Roehr (2007) incorporated language analytic ability into a measure of metalinguistic knowledge. The construct of L2 metalinguistic knowledge was operationalized by means

of a two-section test. The first section was aimed at measuring learners' ability to correct, describe, and explain selected L2 features. The second section was aimed at measuring learners' language analytic ability. For the accomplishment of the first section, the participants were required to correct, describe and explain the highlighted mistakes embedded in a number of sentences. The second section required the participants to identify the grammatical role of highlighted parts of L2 sentences (e.g. subject, relative pronoun, object). This section was modelled on the Words in Sentences subtest of the MLAT. Similarly, in Ellis (2005), Elder (2009), Elder and Ellis (2009) and Bowles (2011), the metalinguistic knowledge test was comprised of two parts. The second part consisted of two sections. In the first section, the participants were asked to read a short text and then to find examples of 21 specific grammatical features from the text (e.g. preposition and finite verb). In the second section, the participants were asked to identify the named grammatical parts in a set of sentences. In addition, Tokunaga (2014) developed a metalinguistic knowledge test which had 36 items in four sections: (a) parts of speech; (b) parts of sentences; (c) tenses, voices, and moods and (d) other. The participants were asked to look at several L2 sentences and choose a term which best described the underlined part or the whole sentence.

2.2.2.3. Metalinguistic knowledge tests

A review of the previous research studies investigating explicit knowledge and/or metalinguistic awareness reveals two versions of Metalinguistic Knowledge Tests (MKTs), both of which are based on the MKT that Ellis (2005) designed as an adaptation of an earlier test of metalanguage devised by Alderson et al., (1997). It consists of an untimed computerized multiple-choice test in two parts. The first part presents participants with 17 ungrammatical sentences (one sentence for each target structure) and requires them to select the rule that best explains each error out of 4 choices provided. The second part consists of two sections. In section 1, the participants are asked to read a short text and then to find examples of 21 specific grammatical features from the text (e.g. preposition and finite verb). In section 2, they are asked to identify the named grammatical parts in a set of sentences. Consequently, a total percentage accuracy score is calculated. This first version of the MKT has been employed in several studies (e.g. Ellis and Loewen, 2007; Ellis and Elder, 2009; Bowles, 2011) following Ellis (2005). The second version of the MKT also consists of 17 ungrammatical sentences (one sentence

for each target structure). However, in this version, participants are required to provide a written explanation of the rule violated in each sentence, as in Gutiérrez (2013) and Vafaee, Kachisnke and Suzuki (2016). It seems clear that the first version of the MKT targets receptive knowledge of metalanguage and metalingual terms, whereas the second version targets productive knowledge of metalanguage and does not necessarily address knowledge of metalingual terms.

Elder (2009) investigated the validity of the MKT (the first version mentioned above) employing a number of other instruments, such as a timed grammaticality judgment test (TGJT), an untimed grammaticality judgment test (UGJT), an elicited oral imitation test (EI), an oral narrative task (ONT), three standard language proficiency tests and a background questionnaire about the total time spent studying English formally and the type of instruction received. The questionnaire also included a self-assessment component in which learners were asked to rate their level of grammatical competence on a 5-point rating scale. In addition, when taking the UGJT, learners were asked to report on the processes they drew on when responding to test items (whether by rule or by feel). This validation study was based on a series of hypotheses derived from previous research into the nature of the construct. The hypotheses were tested using trial data gathered from a diverse population of candidates, including both NSs of English and L2 learners. Those hypotheses were as follow:

1. Scores derived from the MKT will be more strongly associated with scores obtained from measures of explicit knowledge than with those derived from measures of implicit grammatical knowledge.
2. There will be a significant relationship between self-reported use of rule in the UGJT and performance on Part 1 of the MKT.
3. There will be a significant relationship between self-assessed grammatical knowledge and overall scores on the MKT.
4. Scores on Part 1 of the MKT designed to measure knowledge of grammar rules will not be related to scores on Part 2 designed to measure understanding of metalinguistic terminology.
5. Greater amounts of formal English study will be associated with higher scores on the MKT.
6. Exposure to formal (grammar-based rather than communicative) instruction will be associated with higher scores on the MKT.

7. The NS/NNS differential on the MKT will be smaller than is the case for tests of implicit knowledge.
8. Metalinguistic knowledge will not be associated with the accuracy of performance on a Timed Oral Narrative Task.
9. Scores on the MKT will relate more strongly to reading and writing tasks on standardized English proficiency tests than to speaking and listening tasks.

Most of these hypotheses were confirmed in Elder's (2009) study and discussed within the criterial features of the metalinguistic knowledge construct, namely type of knowledge, awareness, metalanguage, learnability and accessibility. With regard to the type of knowledge, it was reported that MKT measures rule-based, analyzed knowledge, namely explicit knowledge, rather than implicit knowledge. As for awareness, it was stated that the knowledge measured by MKT is analytic rather than intuitive in nature. However, it is also worth noting that the relationship between the participants' self-reported use of rule on the UGJT and their performance on the rule explanation component of the MKT was weak. This indicates that self-report may not be a very reliable means of finding out what knowledge base learners are drawing on. In terms of metalanguage, the significant relationship between the two parts of the MKT (in contrary to what is expected) suggested that metalinguistic knowledge appears not to be entirely unitary in nature, and a learner can have explicit knowledge of target language rules without having command of the technical language that is often used by teachers and textbook writers to communicate such rules to language learners. Concerning learnability, it was mentioned that being exposed to grammar-based instruction did not appear to be associated with higher performance on the MKT. However, this may probably stem from the participants' lack of understanding for the different instructional methods and/or lack of their insights into the nature of the L2 instruction they were exposed to. On the contrary, length of formal English instruction was associated with higher MKT performance, as predicted. Additionally, NSs outperformed the NNSs in all of the tests except the MKT, indicating a somehow strong relationship between the MKT and formal grammatical instruction. When it comes to accessibility, it was stated that metalinguistic knowledge is inaccessible under time pressure considering the lack of relationship between total scores on the MKT and those on the Oral Narrative Task. Finally, a relatively stronger relationship was found between the scores obtained from the MKT and reading, confirming Bialystok's contention that literacy-based and metalinguistic tasks

make similar cognitive demands in that they both require controlled processing and analysis. However, that the correlation between the MKT and writing was not stronger than those for listening and speaking weakens this contention. Moreover, the internal consistency of the MKT was found to be very high (alpha=0.90). The case reliability estimate yielded by the Rasch analysis was also high at 0.88. This indicates that there was an acceptably high level of discrimination between candidates at different ability levels.

In sum, MKT is acknowledged as a well-established measure of explicit knowledge (Vafaee, Kachisnke and Suzuki, 2016), and has been used in almost all of the previous studies investigating L2 explicit knowledge along with grammaticality judgment tests and language aptitude tests.

2.3. L2 Explicit Knowledge and L2 Proficiency

This section provides an overview of studies that have examined the relationship between explicit knowledge and L2 proficiency. Even though explicit knowledge measures have been named differently (e.g., grammaticality judgment test, metalinguistic assessment test, or metalinguistic knowledge test), what is relevant for the present study are the actual operations that learners are asked to perform as part of those tests.

To begin with, it is worth mentioning some early research investigating L2 explicit knowledge and its reflection in L2 development. Sorace (1985) investigated the relationship between metalinguistic knowledge and language use in acquisition poor environments. The data were collected using a grammaticality judgment test, in which the participants were asked to find the erroneous parts of a number of sentences, correct them and explain why they were correct, and two oral tasks, namely a picture description task and an informal conversation. As a result, it was found that learners with higher levels of explicit knowledge performed better in the oral production tasks than those with lower levels of explicit representations, indicating a positive relationship between metalinguistic knowledge and L2 proficiency. Steel and Alderson (1994), constructed a battery of tests of metalinguistic knowledge, language aptitude, grammatical accuracy in French and French linguistic proficiency and explored the relations amongst these measures with a view to establishing levels of metalinguistic knowledge in first-year students of French at a British university. The tests were all found appropriate and reliable. Besides, moderate correlations were found between metalinguistic knowledge and French grammatical accuracy, and metalinguistic knowledge and language aptitude.

However, proficiency in French reading did not correlate with either aptitude or metalinguistic knowledge, but correlated with French grammatical accuracy only moderately. Subsequently, Alderson et al., (1997) administered the battery to first-year students of French in six more British universities this time. Identification of parts of speech and rule verbalizations were weakly correlated with the L2 proficiency measures; correlations regarding error correction scores were strong with the grammar test, moderate with the reading and writing tests, and weak with the listening test. They note that there is no evidence to support the belief that students with the highest metalinguistic knowledge will perform better at French, or develop their French at a high rate than others. In other words, there is no evidence to support the assumption that teaching metalinguistic knowledge will help learners improve their linguistic proficiency.

Studies that measured oral and written proficiency separately mostly suggest that explicit knowledge is more highly correlated to written proficiency (reading and writing) than oral proficiency (speaking and listening). Elder and Manwaring (2004), for example, investigated the role of metalinguistic knowledge in learning a foreign language among Chinese second language learners. For this purpose, the study sought answers to what intermediate-level learners of Chinese know about the grammar of the Chinese language, whether their different experiences with regard to learning a foreign language are associated with different levels of grammatical knowledge, and whether there is a relationship between their L2 grammar knowledge and their Chinese proficiency. The data were collected using a Chinese metalinguistic assessment, designed by the researcher based on Alderson et al. (1997), and Chinese achievement tests. The Chinese metalinguistic assessment consisted of two sections, in which the participants were asked to match metalinguistic terms of parts of speech to the relevant items in sentences in Chinese, and correct the error in a number of Chinese sentences, formulate the rule and use appropriate metalinguistic terminology. It was reported that Chinese metalinguistic assessment correlated much more highly to reading and writing achievement than to listening and speaking achievement. Similarly, Elder (2009) explored the relationship between explicit knowledge and L2 proficiency through three different standard proficiency tests, namely Test of English as a Foreign Language (TOEFL), International English Language Testing System (IELTS) and Diagnostic English Language Needs Assessment (DELNA). Results presented a mixed picture regarding this relationship, with correlations generally stronger for the TOEFL than for the IELTS and DELNA.

Reading was the test component that correlates most closely with explicit knowledge in all cases. There were significant moderate to strong correlations between explicit knowledge and other components of the TOEFL and IELTS, namely listening, speaking, structure and writing, whereas in the case of DELNA explicit knowledge correlated significantly only with reading. Elder and Ellis (2009) also explored the extent to which standardized L2 proficiency tests, (computer-based TOEFL, pilot version of internet-based TOEFL and IELTS) can be explicated in terms of the distinction between implicit and explicit knowledge. Results revealed strong relationship between explicit knowledge and all sections of both versions of the TOEFL. In the case of the IELTS, the written sections (reading and writing) were more strongly related to the explicit knowledge scores than the oral sections (speaking and listening). Gutiérrez (2012) examined the nature of the knowledge representations developed by two groups of learners of Spanish as a L2 at different levels of proficiency. The data was gathered using a language background questionnaire, a timed grammaticality judgment test (TGJT), an untimed grammaticality judgment test (UGJT), a metalinguistic knowledge test (MKT), an oral proficiency test, and a written proficiency test. Given the results of the principal components analysis and the confirmatory factor analysis, the grammatical sentences in the timed and untimed GJT were considered to be measures of implicit knowledge and the ungrammatical sentences in both GJTs and the MKT were considered measures of explicit knowledge. Significant differences were found between the learners' performance on the implicit and explicit knowledge measures, and the participants performed rather poorly on all measures of explicit knowledge. The higher proficiency learners performed better than the lower proficiency ones in all measures of implicit and explicit knowledge; however, the differences were not significant for the explicit knowledge measures without time constraints. With regard to the relationship between the participants' scores from the explicit and implicit knowledge measures and their L2 proficiency, for the lower proficiency group, none of the measures of implicit and explicit knowledge correlated with the scores on the oral test, whereas only the scores on the ungrammatical section of the untimed GJT and those on the MKT correlated significantly with the written proficiency test. Regarding the higher proficiency group, all measures of implicit and explicit knowledge except the MKT correlated significantly with the oral test whereas all measures correlated significantly with the written test. For another, Gutiérrez (2013) examined the development of metalinguistic and metalingual knowledge that university-

level learners of Spanish have developed, and additionally the relationship between these two types of knowledge and L2 proficiency. The data collection instruments include a metalinguistic knowledge test and a Spanish proficiency test consisting of oral and written subtests. It was found that metalinguistic and metalingual knowledge correlated with written L2 proficiency but not with oral L2 proficiency. Another recent study, Tokunaga (2014), investigated what metalinguistic features can be recognized by low-intermediate level Japanese university students and the correlation between their English proficiency and metalinguistic knowledge. The participants had difficulty identifying basic parts of speech and parts of sentences, which suggests that many of them lack the metalinguistic knowledge. In addition to this, significant correlations were found between the participants' proficiency test scores and metalinguistic knowledge, with the strongest correlation being between reading scores and metalinguistic knowledge. Elder and Manwaring (2002) attribute the relatively higher correlation between explicit knowledge and written proficiency, namely reading and writing, to the tendency to perform reading and writing under more planned conditions than listening and speaking, which provides learners with greater opportunity to access their grammatical knowledge. Although most studies have investigated L2 explicit knowledge and its relationship to overall L2 proficiency, there are some others in which L2 proficiency is operationalized as one single component such as oral proficiency or grammatical accuracy. White and Ranta (2002), for one, explored the relationship between metalinguistic task performance and oral production with respect to the use of possessive determiners (his/her) in English. Explicit knowledge was measured through identification and correction of errors, while oral production was measured using a picture description task. Results revealed that metalinguistic instruction was associated with higher levels of performance on a metalinguistic task, which targeted the use of possessive determiners, and higher stages of development in the use of possessive determiners in oral production. Alipour (2014), for another, looked into the issue among university-level Iranian EFL learners. Similar to the previous studies, the metalinguistic knowledge test assessed learners' ability to correct, describe and explain L2 errors embedded in L2 sentences. L2 proficiency, operationalized as L2 grammar, on the other hand, was assessed using a cloze-test. As a result of a bivariate regression analysis, a moderate significant relationship was found between metalinguistic knowledge and L2 proficiency among Iranian EFL learners. From a different perspective, Wistner (2014), in his dissertation, investigated metalinguistic

knowledge, language learning aptitude, and L2 procedural knowledge among Japanese learners of English using the analytic methods of Rasch modeling and structural equation modeling. He found that metalinguistic knowledge and language learning aptitude are two distinct factors, and metalinguistic knowledge statistically predicted L2 procedural knowledge, operationalized as writing, in terms of complexity, accuracy, and fluency, whereas language learning aptitude was not a statistically significant predictor of those variables.

Studies that measured grammaticality judgment/error correction and rule verbalization/use of metalanguage separately report that L2 proficiency is more highly correlated with grammaticality judgment/error correction scores than with rule verbalization scores/use of metalanguage. Han and Ellis (1998), for example, examined the relationship between explicit and implicit knowledge and measures of general language proficiency among a group of adult learners of English coming from different L1 backgrounds. Scores were obtained from a timed oral production test, a timed grammaticality judgment test (administered twice), a delayed grammaticality judgment test and an interview designed to tap metalingual knowledge, all of which focused on learners' knowledge of verb complementation in English. L2 proficiency was measured using the global scores of Test of English as a Foreign Language (TOEFL) and Secondary Level English Proficiency Test (SLEPT). Results revealed medium correlations between judgments and both proficiency measures, but no relationship between metalanguage and those measures. Elder and Manwaring (2002) also, in which Chinese metalinguistic assessment consisted of grammatical terms, error correction and rule verbalization, also stated that error correction was more highly correlated with L2 proficiency in all cases, including different components of the L2 proficiency measurement and different groups of the participants. More recently, Gutiérrez (2016) examined the two components of explicit knowledge, namely, analyzed knowledge and knowledge of metalanguage, and their relationship to different skills and aspects of L2 proficiency. Anglophone learners of Spanish enrolled in an intermediate-level university course participated in this study. The data was gathered using two tests of explicit knowledge, each measuring analyzed knowledge and metalanguage, respectively, and also several tests of language achievement focusing on different skills. The findings revealed statistically significant differences between analyzed knowledge and knowledge of metalanguage with the analyzed knowledge being significantly correlated with more components of L2

proficiency than knowledge of metalanguage. It is reported that these results point to a larger role of analyzed knowledge in L2 proficiency than of knowledge of metalanguage. Concerning the sub-components of explicit knowledge, it is worth noting that it contains more than error correction and rule verbalization. To illustrate, Roehr (2007) carried out an investigation to find out the relationship between L2 proficiency and L2 metalinguistic knowledge among advanced university-level English learners of German. The secondary aim of the current study was to look into the relationship between the ability to correct, describe and explain L2 errors and language-analytic ability, which refers to the ability to identify the grammatical role of parts of speech in L2 sentences. The data were collected employing a proficiency test, consisting of gap-filling and multiple-choice test items, and a metalinguistic test. The metalinguistic test also consisted of two sections. The first section assessed the participants' ability to correct, describe and explain L2 errors, whereas the second section assessed the participants' ability to identify parts of speech in L2 sentences. Consequently, a strong positive correlation was found between L2 proficiency and metalinguistic knowledge. Additionally, it was reported that the ability to correct, describe and explain L2 errors and the ability to identify the grammatical of parts of speech in L2 sentences may be the components of the same complex construct: explicit knowledge.

The relationship between the two subcomponents of explicit knowledge, namely analyzed knowledge and metalinguistic knowledge has also been researched. For example, in Hu (2011), the data was collected from Chinese learners of English via a rule verbalization task. Metalinguistic knowledge was assessed depending on whether the participants were able to verbalize the rule correctly, whereas metalingual knowledge was assessed depending on whether the participants used appropriate metalanguage. Result revealed that the participants possessed a great deal of metalinguistic knowledge and a large amount of metalingual terms that they used correctly in the rule-verbalization task. Qualitative analyses of the rule verbalizations suggested that the participants who were more successful on the verbalization task also seemed to have more metalingual terms at their disposal. Statistical analyses also indicated a strong positive relationship between the two variables. For another, Gutiérrez (2013) examined the development of metalinguistic and metalingual knowledge university-level learners of Spanish, and additionally the relationship between these two types of knowledge and L2 proficiency. The data collection instruments include a metalinguistic knowledge test and a Spanish

proficiency test consisting of oral and written subtests. For the metalinguistic knowledge test, the participants were required to provide a written explanation for the sentences in each of which there were underlined errors. Metalinguistic knowledge referred to providing an appropriate explanation, whereas metalingual knowledge referred to using appropriate metalanguage in this explanation. Unlike Hu (2011), results revealed that the participants showed limited metalinguistic and metalingual knowledge. However, similar to Hu (2011), a significant correlation was found between metalinguistic and metalingual knowledge with large effect sizes. Apart from the strong relationship between metalinguistic knowledge and knowledge of metalanguage, these two studies are contradictory regarding the metalingustic and metalingual knowledge of the participants although they had been exposed to large doses of explicit instruction in English grammar as mentioned in both of the studies. This brings up another related issue: the relationship between explicit knowledge and instruction. In this sense, it is worth mentioning Renou (2000), in which the role of communicative and grammar approaches, error types, and mode of presentation, namely oral and written, in metalinguistic awareness were examined as well as metalinguistic awareness among advanced-level French second language learners and its relationship to certain aspects of L2 proficiency (listening, reading, vocabulary and grammar). It was found that the participants who had been exposed to grammar approach were better at correcting the grammar rules and providing the rule in the judgment test created to assess metalinguistic awareness. Moreover, certain items (adjective errors, verb errors and pronoun errors) were more difficult depending on the mode of presentation. Lastly, there was a significant correlation between the judgment tests and the proficiency test, which indicates that metalinguistic awareness may have a role in L2 proficiency. Renou (2001) revised her study and reinvestigated the relationship between metalinguistic knowledge and L2 proficiency of university level-French second language learners. This study also sought an answer to the relationship between metalinguistic awareness and L2 proficiency when learners have been exposed to different learning approaches, namely communicative approach and grammar approach. The data were collected using a grammaticality judgment test (both oral and written), in which the participants were asked to identify and correct the error and provide the rule that the correction entailed, a French proficiency test and a questionnaire providing information about the learning approaches that the participants had been exposed to. As a result, a moderate significant correlation was found between both oral and written

versions of the judgment test and French proficiency for the entire sample. However, the correlation was non-significant for the participants who had been exposed to communicative approach, whereas it remained significant and even increased in the case of the participants who had been exposed to grammar approach. As a result, Renou (2000; 2001) suggest that increases in metalinguistic awareness are associated with increases in proficiency once learners have been exposed to explicit grammar instruction. In addition to the instruction, the length of studying the L2 may also play a role in the relationship between explicit knowledge and L2 proficiency. Within this regard, Elder and Manwaring (2004) manifested that the participants who had studied L2 for a shorter term performed better in grammatical knowledge and the relationship between metalinguistic knowledge and L2 performance was stronger for the late-starters than the participants who had studied L2 for a longer time, indicating that late-starters are more reliant on grammatical knowledge for L2 success.

The relationship between metalinguistic knowledge and some language-related variables other than L2 proficiency has also been examined. To illustrate, Hu (2002) explored the psychological factors that influence access to metalinguistic knowledge in L2 production. The data were collected from upper-intermediate-level Chinese learners of English at an intensive English program using a verbalization task to assess metalinguistic knowledge, a judgment test to determine the prototypically of the target structures in the verbalization task and two consciousness-raising tasks, namely spontaneous writing tasks and error-correction tasks, to assess attention to form. Results reveal that there are major psychological constraints on the use of metalinguistic knowledge in L2 performance. First, prototypically contributes to grammatical accuracy. In other words, L2 learners are likely to show more grammatical accuracy for more prototypical target uses. Moreover, attention to form also predicts greater grammatical accuracy. Furthermore, there is a significant relationship between prototypically and attention to form, which underscores the influence of processing automaticity. Roehr and Gánem-Gutiérrez (2009a) investigated the relationship among L2 metalinguistic knowledge, language learning aptitude and working memory for language among university-level English learners of German and Spanish. Data were collected through 1) a bio-data questionnaire including questions about demographic variables as well as the participants' language- learning history, 2) metalinguistic knowledge test, MLAT (The Modern Language Aptitude Test), 4) test of L1 reading span and 5) test of L2 reading

span. The researcher-designed metalinguistic knowledge test also consisted of two sections, assessing the participants' ability to correct, describe and explain L2 errors and their ability to identify the grammatical of parts of speech in L2 sentences respectively as in the previous research. Findings indicate that two background variables, assessed through the bio-data questionnaire, namely cumulative years of study of other foreign languages and years of formal L2 study significantly predicted metalinguistic knowledge along with the fourth and the fifth section of MLAT, namely words in sentences and paired associates. Working memory, however, did not contribute to metalinguistic knowledge. This study is significant in the sense that it supports the claim that the development of metalinguistic knowledge is influenced by external variables such as exposure to formal L2 study as well as learner-internal individual differences.

As far as Turkish context is concerned, there are three previous studies investigating the relationship between L2 explicit knowledge and L2 proficiency. First, Yeşilyurt (2005) investigated the relationship between metalinguistic knowledge and foreign language proficiency of 43 Turkish EFL learners majoring at English Language Teaching (ELT). The data were collected by administering a metalinguistic knowledge test measuring the explicit knowledge of the students about their foreign language and a foreign language proficiency test consisting of a multiple choice listening test, a multiple choice reading comprehension test, a multiple choice grammar test and a writing test. In the metalinguistic knowledge test, the participants were asked to judge the grammaticality of a total of fifty sentences in which there were four underlined words one of which was grammatically incorrect. They had to find the incorrect words, correct them and explain the rule that was violated in each sentence. As a result, no relationship was found between the participants' metalinguistic knowledge and their proficiencies in the reading, language structure and writing tests. The correlation coefficient between the participants' metalinguistic knowledge and the means of the scores of the proficiency test given to them was found to be moderate. However, given that the listening test was the only test that affected the means, speaking of a significant evidence for the role of metalinguistic knowledge in foreign language proficiency would not be very realistic. Second, Erçetin and Alptekin (2013) examined the relationship between L2 reading comprehension and L2 explicit/implicit knowledge sources as well as the relationships between L2 reading comprehension and L2 working memory (WM) capacity. Participants were late adult learners of English as an L2, with a relatively advanced level of English proficiency. An

untimed grammaticality judgment test (UGJT), a timed grammaticality judgment test (TGJT), and an elicited oral imitation test (EI) were adapted from Ellis and colleagues (2009) to measure explicit and implicit knowledge. The findings pointed to L2 reading comprehension being closely associated with explicit linguistic knowledge and L2 WM capacity. In fact, a principal component analysis revealed that these three variables load on a single factor. By contrast, implicit knowledge appeared not to be related to L2 readers' comprehension processes. Third, Aydın (2018) investigated the relationship between L2 metalinguistic knowledge and L2 achievement among intermediate-level adult Turkish EFL learners studying at a large scale Turkish university. Metalinguistic knowledge was operationalized as the ability to correct a grammatically incorrect structure in English and explain why it is incorrect, and identify and explicitly state the grammatical role of parts of speech in L2 sentences. It was assessed using the two-section metalinguistic knowledge test. L2 achievement, on the other hand, was operationalized as the ability to repeat language elements that had been taught and mastered before. It was assessed using the mid-term exam that consisted of grammar, vocabulary, listening, reading, speaking and writing sub-tests. Results of the metalinguistic knowledge test indicated that L2 metalinguistic knowledge is weak among intermediate-level adult Turkish EFL learners. In addition, a correlation analysis and a series of bivariate and multiple regression analyses revealed that L2 metalinguistic knowledge significantly contributes to L2 writing achievement explaining 19.9% of the variance in participants' writing exam scores. Following this, Aydın (2019) further investigated the relationship between metalinguistic knowledge and L2 writing in terms of complexity, accuracy and fluency. The results revealed a significant moderate correlation between metalinguistic knowledge and writing accuracy. As far as the relationship between metalinguistic knowledge and writing proficiency is concerned, it is worth mentioning that Çandarlı (2018) investigated L1-Turkish-speaking, first-year university students' metalinguistic knowledge of the lexical phrases they use in their own academic writing in English at an English-medium university. Stimulated recall protocols were carried out with 10 participants at both the beginning of the first semester and the end of the second semester of their first year at university. The results showed that the participants' self- reported metalinguistic understanding of lexical phrases tended to shift from low- and medium-level awareness to high-level awareness, although variability was found within the group. This study also provided evidence for a moderate negative correlation between the levels

of metalinguistic knowledge and frequencies of lexical phrases in L2 writers' essays, suggesting that learners with higher metalinguistic knowledge tend to use less frequent lexical phrases in their academic writing.

Additionally, Atar (2018) attempted to explore the effects of learning a second language on the first, which provides insights into our understanding of the overall role of explicit knowledge. In this study, fifteen monolingual teachers from two schools in Turkey and fifteen bilingual Turkish people who live in the UK were compared on their grammaticality judgment of Turkish generic/habitual real conditionals. A significant difference was found between the two groups, which suggests that learning an L2 has an effect on the L1 of L2 users, and implies that L2 users are a distinctive group of people with regard to their language knowledge. Lastly, Akbulut (2019) investigated the effect of morphological treatment on morphological awareness and reading comprehension skill among Turkish EFL learners using an experimental design. The participants were pre-tested on a morphological correction test and a reading comprehension test. Then, the experimental group received morphological treatment for two semesters as the control group completed the same exercises and studies without focusing on the morphological awareness. In the end, the participants were tested on the same morphology and reading tests as a post-test. As a result, the experimental group outperformed the control group in reading comprehension as well as morphological awareness, indicating a significant effect of morphological awareness, a part of metalinguistic capacity, on reading comprehension.

Table 1 below shows a summary of some of the previous research studies investigating the relationship between L2 explicit knowledge and language proficiency.

Table 2.1. *Summary of studies about the relationship between L2 explicit knowledge and L2 proficiency***.**

Study	Measures of Explicit Knowledge	Measures of L2 Proficiency	Results
Sorace (1985)	Judgment of sentences, identification and correction of errors, and verbalization of rules	Picture description task and informal conversation	Learners with higher levels of explicit knowledge performed better in two oral production tasks than those with lower levels of explicit representations.
Steel & Alderson (1994)	A self-assessment of the participants' familiarity of grammatical terms, tests of knowledge of English and French grammatical terminology and identification of parts of speech in English	A 100-item test of grammatical accuracy in French, consisting of items considered important by staff of the French Department A 50-item standardized test of French reading comprehension	No relationship between linguistic proficiency and metalinguistic knowledge.
Alderson, Clapham & Steel (1997)	Identification of parts of speech and error correction and rule verbalization	Tests of grammar, reading, listening, and writing	Identification of parts of speech and rule verbalizations were weakly correlated with the L2 proficiency measures; correlations regarding error correction scores were strong with the grammar test, moderate with the reading and writing tests, and weak with the listening test.
Han & Ellis (1998)	Judgment of sentences and metalingual comments	Test of English as a Foreign Language (TOEFL) and Secondary Level English Proficiency Test (SLEP)	Medium correlations between judgments and both proficiency measures, but no relationship between metalanguage and those measures
Yeşilyurt (2005)	Identification and correction of errors, and verbalization of rules	A multiple-choice (MC) listening test, a MC reading comprehension test, a MC grammar test and a writing test (paragraph writing)	Moderate correlations between metalinguistic knowledge and listening comprehension. Weak correlations between metalinguistic knowledge and reading comprehension, grammar and writing
Renou (2000)	Verbal and oral grammaticality judgment tests Identification and correction of errors, and verbalization of rules	Listening and reading comprehension measures; cloze test targeting vocabulary, grammar, and structures	Significant correlation between the judgment tests and the proficiency test for both groups (communicative instruction and explicit instruction)

Table 2.2. (Cont.) *Summary of studies about the relationship between L2 explicit knowledge and L2 proficiency*.

Renou (2001)	Identification and correction of errors, and verbalization of rules	Listening and reading comprehension measures; cloze test targeting vocabulary, grammar, and structures	Communicative instruction group: significant correlation between explicit knowledge and cloze test Explicit instruction group: explicit knowledge significantly correlated with global score and with cloze test.
Hu (2002)	Verbalization of rules (metalanguage)	Spontaneous writing tasks	Learners with higher levels of explicit knowledge performed better on spontaneous writing tasks.
White & Ranta (2002)	Identification and correction of errors regarding possessive determiners in English (analyzed knowledge)	Picture description task	Significant correlation between performance on both tasks in the pre-test of the rule group and the post-test of the comparison group, but not on the post-test of the rule group.
Elder & Manwaring (2004)	Identification of grammar terms and error correction and rule verbalization	Achievement tests in several university-level Chinese language courses (combined score for listening and speaking, and for reading and writing).	Communicative instruction groups: only one of the two groups showed a strong correlation between explicit knowledge and the reading and writing measures. Explicit instruction groups: strong correlations between explicit knowledge and all achievement measures, but stronger for reading and writing than for listening and speaking. Stronger correlations for error correction than for rule verbalization.
Roehr (2007)	Identification of grammatical roles and error correction and rule verbalization	Grammar and vocabulary tests	Strong positive correlations for all explicit knowledge scores and L2 proficiency, but stronger for error correction
Elder (2009)	Identification of parts of speech and identification of rules (multiple choice) in relation to highlighted error (metalanguage)	Test of English as a Foreign Language (TOEFL); International English Language Testing System (IELTS); Diagnostic English Language Needs Assessment (DELNA)	Correlation with all parts of IELTS, stronger with reading and listening. Weak correlation with reading section in DELNA; no other correlations. Medium to strong correlations with all sections of TOEFL; highest with reading and writing, lowest with listening.

Table 2.3. (Cont.) *Summary of studies about the relationship between L2 explicit knowledge and L2 proficiency*.

Elder and Ellis (2009) Study 1	Judgment of sentences, identification of parts of speech and identification of rules (multiple choice) in relation to highlighted error	Computer-based TOEFL (reading, listening & structures); pilot version of internet-based TOEFL (reading, listening, speaking & writing)	Strong relationship between explicit knowledge and all sections of L2 proficiency measures
Elder and Ellis (2009) Study 2	Judgment of sentences, identification of parts of speech and identification of rules (multiple choice) in relation to highlighted error	IELTS	The written sections (reading and writing) of the IELTS were more strongly related to the explicit knowledge scores than the oral sections (speaking and listening).
Gutiérrez (2012)	Judgment of sentences and verbalization of rules	Achievement tests in two university-level Spanish courses Oral and the written (listening, reading, writing and grammar)	Low proficiency group: strong correlation between explicit knowledge measures and written test, but not with oral test High proficiency group: strong correlations between explicit knowledge measures and written test; strong correlation between judgment scores and oral test
Gutiérrez (2013)	Judgment of sentences and verbalization of rules	Oral and the written (listening, reading, writing and grammar) Spanish-language tests, different for the two proficiency levels	A significant correlation with large effect sizes between metalinguistic and metalingual knowledge for both proficiency groups No correlation between metalinguistic and metalingual knowledge scores and oral proficiency measures Significant correlations, with large effect sizes, between metalinguistic and metalingual knowledge scores and written proficiency measures
Erçetin & Alptekin (2013)	Judgment of sentences (analyzed knowledge)	Reading comprehension test	Moderate correlation between explicit knowledge and reading comprehension

Table 2.4. (Cont.) *Summary of studies about the relationship between L2 explicit knowledge and L2 proficiency***.**

Alipour (2014)	Correction, description and explanation of errors	An open-ended grammar cloze test	Significant, moderate correlation between metalinguistic knowledge and linguistic knowledge
Tokunaga (2014)	Identification of parts of speech, parts of sentences, tenses, voices, moods and some other grammatical features Judgment of sentences and verbalization of rules	Two standardized tests, TOEIC (Test of English for International Communication) and VELC (Visualizing English Language Competency)	Significant, moderate to high correlations between students' proficiency test scores and meta-linguistic knowledge with the strongest correlation being with reading sections of both of the proficiency tests
Wistner (2014)	Receptive metalinguistic test asking the participants to identify the correct metalinguistic term that described or explained the structures or words included in English sentences and choose the English word, phrase, or sentence that represented an example of the metalinguistic term provided in the item stem Productive metalinguistic test asking the participants to identify errors in English sentences and correct them and explain the rule using metalanguge.	A timed writing task to be evaluated in term of complexity, accuracy and fluency (CAF measures)	Metalinguistic knowledge statistically predicted L2 procedural knowledge, complexity, accuracy, and fluency.
Gutiérrez (2016)	An untimed grammaticality judgment test (analyzed knowledge) A metalinguistic knowledge test asking the participants to correct errors and verbalize the grammar rule	Two compositions, and oral exam and two term exams including listening comprehension, reading comprehension, vocabulary, grammar and writing	Significant correlations among the variables except between metalinguistic knowledge and the oral exam Analyzed knowledge correlating with more components of L2 proficiency than metalinguistic knowledge Stronger correlations for analyzed knowledge than metalinguistic knowledge in all cases
Aydın (2018)	The ability to correct a grammatically incorrect structure in English and explain why it is incorrect Identifying and explicitly stating the grammatical role of parts of speech in L2 sentences	A multiple-choice test on reading, listening, vocabulary and grammar A writing exam A speaking exam	L2 metalinguistic knowledge significantly contributes to L2 writing achievement explaining 19.9% of the variance in participants' writing exam scores.

3. METHODOLOGY

3.1. Research Design

Within the scope of the present study, quantitative data were collected. The quantitative data consist of the participants' judgments of grammaticality of a number of sentences in English, responses to a multiple-choice language analysis test, error correction and explanation in a number of sentences in English, identifying some grammatical functions in a paragraph and listing them and underlining the correct part of a sentence, responses to a number of comprehension questions based on two reading texts in the forms of multiple-choice, summary completion and True/False/Not given items and compositions on a given topic. In the quantitative analyses, learner responses to each task were analyzed and each test was evaluated on a basis of 100 points.

The present study is based on correlational research design. This design is used when the researcher seeks to relate two or more variables to see if they affect each other (Creswell, 2012). There are two primary correlation designs, namely explanation and prediction. The latter is used to identify variables that will predict an outcome or criterion. In prediction research design, the researcher identifies one or more predictor variable, which is a variable used to make a forecast about an outcome, and one criterion variable, which is the outcome being predicted. The former, explanatory research design, on the other hand, is also known as "relational" research (Cohen & Manion, 1994, p.123, a cited in Creswell, 2012). In this research design, the researcher investigates the extent to which two or more variables co-vary. In other words, in explanatory research design, the researcher is interested in finding out whether changes in one variable are reflected in changes in the other. Considering that the present study investigates the relationship between L2 explicit knowledge and written L2 proficiency of EFL learners, we can say that the research design of the present study is explanatory research design.

Creswell (2012) lists a number of characteristics of explanatory correlational study, which the present study perfectly fits in as illustrated below (See Table 3.1. below).

Table 3.1. *Characteristics of explanatory correlational study and its reflection in the present study (Creswell, 2012, p.340).*

Characteristics of explanatory correlational study	**Its reflection in the present study**
The investigators correlate two or more variables.	Explicit L2 knowledge, operationalized as analyzed knowledge and metalinguistic knowledge, and written L2 proficiency, namely reading and writing, are correlated in the present study.
The researchers collect data at one point in time.	The researcher is interested in the participants' performance on the data collection instruments in one setting rather than their past or future performance.
The investigator analyzes all participants as a single group.	The present study does not involve multiple groups or treatment sessions (e.g. control group and experiment group). Scores coming from the participants are not divided into categories, but used thoroughly on a continuum.
The researcher obtains at least two scores for each individual in the group - one for each variable.	Six different scores are obtained from each participant in the present study (one score for each data collection instrument).
The researcher reports the use of the correlation statistical test (or an extension of it) in the data analysis.	Findings are presented as a result of correlational analyses including the strength and direction of the correlation.
The researcher makes interpretations or draws conclusions from the statistical test results.	Degree of association between the variables is reported rather than a cause and effect relationship in the present study.

3.2. Participants

The participants of the present study are first- and fourth-year EFL learners enrolled at the Department of English Language Teaching (ELT), at Anadolu University, which is a state university in Turkey. The participants were recruited through convenience sampling method. All of the first- and fourth-year students enrolled at the ELT department were invited to participate in the present study on the voluntary basis (See the sample consent from in Appendix 2).

The participants all had passed Anadolu University School of Foreign Languages (AUSFL) Proficiency Test with a minimum score of 60 before they started studying at the department. At Anadolu University, students are required to prove their English proficiency either with a minimum score of 72 on the TOEFL-IBT; a minimum score of 55 on the Pearson Test of English; a minimum grade of C on CAE (Cambridge Certificate in Advanced English and CPE (Cambridge Certificate of Proficiency in English); or a minimum score of 60 on AUSFL Proficiency Test. As such, it can be suggested that the participants were moderately proficient in English.

The data collection instruments of the present study were administered to 166 first-year and 140 fourth-year students. However, some participants did not sit all of the data collection sessions, making the number of the participants shrink to 120 first-year and 113 fourth-year students. As a result, a total of 233 Turkish EFL learners majoring at ELT department participated in the present study. It is worth noting that the students who are not genuinely first- or fourth-year students (irregular students), those who have a native language other than Turkish and bilinguals did not participate in the present study.

Of the 233 students who took part in the study, one 153 were female and 80 were male. Their ages ranged from 19 to 26. All were native speakers of Turkish.

3.3. Data Collection Instruments

Instruments for the present study comprised three tests designed to measure explicit L2 knowledge: an untimed grammaticality judgment test (UGJT), a language analysis test (LAT) and a metalinguistic knowledge test (MKT); a standardized reading comprehension test of English (IELTS) and a writing task designed to assess general L2 writing proficiency (IELTS). All of the data collection instruments mentioned above are in pen and paper format. It is worth noting that there is no time limit for the accomplishment of the tests of L2 explicit knowledge.

3.3.1. Untimed grammaticality judgment test (UGJT)

The UGJT consists of 68 sentences, half of which are grammatical while the other half are ungrammatical. This test intends to measure the knowledge of 17 grammatical structures that comprised both morphological and syntactic features "known to be universally problematic to learners," and corresponding to "a broad range of proficiency levels" (Ellis, 2009, p. 42) (See Appendix 3). These structures exemplify such features as verb complements, regular past tense, question tags, yes/no questions, modal verbs, unreal conditionals, indefinite articles, ergative verbs, relative clauses, embedded questions, dative alternation, comparatives, and adverb placement. It is worth noting that these structures have been chosen based on the Marsden study (Ellis, 2005; Ellis, et al., 2009), which aimed to develop a test battery measuring implicit and explicit knowledge separately. Four criteria were taken into consideration upon deciding the grammatical content of this test battery. First, the SLA literature on error analysis was consulted (e.g. Burt & Kiparsky, 1972), and consequently target language structures that were known to

be universally problematic to learners were selected. Second, based on the developmental properties of L2 acquisition (e.g. Pienemann, 1989), the structures that would represent both early and late acquired grammatical features were selected. Third, the structures that would represent a broad range of proficiency levels according to when they were introduced in English as a Second Language (ESL) courses covering beginner, lower-intermediate, upper-intermediate and advanced levels were selected. Fourth, an attempt was made to include both morphological and syntactic features.

For the accomplishment of the UGJT, participants were required to judge the grammaticality of the sentences and to provide a correction for those that they thought ungrammatical. Only this last part of the test, that is error correction of ungrammatical sentences, was evaluated as a measure of analyzed knowledge because judgments do not show whether learners actually know the reason for the ungrammaticality of a particular sentence. As a result, the responses to the error correction section of the test were awarded 0 points if the participant did not provide a correction, corrected the wrong element in the sentence, or attempted to correct the right element but provided the wrong correction, and 1 point if the participant provided the right correction to the right element.

It is worth noting that the UGJT was administered to a total of 12 native speakers to ensure that the ungrammatical sentences were indeed ungrammatical. This also helped to notice alternative acceptable answers for a few questions. All of the answers were noted to be used in scoring the participants' answers. See Appendix 4 for the UGJT.

3.3.2. Language analysis test (LAT)

The LAT measures language learning aptitude. It has been adopted from Schmitt, Dörnyei, Adolphs, and Durow (2004) who used it in a study investigating such factors affecting learning formulaic sequences as age, gender, language aptitude and motivation. This test consists of a box that contains words/phrases and sentences from an imaginary language along with their English translation. Following this, there are 14 short English sentences, each with four possible translations into the imaginary language. Based on the examples given in the box, the participants were required to try and work out which of the four options is the correct translation of each sentence.

Regarding scoring, each item were scored dichotomously as correct/incorrect. The items not responded were scored as incorrect. See Appendix 5 for the LAT.

3.3.3. Metalinguistic knowledge test (MKT)

R. Ellis and colleagues (2009) adapted this test from an earlier test of metalanguage devised by Alderson et al. (1997). It consists of two parts. Part 1 covers the same grammatical structures as the UGJT, and consists of 17 English sentences, each of which contains an underlined error. The participants were required to a) correct the sentence, and b) explain why it is incorrect referring to the grammar rules that are violated in each sentence. Part 2 consists of two sections. In section 1, the participants were presented with a short passage to find one example for 19 specific grammatical features from the passage (such as a preposition or a finite verb). They were asked to write their example for each feature in the table provided. In section 2, they were presented with a set of four sentences and asked to underline the named grammatical parts (e.g., 'subject' and 'indirect object') in those sentences. See Appendix 6 for the MKT.

Regarding scoring, the following procedures were followed for the first part of the MKT (See Table 3.2. below).

Table 3.2. *MKT Part 1 Scoring Procedures*

Score	Explanation
0	➢ No answer. ➢ There is error correction but not rule explanation. ➢ There is rule explanation and use of some metalinguistic terms; however, error correction is incorrect. ➢ There is error correction and explanation but no use of metalinguistic terms at all.
1	➢ There is error correction along with one metalinguistic term only. ➢ There is error correction along with at least two essential metalinguistic terms; however, error correction is partial or includes minor mistakes. ➢ There is error correction and explanation along with some metalinguistic terms which are not the essential ones for that specific grammatical structure. ➢ There is ambiguity with regard to meaning or the use of metalinguistic terms.
2	➢ There is complete error correction and explanation along with at least two essential metalinguistic terms.

Following the scoring procedures mentioned above, an answer key was prepared while analyzing the data coming from the pilot study (See Appendix 7 for MKT-Part 1 Anwer Key).

In the second part of the test, a marking key has been developed by the researcher so as to determine the acceptable answer/answers to each item. Two professors of ELT and two English instructors holding a PhD degree in ELT were consulted in the development of the answer key. (See Appendix 8 for MKT-Part 2 Answer Key).

Each item was scored dichotomously as correct/incorrect in the second part of the test.

3.3.4. Reading test

The reading test was adapted from IELTS General Training Reading. The test originally consists of three sections. The first section contains texts relevant to basic linguistic survival in English, with tasks mainly concerned with providing factual information. The second section focuses on the work context and involves texts of more complex language. The third section involves reading more extended texts, with a more complex structure, but with the emphasis on descriptive and instructive rather than argumentative texts. Considering the purposes of the present study and the assumed proficiency level of the target population, only the third section was used in the present study. Therefore, the reading test used in the present study consisted of two similar IELTS General Training Reading Section-3 texts. The texts are titled *How Babies Learn Language* and *Talking Point*. These texts were chosen on purpose because they were appropriate in terms of the topic for the participants' major and future job. They consist of 789 and 1026 words, respectively. The texts were followed by 12 and 13 questions, respectively. Questions 1-6 were summary completion (with maximum three words). Questions 7-12 and 13-16 were True/False/Not Given items. Questions 17-23 were multiple matching, while questions 24 and 25 were multiple choice questions. The participants were provided with the reading texts and questions on different sheets and an answer sheet. They were given a total of 40 minutes. All of their answers were scored dichotomously as correct/incorrect (See Appendix 9 for the Reading Test).

3.3.5. Writing test

The writing test was adapted from IELTS General Training Writing. The test originally consists of two tasks. In task 1, candidates are asked to respond to a given situation with a letter requesting information or explaining the situation. They are assessed on their ability to engage in personal correspondence, elicit and provide general

factual information, express needs, wants, likes and dislikes, express opinions, complaints, etc. In task 2, candidates are presented with a point of view, argument or problem. They are assessed on their ability to provide general factual information, outline a problem and present a solution, present and justify an opinion, and evaluate and challenge ideas, evidence or arguments. Candidates are also assessed on their ability to write in an appropriate style. Considering the purposes of the present study and the assumed proficiency level of the target population, only the second task was used in the present study. Therefore, the participants were asked to answer the following question in a total of 40 minutes: "Some people think the teaching of a foreign language should be compulsory at all primary schools. To what extent do you agree or disagree with this view?" They were instructed to write at least 250 words (See Appendix 10 for the Writing Test).

The participants' answers to the writing task were graded by two raters using a general writing rubric. The first rater is the researcher herself, whereas the co-rater is an experienced English instructor, who has been working at Anadolu University School of Foreign Languages (AUSFL) for 14 years and worked in testing unit for a long time. She also holds an MA degree in TEFL (Teaching English as a Foreign Language). When it comes to the writing rubric, LOTE General Writing Rubric, which is used by The University of the State of New York for learners learning languages other than English, has been chosen considering the purposes of the present study and the characteristics of the participants. Before deciding on the LOTE General Writing Rubric, several other writing rubrics were reviewed. As a result, two lists of "essential things to consider" and "things that might be ignored" were created by the researcher. The essential things to be included in the writing rubric of the present study were the overall task achievement, grammar, vocabulary and fluency of writing, namely the organization of ideas and coherence and cohesion. The things that might be ignored, on the other hand, were audience, style (formal versus informal) and organization (paragraph versus essay). In the end, LOTE General Writing Rubric, whose descriptive labels are content, coherency, syntax and vocabulary, seemed appropriate for the purposes of the present study. That each label is followed by very general descriptors is another thing that makes the rubric desirable. The highest grade to be obtained from each section was 5, making the highest total grade 20 (See Appendix 11 for the writing rubric).

Subsequent to choosing the writing rubric, a norming meeting was held with the co-rater in order to standardize what each rater understands from the rubric. In this meeting six papers were graded by each rater and the grades were compared and negotiated. Some decisions regarding the future grading sessions were also made during this meeting.

Figure 3.1 below shows a summary of the data collection instruments utilized in the present study and what they are supposed to measure.

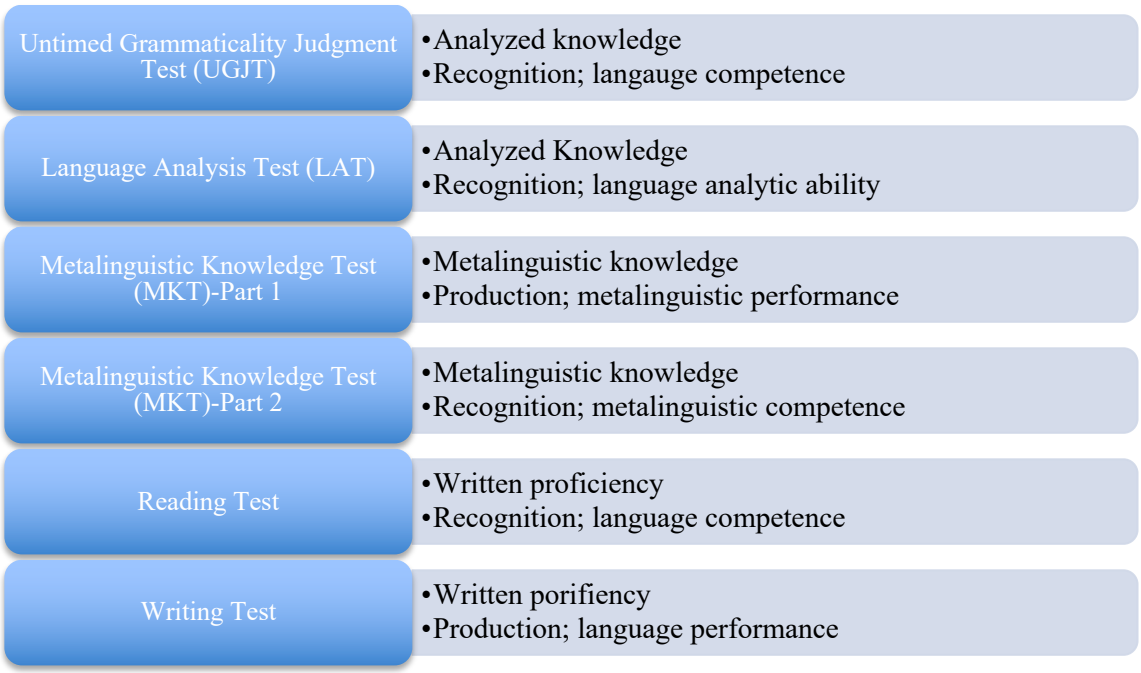

Figure 3.1. *Data collection instruments*

3.4. Data Collection Procedures

3.4.1. Pilot study

Apart from the tests explained above as the data collection instruments of the present study, there was one more test, named Words in Sentences (WIST), which was designed to measure analyzed explicit knowledge. However, because of the relatively lower reliability of this test and considering the practicality of the data collection procedures, this test was removed from the study. WIST had been adapted by the researcher from the fourth subtest of Carroll and Sapon's (1959) Modern Languages Aptitude Test (MLAT). This test was supposed to measure recognition of main parts of sentence in English. The parts of sentence covered in this test consisted of subject, simple

predicate verb, direct object, indirect object and subject complement. It was composed of four items for each part of sentence, making a total of twenty items. Each item consisted of a short key sentence in which one word is capitalized and underlined, and a longer sentence five parts of which are underlined and labeled as A, B, C, D and E. The participants were required to select the letter of the word in the second sentence that plays the same role in that sentence as the underlined and capitalized word in the key sentence. Example:

MARY is happy.

From the look on your face, **I** can tell that you must have had a bad day.
A B **C** D E

Regarding scoring, each item was scored dichotomously as correct/incorrect. The items not responded were scored as incorrect.

All of these tests of explicit knowledge (UGJT, WIST, LAT and MKT) were piloted in Spring Term 2018-2019 to find out whether they would function properly. A total of 80 EFL learners majoring at ELT department at Anadolu University participated in the pilot study. Forty-two of the participants were first-year students, while the rest, 38 participants, were fourth-year students. The pilot data collection took three weeks. In the first week, UGJT was administered. In the second week, WIST and LAT were administered. In the third week, MKT was administered. All of the tests were administered by the researcher in the participants' own classrooms.

The pilot data collection was beneficial because it helped us

- to determine the face validity of the tests,
- to find out whether the instructions were comprehensible enough or not,
- to find out whether there might be any misunderstandings,
- to notice the spelling mistakes if any,
- to determine how long each test takes on average,
- to determine alternative acceptable answers for UGJT and open-ended parts of the MKT.

In addition, the technical words that the participants used for each question in MKT-Part 1 were noted to be used in the main collection as part of the scoring procedures.

After the pilot data were collected, item and reliability analyses were carried out. The dichotomous scores that the participants obtained from UGJT, WIST, LAT and Part 2 of MKT were computed, and item and test analyses were carried out for each test. For

each test, item facility (IF) indexes, item differentiation (ID) indexes, item variance, test variance and test reliability were calculated. As a result of the item analyses, problematic items were determined.

To ensure the internal consistency of the tests, Kuder and Richardson Formula 20 (KR20) was employed. The reliability values for each test were found to be as follow:

UGJT : 0.71

WIST : 0.68

LAT : 0.77

MKT-Part 2 : 0.77

Item analyses were not carried out for MKT-Part 1 because it was not dichotomously scored. One third of the papers (N=26) were graded by the same co-rater who also rated the writing papers along with the researcher. After negotiating on the discrepancies and reaching on agreement on each question for each participant, the researcher rated the rest of the papers on her own but discussed with the co-rater when problems arouse. For the reliability of the scores computed, Cronbach's alpha was calculated instead of KR20 and found to be 0.78, indicating that it is a reliable test for the sample recruited in the present pilot study.

3.4.2. Main data collection

The main data were collected during Fall Term 2019-2020. The data collection took a total of five weeks. The data were collected either at the beginning or end of the participants' lessons following a program designed by the researcher considering the participants', their instructors' and the researcher's own schedule. In the first week, UGJT, LAT and MKT were administered to the first-year students. In the second week, the reading and writing tests were administered to the first-year students. A break was given in the third week because of a one-day national holiday. During this week, the data coming from the first-year students were checked. In the fourth week, UGJT, LAT and MKT were administered to the fourth-year students. In the fifth week, the reading and writing tests were administered to the fourth-year students. During these five weeks, the researcher carried out a total of 64 data collection sessions for a total of 16 classes (4 sessions for each class). In addition, some of the missing data were completed by means of individual meetings with participants and keeping in touch with them via e-mail and/or telephone.

Figure 3.2 below shows a summary of the data collection procedures of the present study.

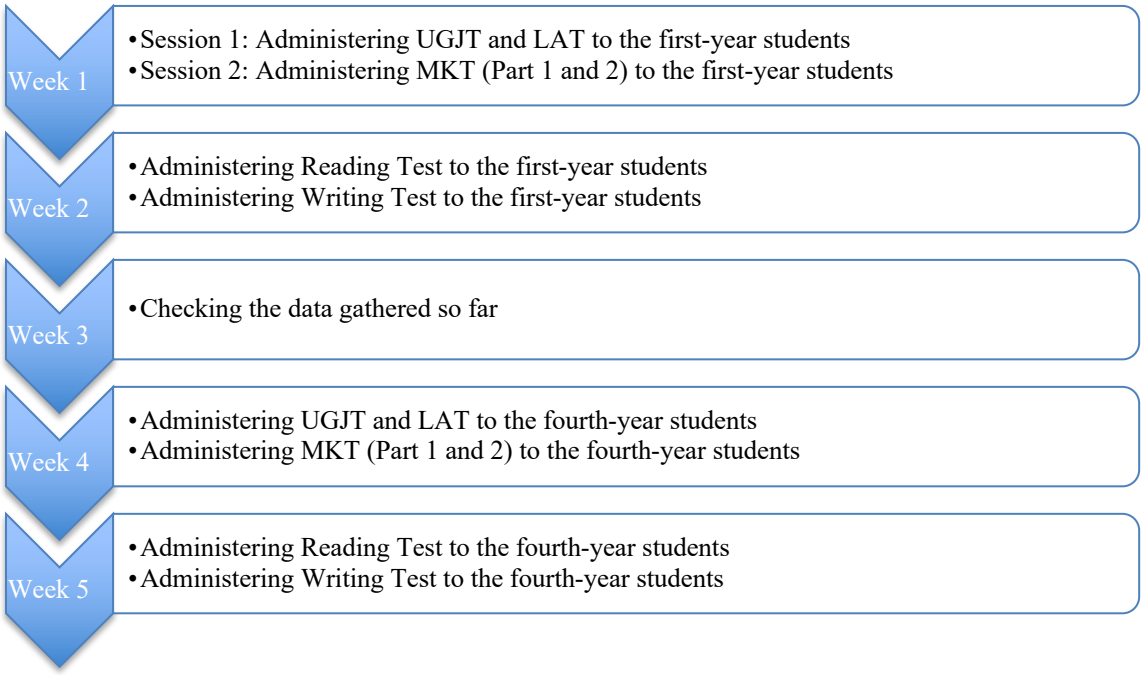

Figure 3.2. *Summary of the data collection procedures*

3.5. Reliability and Validity Evidence of the Study

The data collection instruments of the present study were carefully chosen based on a detailed review of previous literature. Experts in foreign language education and applied linguistics were asked for their opinion in every step of choosing the instruments. Scoring rubrics and answer keys were also prepared in cooperation with these experts. Besides, a group of native speakers of English were asked for their opinion of the items in the UGJT. Furthermore, all of the instruments designed to measure explicit knowledge were piloted with a large group of learners sharing similar characteristics with the participants in the main study.

Both in the pilot study and the main study, the dichotomous scores that the participants obtained from UGJT, LAT, MKT-Part 2 and the reading test were computed, and item and test analyses were carried out for each test. For each test, item facility (IF) indexes, item differentiation (ID) indexes, item variance and test variance were calculated. As a result of these analyses, majority of the items were found to have acceptable values to be involved in the data collection instruments of the present study.

Based on the sum of the item variances and the test variance, test reliability was also calculated for each test. For the test reliability, Kuder and Richardson Formula 20 (KR20) was utilized. Reliability values for each test were found to be as follow:

UGJT : 0.76

LAT : 0.74

MKT-Part 2 : 0.72

Reading Test : 0.60

The range of reliability measurement are rated as low if it is less than 0.5, moderate if it is between 0.5 and 0.8, and high if it is greater than 0.8 (Salvucci, Walter, Conley, Fink, & Saba, 1997). Therefore, we can arrive at the conclusion that these tests are all moderately acceptable in terms of reliability.

In order to find out the reliability of MKT-Part 1, Cronbach's alpha was calculated instead of KR20 (because it was not dichotomously scored) and found to be 0.83, indicating that it is also a reliable test.

For the writing test, once the researcher and the co-rater rated one third of the writing papers on their own (N=70), inter-rater reliability was calculated by dividing the number of the papers on which the two raters agreed (N=58) with the total number of the papers rated by each rater (58/70). As a result, inter-rater reliability was found to be 0.83, indicating that the two raters agreed with each other on %83 of the writing papers they rated. Although the raters' grades on the other twelve papers were slightly different, they negotiated on these papers until they reached an agreement so that the researcher could rate the rest of the writing papers fairly.

3.6. Data Analysis

After the data were collected, UGJT, LAT, MKT-Part 2 and Reading Test were scored dichotomously. MKT-Part 1 was scored as 0, 1 and 2 based on the scoring procedures explained above. Finally, compositions written by the participants were graded using the general writing rubric mentioned above. For the UGJT, consisting of 68 items, only the incorrect items (N=34) were evaluated based on the reasons provided above, making the full score that each participant could obtain is 34 (the same as the number of the items evaluated). The full score that each participant could obtain from LAT is 14 (the same as the number of the items). The full scores that each participant could obtain from MKT-Part 1 and MKT-Part 2 are 34 (double the number of the items)

and 24 (the same as the number of the items), respectively. The full score that each participant could obtain from the Reading Test is 25 (the same as the number of the items), whereas the full score that each participant could obtain from the Writing Test is 20 (based on the rubric). After scoring and grading the tests, the participants' scores from each of the tests were converted to 100. Table 3.3 shows the number of items and full scores for each test.

Table 3.3. *Number of items and full scores for each test*

Tests	Number of Items	Full Scores	Converted Full Scores	Scores Allocated per Item
UGJT	34	34	100	2.95
LAT	14	14	100	7.14
MKT-Part 1	17	34	100	2.95
MKT-Part 2	24	24	100	4.16
Reading Test	25	25	100	4
Writing Test	20	20	100	-

When the scores were computed, item and reliability analyses were carried out on the raw scores and assumptions for parametric data were checked in order to decide on the statistical procedures.

3.6.1. Checking the data for parametric tests

Statistical procedures are mainly clustered into two as parametric and non-parametric tests. "A parametric test is one that requires data from one of the large catalogue of distributions that statisticians have described and for data to be parametric certain assumptions must be true" (Field, 2009, p.132). It is crucially important to check these assumptions before deciding which tests to use because misuse of tests may yield inaccurate findings. The two essential assumptions of parametric tests are normally distributed data and homogeneity of variance. Before checking the normality and homogeneity of the data in the current study, first, outliers were determined through boxplots for each test. As a result, the data coming from 8 participants were removed from the dataset, reducing the number of the participants to 225 (115 and 110 for the first and fourth year students, respectively) (See Appendix 12 for the boxplots).

Second, descriptive statistics were obtained for the six tests and composite scores of analyzed knowledge (the average of the participants' scores form UGJT and LAT), metalinguistic knowledge (the average of the participants' scores form the first and second parts of the MKT) and explicit knowledge (the average of the participants' scores

form analyzed knowledge and metalinguistic knowledge). Means, medians and skewness and kurtosis coefficients were checked to see if the data were normally distributed. Considering that in a normal distribution, means and medians must be equal or very close to each other, and skewness and kurtosis coefficients must be as close to 0 as possible, the data in the current study appeared to be normally distributed (Table 3.4). Regarding the skewness and kurtosis coefficients, it is worth noting that these scores may be converted into z-scores so that we can compare them in different samples that used different measures, and the new scores should be between -1.96 and +1.96. (Field, 2009). However, Field (2009) maintains that it is more important to look at the value of the skewness and kurtosis statistics rather than calculate their significance if the sample is as large as 200 and more as in the current study. In addition to the skewness and kurtosis statistics, the data were plotted and histograms and Q-Q plots were created for each test to double check the normality (See Appendix 13).

Table 3.4. *Descriptive statistics and skewness and kurtosis values*

	UGJT		**LAT**		**MKT-Part1**		**MKT-Part2**		**READING**		**WRITING**	
	1st year	**4th year**	**1st year**	**4th year**	**1st year**	**4th year**	**1st year**	**4th year**	**1st year**	**4th year**	**1st year**	**4th year**
Mean	23.7	25.7	9.91	9.11	11.58	13.46	11.52	14.69	15.73	14.84	12.81	13.97
Median	24	26	10	10	10	13	12	15	16	15	13	14
Mode	26	27	12	12	10	12	12	18	15	15	12	14
Skewness	-.48	-.20	-.51	-.59	.75	.07	-.23	-.49	-.42	-.34	.13	-.33
Kurtosis	-.48	-.56	-.13	-.60	.07	-.69	-.44	-.60	.38	.31	-.44	.23

Third, Kolmogorov-Smirnov (K-S) test was conducted to see if the data is normally distributed. The K-S test was significant, which may indicate that the scores are significantly different from a normal distribution (Field, 2009). However, Field (2009) states that "in large samples the K-S test can be significant even when the scores are only slightly different from a normal distribution" (p.148). Therefore, we decided on the normality of the distribution considering the means and medians, the Q–Q plots, and the values of skewness and kurtosis (See Appendix 14).

Finally, Levene's test was carried out to check the homogeneity of variance in the data. For the percentage on the LAT, MKT-Part 1, MKT-Part 2, reading test, writing test, composite scores of analyzed knowledge, metalinguistic knowledge and explicit knowledge, the variances were equal for the first- and fourth-year students. For the UGJT scores, the variances were significantly different in the two groups. However, this would

not constitute a problem because the statistical procedures carried out on the scores of the UGJT as a separate test, namely a one-way ANOVA with repeated measures and a paired samples t-test, require assumption of normality only, not homogeneity of variance (Field, 2009). (See Appendix 15 for the tests of homogeneity).

3.6.2. Statistical procedures

First of all, descriptive statistics were found for each participant and all of the tests. Later, several statistical procedures were followed to be able to respond to the research questions addressed in the present study.

In order to find out whether first- and fourth-year Turkish EFL learners majoring at ELT differ from each other in their L2 explicit knowledge, first, an independent samples t-test was conducted on the composite scores of explicit knowledge. After that, between subjects one-way MANOVA was carried out and the two groups were compared in terms of the sub-components of explicit knowledge, namely analyzed knowledge and metalinguistic knowledge, as well as the different tests designed to measure these sub-components (UGJT, LAT, MKT-1 and MKT-2). This helped us gain better insights into the explicit knowledge the participants have and whether/where they differ from each other.

So as to investigate whether there is a significant difference between the participants' performance on analyzed explicit knowledge and metalinguistic knowledge regardless of their year of study, a paired samples t-test was carried out on the composite scores of analyzed knowledge and metalinguistic knowledge. Then the participants' performance on the four different tests designed to measure analyzed knowledge (UGJT and LAT) and metalinguistic knowledge (MKT-1 and MKT-2) were compared utilizing a one-way repeated measures ANOVA. The significant differences among the participants' performance on each test were found by conducting a series of paired samples t-tests as post-hoc tests.

With the purpose of exploring the relationship between L2 explicit knowledge and reading and writing performances among first- and fourth-year EFL learners majoring at ELT, Pearson product-moment correlations were run among the measures. To investigate the predictive relationship between L2 explicit knowledge and its sub-components and reading and writing performances, multiple-regression analyses were conducted by using the analyzed knowledge and metalinguistic knowledge as independent variables and

reading and writing performances as dependent variable. This relationship was investigated both as a single group (regardless of the year of study) and as a comparison of the first- and fourth-year EFL learners. Figure 3.3 below presents the statistical procedures used to answer each research question.

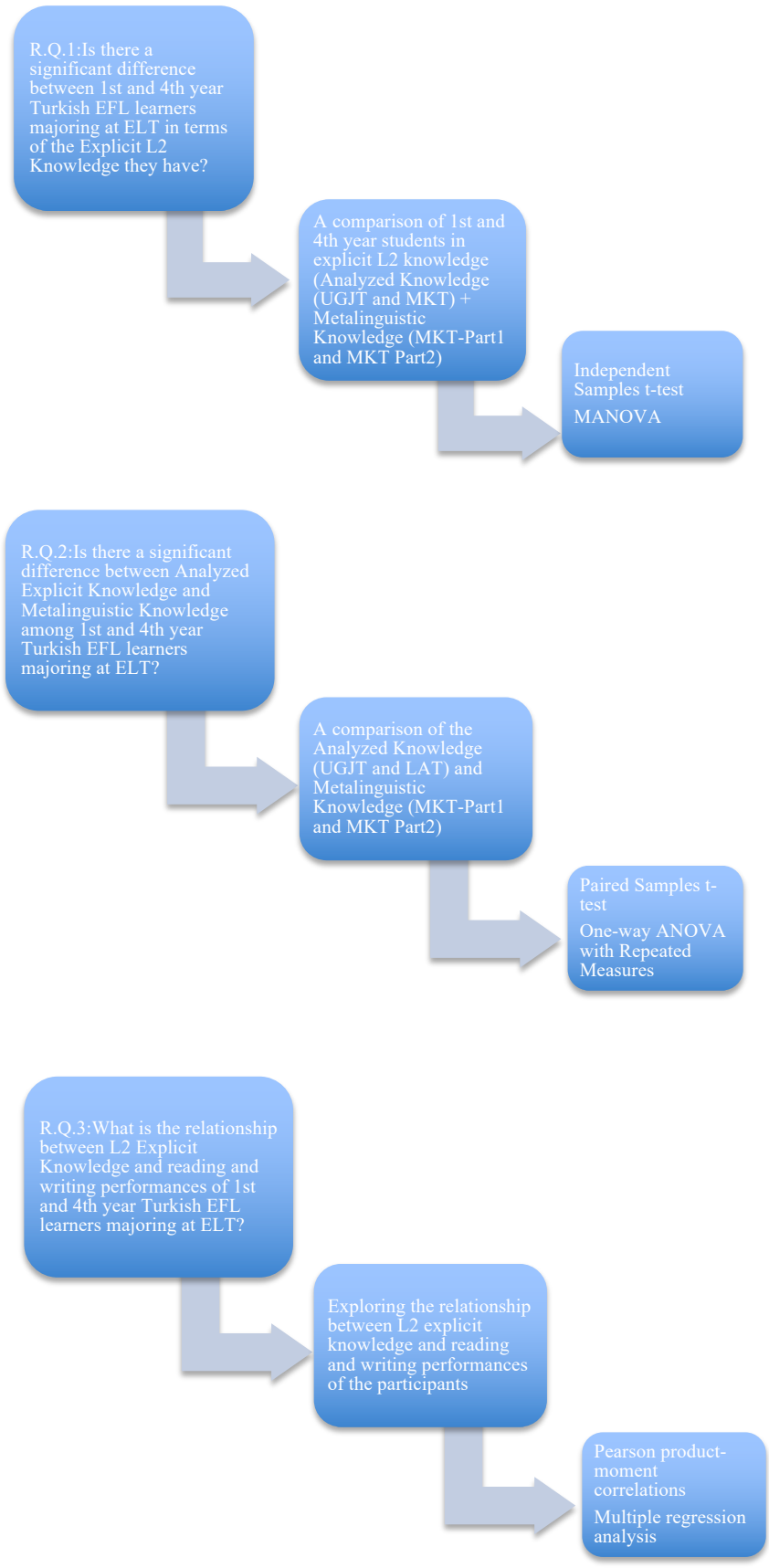

Figure 3.3. *Research questions and the statistical procedures.*

4. RESULTS

4.1. Descriptive Statistics

The following four tables show the descriptive statistics, namely minimum, maximum, mean scores and standard deviation, for the composite scores of explicit L2 knowledge, the sub-components of explicit L2 knowledge (analyzed knowledge and metalinguistic knowledge), the four different tests used to measure explicit L2 knowledge and the tests of written proficiency.

Table 4.1 presents that the fourth-year participants outperformed the first-year participants as a result of the four separate tests designed to measure explicit L2 knowledge.

Table 4.1. *Descriptive statistics-Explicit L2 Knowledge*

	Explicit L2 Knowledge			
	Minimum	**Maximum**	**Mean**	**Std. Deviation**
1st-year Learners	27	82	56.17	11.34
4th-year Learners	31	88	61.03	12.35
Total	27	88	58.54	12.04

As shown in Table 4.2, the mean scores that the first- and fourth-year Turkish EFL learners majoring at ELT obtained from the tests of analyzed knowledge are very close to each other, whereas the mean scores that they obtained from the tests of metalinguistic knowledge differ from each other to a large extent. These statistics also show that the fourth-year participants outperformed the first-year ones, and both groups showed a better performance of analyzed knowledge than metalinguistic knowledge.

Table 4.2. *Descriptive Statistics-Analyzed Knowledge and Metalinguistic Knowledge*

	Analyzed Knowledge				Metalinguistic Knowledge			
	Min.	**Max.**	**M**	**SD**	**Min.**	**Max.**	**M**	**SD**
1st-year Learners	37	93	70.25	13.08	9	76	42.08	15.90
4th-year Learners	37	95	70.33	13.59	13	85	51.74	16.93
Total	37	95	70.29	13.30	9	85	46.80	17.07

As shown in Table 4.3, the first-year participants performed slightly better in the Language Analysis Test (LAT) than in the Untimed Grammaticality Judgment Test (UGJT), whereas the fourth-year participants performed much better in the UGJT than in the LAT. In addition, the fourth-year participants outperformed the first-year participants

in the UGJT, whereas the first-year participants outperformed the fourth-year participants in the LAT. Moreover, both groups performed far better in the MKT-Part 2, which is the receptive part of the test, than in the MKT-Part 1, the productive part of the test. Furthermore, the fourth-year participants outperformed the first-year participants in both parts of the MKT. It is worth noting that LAT is the only test of explicit L2 knowledge that the first-year participants outperformed the fourth-year participants.

Table 4.3. *Descriptive statistics-Explicit Knowledge tests*

	UGJT				**LAT**				**MKT-1**				**MKT-2**			
	Min	**Max**	**M**	**SD**	**Min**	**Max**	**M**	**SD**	**Min**	**Max**	**M**	**SD**	**Min**	**Max**	**M**	**SD**
1st-year	32	97	69.69	14.55	21	100	70.81	19.17	0	85	34.07	18.18	9	87	50.09	17.35
4th-year	50	100	75.59	11.48	14	100	65.06	21.55	0	79	39.60	19.97	17	96	63.87	18.42
Total	32	100	72.58	13.44	14	100	68	20.52	0	85	36.77	19.23	9	96	56.83	19.13

Table 4.4 shows that both groups performed better in writing than in reading although the mean difference is relatively smaller in the case of the first-year participants. Additionally, the first-year participants outperformed the fourth-year participants in reading, while the fourth-year participants outperformed the first-year participants in writing.

Table 4.4. *Descriptive statistics-Written proficiency tests*

	Reading				**Writing**			
	Min.	**Max.**	**M**	**SD**	**Min.**	**Max.**	**M**	**SD**
1st-year Learners	32	92	62.92	11.44	35	100	64.04	13.92
4th-year Learners	28	88	59.35	12.43	35	95	69.86	12.42
Total	28	92	61.17	12.04	35	100	66.89	13.50

4.2. Research Question 1: Is there a significant difference between first- and fourth-year Turkish EFL learners majoring at ELT in terms of the explicit knowledge they have?

To be able to respond to the first research question, an independent samples t-test was conducted. This test was conducted because there was one dependent variable (Explicit Knowledge) and one independent variable with two levels (year of study with the levels being the first and the fourth year). This test revealed that there is a statistically significant difference between first-year Turkish EFL learners majoring at ELT (M=56.17, SD=11.34) and fourth-year Turkish EFL learners majoring at ELT (M=61.03, SD=12.35), $t(223)$=-3.07, p<.05 in terms of the explicit knowledge they have. With an investigation of the mean scores, this finding indicates that fourth-year Turkish EFL learners majoring at ELT are significantly more knowledgeable about the foreign language they have been learning compared to the first-year learners. In others words, they have better conscious knowledge of the foreign language they have been learning or they are more aware of the knowledge they have. The effect size of this significant difference was also calculated and found to be η^2=.04. This indicates that the effect size of the significant difference between the first- and fourth- year Turkish EFL learners majoring at ELT in terms of the explicit knowledge they have is small (Cohen, 1988). It is worth noting that according to Cohen (1988), eta squared value (η^2) between .01 and .06 indicates small effect, eta squared value between .07 and .14 indicates moderate effect, whereas eta squared value over .14 indicates large effect.

Considering that in the present study explicit L2 knowledge is defined to consist of Analyzed Knowledge and Metalinguistic Knowledge, a between subjects one-way MANOVA was conducted to find out whether the participants differ from each other on the sub-components of explicit knowledge as well. This test was conducted because there were two dependent variables (Analyzed Knowledge and Metalinguistic Knowledge) and one independent variable with two levels (year of study) this time. The multivariate tests revealed that there was a statistically significant difference between different years of study on the dependent variables of Analyzed Knowledge and Metalinguistic Knowledge, $F(2, 222)$=10.337, p<0.001; Pillai's Trace=0.85; η_p^2=0.85*. Tests of between subjects, on the other hand, revealed that the only difference to reach statistical difference using a Bonferroni adjusted alpha level of .05, was Metalinguistic Knowledge, $F(1, 223)$=19.45, p<0.001, ηp2= 0.80. This means that the difference in explicit knowledge across the first-

and fourth-year Turkish EFL learners majoring at ELT stems from the difference in Metalinguistic Knowledge rather than the Analyzed Knowledge. In other words, first-and fourth-year Turkish EFL learners majoring at ELT do not significantly differ from each other in terms of analyzed explicit knowledge but in metalinguistic knowledge. An investigation of the mean scores illustrates that fourth-year Turkish EFL learners majoring at ELT are better at metalinguistic knowledge (*M*=42,08) compared to the first-year learners (*M*=51.74). A further independent samples t-test also confirms that fourth-year Turkish EFL learners are statistically better at metalinguistic knowledge than first-year learners, $t(223)=-4.41$, $p<.001$. The effect size of this significant difference was also calculated and found to be $\eta^2=.79$. This indicates that the effect size of the significant difference between the first- and fourth- year Turkish EFL learners majoring at ELT in terms of the metalinguistic knowledge they have is quite large (Cohen, 1988).

Considering that the Metalinguistic Knowledge Test used in the present study has two different parts, measuring productive and receptive metalinguistic knowledge, respectively, another MANOVA was carried out with the dependent variables being MKT-Part 1 and Part 2 and the independent variable being the year of study again. The multivariate tests revealed that there was a statistically significant difference between different years of study on the dependent variables of MKT-1 (productive metalinguistic knowledge) and MKT-2 (receptive metalinguistic knowledge), $F(2, 222)=17.61$, $p<0.001$; Pillai's Trace=0.137; $\eta_p^2=0.137$). According to the tests of between subjects, the difference was significant on both MKT-1, $F(1, 223)=4.72$, $p<0.05$, ηp2= 0.21, and MKT-2, $F(1, 223)=33.36$, $p<0.001$, $\eta_p^2= 0.13$. An investigation of the mean scores indicates that fourth-year Turkish EFL learners majoring at ELT are better at both productive and receptive metalinguistic knowledge (M=39.60 and M=63.87, respectively) compared to the first-year learners (*M*=34.07 and *M*=50.09, respectively). Two further independent samples t-tests also indicate that these findings are statistically significant, (MKT-1: $t(223)=-2.17$, $p<.05$ and MKT-2: $t(223)=-5.77$, $p<.001$). The effect sizes of these significant differences were also calculated and found to be $\eta^2=.02$ and $\eta^2=.06$, respectively. These findings indicate that the effect sizes of the significant difference between the first- and fourth- year Turkish EFL learners majoring at ELT in terms of the productive and receptive metalinguistic knowledge they have are both small although the effect size of the significant difference in terms of the receptive metalinguistic knowledge is relatively larger (Cohen, 1988).

4.3. Research Question 2: Is there a significant difference between Analyzed Explicit Knowledge and Metalinguistic Knowledge among Turkish EFL learners majoring at ELT?

To be able to respond to the second research question, a paired samples t-test was conducted. This test was conducted because the purpose was to see the difference on the performance of the participants across the two sub-components of explicit knowledge, namely analyzed knowledge and metalinguistic knowledge. The test revealed a statistically significant difference between the participants' performance on analyzed explicit knowledge (*M*=70.29, *SD*=13,30) and metalinguistic knowledge (*M*=46.80, *SD*=17,07), *t*(224)=18.70, *p*<.001. This finding indicates that Turkish EFL learners majoring at ELT have significantly better analyzed explicit knowledge than metalinguistic knowledge. The effect size of this significant difference was also calculated and found to be η^2=.60. This indicates that the effect size of the significant difference between the participants' performance on explicit knowledge and metalinguistic knowledge is quite large (Cohen, 1988).

Considering that these two sub-components of explicit L2 knowledge were measured using two tests for each, a one-way ANOVA with repeated measures was conducted to compare the mean scores of the four tests. The findings indicated that there is a statistically significant difference (*F*(3, 221)=259.96, *p*<.001) across the four tests (Sphericity assumption was not met, Wilks' Lambda results are reported). To detect where the significant difference occurred, pairwise comparisons with Bonferroni adjustment were calculated. As we already know form the first paired samples t-test conducted to respond the second research question that the participants showed significantly better performance on tests of analyzed knowledge (UGJT and LAT) than on the tests of metalinguistic knowledge (MKT-1 and MKT-2), only the tests measuring the same construct were compared with each other using follow-up paired samples t-tests. To begin with the tests of analyzed knowledge, which the participants have a better performance of, a statistically significant difference was found between the participants' performance on UGJT (*M*=72.58, *SD*=13.44) and LAT (*M*=68.00, *SD*=20.52), *t*(224)=3.08, *p*<.005. When it comes to the tests of metalinguistic knowledge, another statistically significant difference was found between the participants' performance on MKT-Part 1 (*M*=36.77, *SD*=19.23) and MKT-Part 2 (*M*=56.83, *SD*=19.13), *t*(224)=-.17.21, *p*<.001. These results mean that the participants performed significantly better in

UGJT than in LAT and they performed significantly better in MKT-Part 2 (receptive metalinguistic knowledge) than in MKT-Part 1 (productive metalinguistic knowledge). Also, the participants showed the best performance in UGJT and the worst performance in MKT-Part 1. The effect sizes of these significant differences were also calculated and found to be η^2=.04 and η^2=.56, respectively. These findings indicate that the effect size of the significant difference between the participants' performance on UGJT and LAT is small, whereas the effect size of the significant difference between their performance on MKT-Part 1 and MKT-Part 2 is large (Cohen, 1988). These findings suggest that Turkish EFL learners majoring at ELT are more knowledgeable about L2 items and structures of which they are aware but not necessarily conscious than about the language used to analyze or describe a language, or the ability to talk about language. Moreover, they are relatively better at judging the grammaticality of a sentence in English, identifying the errors and correcting them than deducing the grammar rules in an imaginary language and applying them to new sentences in that language. Furthermore, they are far better at recognizing the metalingual terms in English than producing them on their own in an error explanation activity.

The participants' answers for the items in UGJT and MKT were examined in detail to gain better insights into their explicit L2 knowledge. For each item in the UGJT, the percentages of the participants who answered correctly were found. Considering that there were two items designed to measure the explicit knowledge of the same grammar subject, the average of the correct answer percentages of those two items were found. As a result, of the seventeen grammar subjects included in the present study as part of the UGJT, plural –s suffix was the least correctly answered one (41% of the participants answered it correctly). It was followed by unreal conditionals (42%), dative alternation (44%) and ergative verbs (58%). The most correctly answered grammar subjects were modal verbs (95%), third person singular –s suffix (89%), verb complements and yes/no questions (87%). See Table 4.5 below for a full list of the seventeen grammar subjects included in the present study as a part of the UGJT in an ascending order depending on the percentages of the participants who answered them correctly.

Table 4.5. *The grammar subjects included in the present study as part of the UGJT and the percentages of the participants who answered them correctly*

The grammar subjects in the UGJT	The participants who answered them correctly
plural -s suffix	41%
unreal conditionals	42%
dative alternation	44%
ergative verbs	58%
possessive –s suffix	66%
indefinite article	68%
question tags	72%
for/since	73%
comparatives	77%
adverb placement	77%
embedded questions	79%
regular past tense	84%
relative clauses	85%
verb complements	87%
yes/no questions	87%
third person singular –s suffix	89%
modal verbs	95%

For the MKT-Part 1, in which the same grammar subjects were targeted, mean scores were found for each item since the scoring was not dichotomous but rather changed between 0 and 2. Table 4.6 displays the mean scores for each item in an ascending order.

Table 4.6. *The grammar subjects included in the present study as part of the MKT-Part 1 and the mean scores for each item*

The grammar subjects in the MKT-Part 1	The mean scores for each item
indefinite article	0.36
relative clauses	0.45
Yes/No questions	0.47
possessive pronouns	0.51
modal verbs	0.52
embedded questions	0.55
question tags	0.55
adverb placement	0.59
ergative verbs	0.70
for/since	0.73
verb complements	0.73
plural -s suffix	0.74
unreal conditionals	0.80
comparatives	0.88
possessive -s suffix	1.29
indefinite article	1.29
regular past tense	1.39

In MKT-Part 1, which is the productive part of the metalinguistic knowledge test, many students misused metalingual terms, as exemplified below:

- Some students used the terms “suffix”, “determiner” and “adjective” for articles.
- While they were explaining the use of indefinite article, they reported that it depended on the first “letter” of the word, not the first “sound”.
- They used the term “pronouns” for possessive adjectives.
- Many students reported that “*want is an infinitive verb*” although they were supposed to write that “*want is followed by infinitives*”.
- Some students mistook “gerund” as a verb pattern for present continuous tense.
- They mistook “active voice” for “passive voice” and vice versa.
- They mistook “relative clause” for “noun clause” and vice versa.
- They mistook “comparatives” for “superlatives” and vice versa.
- Many students misused the terms “adjective”, “adverb”, “determiner”, “quantifier” and “pronoun”.
- They mentioned possessive pronouns as “possessive nouns”.
- Some students mentioned the questions words in noun clauses as “conjunctions”.

In MKT-Part 2, which is the receptive part of the metalinguistic knowledge test, “conditional verb” was the least recognized grammatical feature (recognized by only 6% of the participants) in the first section. It is followed by “finite verb” (10%) and “agent” (16%). The other grammatical features that more than fifty percent of the participants did not recognize were “past participle” (31 %), “auxiliary verb” (34%), “indefinite article” (36%), “infinitive verb” (38%) and “relative pronoun” (48%). The most recognized grammatical features were “verb” (98%) and “noun” (95%), followed by “countable noun” (85%) and “adjective” (82%). See Table 4.7 for below for a full list of the nineteen grammar features included in the present study as a part of the MKT-Part 2 in an ascending order depending on the percentages of the participants who answered them correctly.

Table 4.7. *The grammar features included in the present study as part of the MKT-Part 2 and the percentages of the participants who answered them correctly*

The grammar features in the MKT-Part 2	The participants who answered them correctly
conditional verb	6%
finite verb	10%
agent	16%
past participle	31%
auxiliary verb	34%
indefinite article	36%
infinitive verb	38%
relative pronoun	48%
pronoun	54%
modal verb	66%
conjunction	67%
adverb	69%
passive verb	70%
comparative form	72%
preposition	79%
adjective	82%
countable noun	85%
noun	95%
verb	98%

In the second section, "direct object" was the most recognized part of sentence (79% of the participants recognized it), followed by "subject" (77%) and "infinitive" (56%). Indirect object was the least recognized part of sentence in the second section (47%).

4.4. Research Question 3: What is the relationship between L2 Explicit Knowledge and reading and writing performances of 1st and 4th year Turkish EFL learners majoring at ELT?

Pearson product moment correlations were run to find out the relationship between L2 explicit knowledge and reading and writing performances of Turkish EFL learners majoring at ELT. Results yielded a significant relationship between the overall L2 explicit knowledge and writing performance both in the whole sample and across the two groups although it is weak. Reading, however, does not seem to significantly correlate with the overall L2 explicit knowledge at all. On the other hand, of the two sub-components of L2 explicit knowledge, analyzed knowledge was found to have a significant relationship with both reading and writing considering the two groups separately as well as the whole sample. Table 4.8 displays that as for the first-year students, there was a significant weak correlation between analyzed knowledge and reading (r=.224) and writing (r=.320). The correlation between the overall explicit knowledge and writing was also significant

(r=.220), whereas it was non-significant for reading. Table 4.9 displays that as for the fourth-year students, there was also a significant weak correlation between analyzed knowledge and reading (r=.220) and writing (r=.319). The correlation between overall explicit knowledge and writing was also significant (r=.265), whereas it was non-significant for reading. It is clear that the significance and the strength of the relationship between L2 explicit knowledge and reading and writing performances are similar across the first- and fourth-year Turkish EFL learners majoring at ELT. As in Table 4.10, considering the whole sample, there was a significant weak correlation between analyzed knowledge and reading (r=.228) and writing (r=.312). There was also a significant relationship between metalinguistic knowledge and writing although it is very weak (r=.144). The correlation between the overall explicit knowledge and writing was also significant (r=.274), whereas it was non-significant for reading.

Table 4.8. *Correlations between L2 explicit knowledge and reading and writing performances-First-year students*

	Explicit Knowledge	**Analyzed Knowledge**	**Metalinguistic Knowledge**
Reading	.081	.224**	-.086
Writing	.220**	.320**	.051

*: Correlation is significant at the 0.05 level (2-tailed).

**: Correlation is significant at the 0.01 level (2-tailed).

Table 4.9. *Correlations between L2 explicit knowledge and reading and writing performances-Fourth-year students*

	Explicit Knowledge	**Analyzed Knowledge**	**Metalinguistic Knowledge**
Reading	.125	.220*	.006
Writing	.265**	.319**	.130

*: Correlation is significant at the 0.05 level (2-tailed).

**: Correlation is significant at the 0.01 level (2-tailed).

Table 4.10. *Correlations between L2 explicit knowledge and reading and writing performances-Whole sample*

	Explicit Knowledge	**Analyzed Knowledge**	**Metalinguistic Knowledge**
Reading	.071	.228**	-.078
Writing	.274**	.312**	.144*

*: Correlation is significant at the 0.05 level (2-tailed).

**: Correlation is significant at the 0.01 level (2-tailed).

Apart from calculating the correlation coefficients presented in the foregoing paragraphs, a series of hierarchical regression analyses were conducted in order to further understand the relationship between the variables. The dependent variables of the

hierarchical regression analyses were 'reading' and 'writing', and the independent variables were 'metalinguistic knowledge' and 'analyzed knowledge', which were entered in the regression models in that order. The first two models, as presented in Table 4.11 and Table 4.12 below, present the relationship between explicit knowledge, and reading and writing, respectively, for the first-year participants. The third and the fourth models, as presented in Table 4.13 and Table 4.14 below, present the relationship between explicit knowledge, and reading and writing, respectively, for the fourth-year participants. Finally, the last two models, as presented in Table 4.15 and Table 4.16 below, present the relationship between explicit knowledge, and reading and writing, respectively, for the whole sample.

Table 4.11. *Hierarchical multiple regression analysis (Dependent variable: Reading-First-year students)*

Model	R	R Square	Adjusted R Square	Standard Error	F Model	R Square Change	F Change
1. MK[a]	.086	.007	-.001	11.449	.841	.007	.841
2. AK[b]	.283	.080	.064	11.072	4.868	.073	8.837*

a: Metalinguistic Knowledge

b: Analyzed Knowledge

*: F is significant at the 0.01 level.

As the Table 4.11 indicates, the R square of this regression model was found to be .080, and it is significant at the .01 level. This means that metalinguistic knowledge and analyzed knowledge, together, significantly explain 8 percent of the variance in the dependent variable, which is the reading performance of the first-year Turkish EFL learners majoring at ELT. When the model is further examined in order to see the unique contribution of each independent variable, it is seen that metalinguistic knowledge does not have a significant relationship with reading performance. In other words, metalinguistic knowledge does not make a significant contribution to the explanation of the reading performance of the first-year Turkish EFL learners majoring at ELT. As can be seen from the R Square Change column, analyzed knowledge explains 7.3 percent of the variance in reading performance on its own.

Table 4.12. *Hierarchical multiple regression analysis (Dependent variable: Writing-First-year students)*

Model	R	R Square	Adjusted R Square	Standard Error	F Model	R Square Change	F Change
1. MK[a]	.051	.003	-.006	13.965	.294	.003	.294
2. AK[b]	.321	.103	.087	13.304	6.412	.100	12.500*

a: Metalinguistic Knowledge

b: Analyzed Knowledge

*: F is significant at the 0.01 level.

Table 4.12 shows that the R square of this regression model was found to be .103 and, it is significant at the .01 level. This means that metalinguistic knowledge and analyzed knowledge, together, significantly explain 10.3 percent of the variance in the dependent variable, which is the writing performance of the first-year Turkish EFL learners majoring at ELT. When the model is further examined in order to see the unique contribution of each independent variable, it is seen that metalinguistic knowledge does not have a significant relationship with writing performance, either. In other words, metalinguistic knowledge does not make a significant contribution to the explanation of the writing performance of the first-year Turkish EFL learners majoring at ELT. As can be seen from the R Square Change column, analyzed knowledge itself explains 10 percent of the variance in writing performance.

Table 4.13. *Hierarchical multiple regression analysis (Dependent variable: Reading-Fourth-year students)*

Model	R	R Square	Adjusted R Square	Standard Error	F Model	R Square Change	F Change
1. MK[a]	.006	.000	-.009	12.490	.003	.000	.003
2. AK[b]	.229	.052	.035	12.216	2.956	.052	5.908**

a: Metalinguistic Knowledge

b: Analyzed Knowledge

**: F is significant at the 0.05 level.

According to Table 4.13, the R square of this regression model was found to be .052 and, it is significant at the .05 level. This means that metalinguistic knowledge and analyzed knowledge, together, significantly explain 5.2 percent of the variance in the dependent variable, which is the reading performance of the fourth-year Turkish EFL learners majoring at ELT. When the model is further examined in order to see the unique contribution of each independent variable, it is seen that metalinguistic knowledge does not have any relationship with reading performance of the fourth-year Turkish EFL

learners majoring at ELT at all, and analyzed knowledge explains all of the variance in reading shown in the model on its own.

Table 4.14. *Hierarchical multiple regression analysis (Dependent variable: Writing-Fourth-year students)*

Model	R	R Square	Adjusted R Square	Standard Error	F Model	R Square Change	F Change
1. MK[a]	.130	.017	.008	12.375	1.36	.017	1.86
2. AK[b]	.321	.103	.086	11.875	8.58	.086	10.27*

a: Metalinguistic Knowledge

b: Analyzed Knowledge

*: F is significant at the 0.01 level.

Table 4.14 shows that the R square of this regression model was found to be .103 and, it is significant at the .01 level. This means that metalinguistic knowledge and analyzed knowledge, together, significantly explain 10.3 percent of the variance in the dependent variable, which is the writing performance of the fourth-year Turkish EFL learners majoring at ELT. When the model is further examined in order to see the unique contribution of each independent variable, it is seen that metalinguistic knowledge does not have a significant relationship with writing performance. In other words, metalinguistic knowledge does not make a significant contribution to the explanation of the writing performance of the fourth-year Turkish EFL learners majoring at ELT. As can be seen from the R Square Change column, analyzed knowledge itself explains 8.6 percent of the variance in writing performance.

Table 4.15. *Hierarchical multiple regression analysis (Dependent variable: Reading-Whole sample)*

Model	R	R Square	Adjusted R Square	Standard Error	F Model	R Square Change	F Change
1. MK[a]	.078	.006	.002	12.034	1.367	.006	1.367
2. AK[b]	.268	.072	.063	11.656	8.581	.066	15.704**

a: Metalinguistic Knowledge

b: Analyzed Knowledge

*: F is significant at the 0.01 level.

Table 4.15 displays that the R square of this regression model was found to be .072, and it is significant at the .01 level. This means that metalinguistic knowledge and analyzed knowledge, together, significantly explain 7.2 percent of the variance in the dependent variable, which is the reading performance of Turkish EFL learners majoring

at ELT. When the model is further examined in order to see the unique contribution of each independent variable, it is seen that metalinguistic knowledge does not have a significant relationship with reading performance. In other words, metalinguistic knowledge does not make a significant contribution to the explanation of the reading performance of Turkish EFL learners majoring at ELT. As can be seen from the R Square Change column, analyzed knowledge explains 6.6 percent of the variance in reading performance on its own.

Table 4.16. *Hierarchical multiple regression analysis (Dependent variable: Writing-Whole sample)*

Model	R	R Square	Adjusted R Square	Standard Error	F Model	R Square Change	F Change
1. MK[a]	.144	.021	.016	13.389	4.711	.021	4.711
2. AK[b]	.319	.102	.094	12.852	12.571	.081	20.028*

a: Metalinguistic Knowledge

b: Analyzed Knowledge

*: F is significant at the 0.01 level.

According to Table 4.16, the R square of this regression model was found to be .102 and it is significant at the .01 level. This means that metalinguistic knowledge and analyzed knowledge, together, significantly explain 10.2 percent of the variance in the dependent variable, which is the writing performance of Turkish EFL learners majoring at ELT. When the model is further examined in order to see the unique contribution of each independent variable, it is seen that metalinguistic knowledge does not have a significant relationship with writing performance. In other words, metalinguistic knowledge does not make a significant contribution to the explanation of the writing performance of Turkish EFL learners majoring at ELT. As can be seen from the R Square Change column, analyzed knowledge itself explains 8.1 percent of the variance in writing performance.

5. DISCUSSION

The most important motive behind the present study was to add to the understanding of the relationship between the overall explicit knowledge of a foreign language and one's proficiency in this language, which has not been thoroughly understood so far. Our aim was to contribute to filling the gap in the field by answering some of the unanswered related questions in Turkish context. The target population was Turkish EFL learners majoring at English language teaching, who are the prospective teachers of the foreign language as well as being the learners of it. We chose two different groups on purpose, namely first- and fourth-year students majoring at ELT, because they represent the two ends of the continuum, respectively. With help of the meticulously chosen instruments and rigorous data collection procedures, the following conclusive results have been reached. These results are summarized once again below and interpreted withing the light of the SLA literature and discussed along with a comparison of the findings of the previous research.

First, it was found that fourth-year Turkish EFL learners majoring at ELT have better explicit knowledge of English language than the first-year learners. This means that they have more conscious awareness of what English (or maybe a language in general) consists of, and the roles that it plays in human life (Ellis, 2004). Additionally, they have more conscious knowledge of English, and it is assumed that they can access to this knowledge through controlled processing when they experience some kind of linguistic difficulty in the use of this language. This finding also indicates that fourth-year ELT majors might have better declarative knowledge of English. In other words, their knowledge of English might highly consist of facts about English grammar and thus be more encyclopedic in nature compared to first-year ELT majors. As a result of this significant difference between first- and fourth-year Turkish EFL learners majoring at ELT in terms of the explicit knowledge they have, it can be assumed that year of study plays a role in building explicit knowledge of a foreign language. The more one is exposed to the foreign language, the more the explicit knowledge of that language grows. This can be tackled in two different ways, namely learning and teaching aspects. An investigation of the ELT syllabus throughout the four years lays bare that the students reinforce what they had learned before their graduate studies, keep learning English and learn how to teach English in a gradual order. Therefore, it is clear that when the present study was conducted, the fourth-year students had already learned far more as foreign

language learners and had just been learning how to teach it, whereas the first-year students were just becoming advanced learners of English and hadn't started learning how to teach it yet. In other words, the fourth-year students were professional learners and pre-service teachers of English, while the first-year students were just advanced learners of English at the time of the present study.

Second, a further investigation of the participant's scores from the sub-components of explicit knowledge revealed that the significant difference between the first- and fourth-year learners is due to the difference in metalinguistic knowledge rather than analyzed knowledge. In other words, fourth-year Turkish EFL learners majoring at ELT were found to have much better metalinguistic knowledge than first-year learners, whereas the two groups did not significantly differ from each other regarding analyzed knowledge. This means that although the two groups have similar knowledge about L2 items and structures of which they are aware but not necessarily conscious, fourth-year learners have better knowledge of English metalanguage, which is the language used to talk about, discuss, describe or make statements about a language**.** Therefore, it can be assumed that they have better ability to talk about English language using metalingual terms. Considering that metalinguistic knowledge is learnt through instruction or observation, whereas analyzed knowledge is derived from implicit knowledge, the difference between the two groups may be due to the fact that fourth-year learners have observed and been instructed English for far longer than the first-year learners during their studies. In addition, fourth-year learners' engagement in classroom observation as part of their pre-service training might explain their relatively higher metalinguistic knowledge as compared to the first-year learners. It is possible that observing in-service teachers teach English, carrying out micro lessons and receiving feedback from their mentors help fourth-year learners boost their metalinguistic knowledge.

So far, the findings have shown that fourth-year Turkish EFL learners majoring at ELT have better explicit knowledge of English than the first-year learners because they have better metalinguistic knowledge, and the two groups do not significantly differ from each other in terms of analyzed knowledge. After a closer look at the mean scores from the four different tests used to measure L2 explicit knowledge, one surprising finding shows up: the first-year participants outperformed the fourth-year participants in the Language Analysis Test. This is surprising because it is the only test whose findings are in favor of the first-year participants unlike the other three tests in which the fourth-year

participants performed better than the first-year participants, which is in line with the overall findings regarding the first research question. Although this finding does not affect the conclusive finding regarding the difference between first- and fourth-year Turkish EFL learners majoring at ELT in terms of the explicit knowledge they have, it requires scrutinizing. This finding may have occurred due to several reasons. First, this test, measuring language analytical ability, is similar to a mathematics test in the sense that it consists of some phrases and sentences given in an imaginary language along with their English translations (like formulas), which are to be used to translate new English sentences into the imaginary language (like new problems). The first-year participants might have been more used to this type of tests because it was not too long ago that they sat the university entrance exam. Second, the first-year participants might have been more used to multiple-choice tests because of the same reason. Third, the fourth-year participants might have spent less time on this test than they needed because of their busier schedule compared to the-first year participants. Multiple-choice test format could have made them try taking advantage of chance factor and as a result they may have not focused on the test well enough.

Going back to the conclusive findings of the present study; third, it was found that Turkish EFL learners majoring at ELT, regardless of their year of study, have a lot more analyzed knowledge than metalinguistic knowledge. This finding indicates that they are more knowledgeable about L2 items and structures of which they are aware but not necessarily conscious than about metalanguage. In other words, they can recognize and correct errors in English; however, they have difficulty in explaining the rule which is violated. Even if they can explain the violation, they cannot/do not use metalingual terms in their explanation. They have difficulty in giving examples for some grammatical functions from a paragraph as well. A further investigation of the correct answer percentages for each item in the UGJT and the mean scores for each item in the MKT-Part 1 also point out that the participants were more successful in the former than in the latter. Although the difference of the type of the data coming from each instrument (percentages versus mean scores) makes the two tests incomparable in this sense, it is apparent that the participants were more successful when they were asked to find and correct the error than when they were asked to explain it. In addition, the order of the correctly answered grammar subjects is different in the two tests, which suggests that

learners' knowledge and performance based on this knowledge with regard to the same grammar subjects may change depending on the task they are asked to do.

Considering that analyzed knowledge and metalanguage differ from each other in the sense that the former is derived from implicit knowledge, whereas the latter is learnt through instruction or observation, the participants' relatively lower performance on the tests of metalinguistic knowledge may be due to lack of or limited instruction and/or observation in metalanguage. We can understand that analyzed knowledge develops on its own throughout time thanks to exposure to language and interest in learning and teaching it. However, learners need to be instructed or engaged in metalanguage and metalingual terms. Apart from the lack of or limited instruction and/or observation in metalanguage, the students may not have been able to gain metalinguistic knowledge simply because they did not need it before. As Gutiérrez (2016) specifies, awareness of how grammar features work seems more beneficial for language use than the ability to verbalize grammar rules even though the latter type of knowledge is likely to promote the accuracy of the former.

A closer look at the participants' mean scores from the four different tests reveals that there is obvious discrepancy across all of the tests in addition to the significant difference between analyzed knowledge and metalinguistic knowledge. That the participants performed better at UGJT than at LAT suggests that Turkish EFL learners majoring at ELT are better at judging whether a sentence in English is grammatical or not and correcting the ungrammatical part than at inducing the grammar rules from a number of phrases and sentences in a new language and applying them to new sentences in the same language. This difference may be explained with the complexity of explicit knowledge. According to Ellis (2004), explicit knowledge is simply "the conscious awareness of what a language or language in general consists of and/or of the roles that it plays in human life" (p. 229). Depending on this definition of explicit knowledge by Ellis (2004), it can be assumed that one may have the conscious awareness of one specific language but fail to do so or may not be as successful in doing so in the case of language in general. In other words, the participants of the present study may have been more successful in UGJT because it is a test of explicit knowledge of English language only, and they may not have performed as well in LAT because it is rather a test of explicit knowledge of language in general.

When it comes to the tests of metalinguistic knowledge, in both of which the participants did not manage to perform as well as they did in the tests of analyzed knowledge, we see that the participants were relatively more successful at the receptive part of the test. This means that Turkish EFL learners majoring at ELT recognize grammatical features in English to some extent and give examples for them from a short paragraph, but most of them cannot use the terms for these grammatical features and verbalize their functions in an error correction and explanation task. This finding is not surprising since foreign language learners generally find receptive skills and activities easier than productive ones. What is surprising is the participants' lower performance on this test than expected. Considering that they have been learning English for a long time, and studying English language teaching (for varying lengths, though), they had been expected to recognize most of the grammatical features given in the test. However, there were students who do not know the functions and even meaning of such very common grammatical features as indefinite article, auxiliary verb and relative pronoun. Almost half of the participants couldn't find an example for a subject pronoun. During the administration of the test, many students said that they do not know the meaning of most of the grammatical features and even if they do, they do not recognize their function not only in English but also in their native language, Turkish. It is far worse in the productive part of the test. Some students just corrected the errors without making any explanations, which were considered completely incorrect as far as the purposes of the test were concerned. Some other students did not use any metalingual terms in their error explanations even though they were repeatedly reminded to use metalingual terms if they knew, as shown in the practice item. Still some other students misused the metalingual terms. These all point out the lack of metalinguistic knowledge.

The results regarding the higher mean for analyzed knowledge than metalanguage are congruent with Alderson et al. (1997), Hu and Ellis (1998), Elder and Manwaring (2004) and Roehr (2008), who also examined explicit knowledge of the L2 as both analyzed knowledge and knowledge of metalanguage and found that learners' levels of analyzed knowledge tended to be higher than those of metalanguage. Concerning the measures, there are a few points that are worth noting. In these studies, all of the sentences in the error correction tasks were ungrammatical, whereas in the present study, the error correction task (UGJT) consists of grammatical sentences as well as ungrammatical sentences. Additionally, in Elder and Manwaring (2004) and Roehr (2008), the errors had

been highlighted for the test takers, which is not the case for the present study. Considering that determining the grammaticality of a sentence and then identifying the error and correcting it in the ungrammatical sentences likely requires a higher level of analyzed explicit knowledge than identifying and correcting errors when all the sentences are ungrammatical and the errors have already been identified, since the former operation places higher demands on control and analysis (Bialystok, 1986), it can be maintained that the present study employed better measures of L2 explicit knowledge that the aforementioned studies. Therefore, we can say that the present study provides a sound confirmation of the findings of the previous similar studies. However, the present study differs from Gutiérrez (2016), who used the same untimed grammaticality judgment test and metalinguistic knowledge test in Spanish, though. In this study, Anglophone learners of Spanish enrolled in an intermediate-level university course in Canada showed higher levels of metalanguage than those of analyzed knowledge. Gutiérrez (2016) reports that in the course where the study took place grammar structures were often presented explicitly by the instructor using metalinguistic explanations accompanied by examples, which might be the explanation for the higher mean for metalanguage.

Concerning the relationship between L2 explicit knowledge and written proficiency, operationalized as reading and writing performances of Turkish EFL learners, we see that there is a meaningful relationship between L2 explicit knowledge and writing performance. Of the two sub-components of L2 explicit knowledge, analyzed knowledge appears to be more related to writing. What is more, analyzed knowledge is significantly related to reading performance, as well, although the relationship is relatively less strong. In other words, when analyzed knowledge is examined on its own, it seems to have a stronger relationship with both reading and writing performances of Turkish EFL learners. These results are consistent with those of the majority of studies that examined the relationship between L2 explicit knowledge and L2 proficiency. The studies that looked at both analyzed knowledge and metalinguistic knowledge separately (Alderson et al., 1997; Elder & Ellis, 2009; Elder & Manwaring, 2004; Han & Ellis, 1998; Gutiérrez, 2012; Gutiérrez, 2016; Roehr, 2008) reported stronger correlations between analyzed knowledge and L2 proficiency than between knowledge of metalanguage and L2 proficiency. Therefore, analyzed knowledge seems to be a better predictor of L2 proficiency than metalanguage. In other words, it is clear that learners who have more analyzed knowledge are likely to be more proficient in a foreign language compared to

those who have less analyzed knowledge. Elder and Manwaring (2004) interpret the stronger correlation of analyzed knowledge and L2 proficiency as follows: learners draw almost exclusively on their explicit knowledge of the L2 while explaining grammar rules; however, they may resort to implicit knowledge as well as explicit knowledge while identifying and correcting errors.

These correlational findings are supported and reinforced with the findings of the regression analyses carried out in the current study. It was found that metalinguistic knowledge does not make a unique contribution to reading and writing performances of Turkish EFL learners, while analyzed knowledge does. Altogether, analyzed knowledge and metalinguistic knowledge explain 7.2 percent of the variance in reading and 10.2 percent of the variance in writing among Turkish EFL learners majoring at ELT. The percentage explained in reading is less than in writing, which is also in line with the correlational findings. The contribution of L2 explicit knowledge to reading and writing might seem small depending on these percentages. However, considering that there are many other contributors of these two skills such as syntactic knowledge, vocabulary knowledge, reading strategies, topic, task type, etc., which have been widely investigated so far, the role of L2 explicit knowledge, which is rather a more recently and less investigated component, shouldn't be underestimated. All in all, it is apparent that L2 explicit knowledge, especially analyzed knowledge, is likely to predict reading and writing performance to some extent, which is also in line with the findings of Erçetin and Alptekin (2013), Aydın (2018; 2019) and Çandarlı (2018). Therefore, if foreign language learners want to be successful in reading and writing, they need to increase their analyzed explicit knowledge along with some other skills and language areas. This means that they need to know about L2 items and structures of which they may already be aware but not necessarily conscious. They may also need to be able to utter facts about the grammar. In addition, their attention should sometimes be drawn for a primary focus on form. Furthermore, they may sometimes need to use metalinguistic knowledge.

The present study contributes to SLA literature by providing evidence for the role of L2 explicit knowledge in L2 proficiency. In this sense, the present study is congruent with the previous research maintaining that L2 proficiency benefits from explicit knowledge (e.g. Sorace, 1985; Renou, 2000; 2001; Roehr, 2007; Elder and Ellis, 2009; Zhang, 2015, Erçetin and Alptekin, 2013 and Gutiérrez, 2016). The present study also provides evidence for *how* L2 proficiency benefits from explicit knowledge. It is by

means of analyzed knowledge. Analyzed knowledge is like a bridge between implicit knowledge and explicit knowledge, which may turn into each other as the weak-interface model maintains. Implicit knowledge (in a general sense) is always there. It is unanalyzed, memory-based and easily accessed. One's L1 knowledge is an example of implicit knowledge. We do not think about the word order while speaking in our L1. L1 speakers of Turkish, for example, do not think for a while and deliberately use the verb at the end of the sentence; it just comes out. This is what we desire in an L2, too. We expect our students to make sentences (written or spoken) fluently and without mistakes. However, it does not usually happen by itself. It happens by means of analyzed knowledge, which is derived from implicit knowledge. In other words, analyzed knowledge is a way of converting, first implicit knowledge into explicit knowledge, and then explicit knowledge into implicit knowledge. Learners notice, or their attention is explicitly drawn to language features such as form-meaning associations, regularities or exceptions, and differences between L1 and L2. They analyze these features through associative language learning and rational cognitive processing and examples. Consequently, these features may become a part of the implicit knowledge and thus be unanalyzed and easily accessed in the course of time. This assumption made by the current study fits in the usage-based approaches to SLA and match with their constructs.

Another remarkable finding is that L2 explicit knowledge significantly explains more variance in writing than in reading. This finding might be explained with the divergent nature of these two skills. Reading is a receptive skill, for the accomplishment of which learners need to comprehend the input and fill in the gaps presented in the form of a variety of questions about this input. To be able to do this, they need to focus on meaning rather than form. However, L2 learners may need to access to L2 explicit knowledge when they experience some kind of linguistic difficulty in the comprehension of the L2 as well as the use. For example, when the text becomes difficult, they may make use of L2 explicit knowledge to make sure that they understand what they are reading and to pay closer attention to what they are reading. Additionally, L2 explicit knowledge may also help L2 learners to guess the meaning of unknown words or phrases. When it comes to writing, which is a productive skill, learners are asked to produce their own sentences in a grammatically correct, comprehensible and well-organized way. Therefore, in writing, learners may need self-monitoring more. They may need to inquire about the grammaticality of their sentences and think about the grammar rules as they are writing.

Such an inquiry paves the way for controlled processing, through which L2 explicit knowledge is accessed.

When the first- and fourth-year EFL learners majoring at ELT were compared in terms of the variance in reading and writing explained by L2 explicit knowledge, it was found that the variance explained is almost the same for writing across the two groups, whereas it is bigger for reading among the first-year learners. This means that L2 explicit knowledge makes a bigger contribution to reading performance of first-year Turkish EFL learners majoring at ELT. This difference might be explained with the employment of lower-level and higher-level processes of reading comprehension. The lower-level processes are word recognition, syntactic parsing and meaning proposition encoding (Grabe & Stoller, 2002). They are more automatic, linguistic and skill-oriented. Word recognition is simply recognizing and retrieving the meaning of a word (Grabe & Stoller, 2002). Syntactic parsing represents extracting basic grammatical information from the printed text by taking in and storing words together in order to gain access to clause-level meaning (Grabe & Stoller, 2002). Meaning proposition encoding refers to forming semantic propositions that are basic clause-level meaning units combined with word meanings and structural information (Grabe & Stoller, 2002). The higher-level processes, on the other hand, are concerned with comprehension processes and depend on readers' background knowledge and inferencing skills (Grabe & Stoller, 2002). In this sense, explicit L2 knowledge appears to be a part of lower-level processes employed in reading. Therefore, the greater role of the L2 explicit knowledge in reading comprehension of the first-year Turkish EFL learners majoring at ELT might be explained with the assumption that they might be employing lower-level processes of reading comprehension more than the fourth-year learners. In addition, first-year Turkish EFL learners majoring at ELT might be employing bottom-up skills in reading, which may also explain the greater role of L2 explicit knowledge in their reading comprehension. These skills consist of linguistic skills mainly, and help learners build literal comprehension of a text. The focus is on the text itself, and reading comprehension is processed from part to the whole (Fatemi, Vahedi, & Seyyedrezaie, 2014). Therefore, according to bottom-up processing, learners resort to their knowledge of lexical items, structural points and phonological patterns to be able to decode the text meaning. (Fatemi, Vahedi, & Seyyedrezaie, 2014).

6. CONCLUSION

6.1. Summary of the Study

The present study is mainly based on the weak-interface model of L2 acquisition (Ellis, 1993; 1994). This model maintains that explicit L2 knowledge may turn into implicit L2 knowledge and implicit knowledge benefits from explicit knowledge in a number of ways such as helping L2 learners notice some linguistic properties in the input that may go unnoticed, enhancing the intake by helping L2 learners compare what they have noticed in the input with what they produce in their outcome, helping L2 learners monitor their output from their implicit knowledge, enabling learners to establish links between form and meaning faster, increasing the likeliness of learners noticing certain grammar features by providing saliency for them, and providing assistance for linguistic problem-solving and output production in the target language. However, with the emergence of communicative language teaching and learning a foreign language, attention to forms of language and the developmental value of "enhanced noticing" and "consciousness raising" in L2 have been neglected, which is one of the reasons why communicative teaching has been criticized recently. Upon this, language form and metalinguistic aspects of teaching and learning a language have regained importance. However, whether there exists a significant relationship between explicit L2 knowledge and L2 proficiency has not been clarified yet. Research has come up with mixed results with regard to the role of explicit L2 knowledge in L2 proficiency probably due to the different instruments used to measure these two constructs as well as the variety of the research settings and the target populations. A detailed review of previous research reveals that the sub-components and thus the complex structure of both explicit knowledge and L2 proficiency have been neglected. A review of related literature also reveals that findings follow a pattern: explicit knowledge correlates with written proficiency, namely reading and writing, more strongly and highly than oral proficiency, namely speaking and listening.

Having covered what the previous research missed such as taking into account the two dimensions of explicit knowledge, namely analyzed knowledge and metalanguage, separately, and the pattern that the previous findings followed, the present study attempted to examine analyzed knowledge and knowledge of metalanguage, and their relationship to reading and writing performances of first- and fourth-year ELT majors

studying at a large-scale state university in Turkey. To this end, the following research questions were addressed:

1) Is there a significant difference between 1st- and 4th-year Turkish EFL learners majoring at ELT in terms of the Explicit L2 Knowledge they have?
2) Is there a significant difference between Analyzed Explicit Knowledge and Metalinguistic Knowledge among 1st- and 4th-year Turkish EFL learners majoring at ELT?
3) What is the relationship between L2 Explicit Knowledge and reading and writing performances of 1st- and 4th-year Turkish EFL learners majoring at ELT?

It is worth noting that the first- and fourth- year ELT majors were chosen purposefully because such a comparison would enable us to figure out how explicit L2 knowledge varies across two different groups of ELT majors: those who have just started their undergraduate study, and those who are about to finish it and start their profession, respectively. Such a comparison would also help us find out whether the participants' undergraduate studies as ELT majors boost their explicit knowledge or not. In addition, a considerable relationship between L2 explicit knowledge and written proficiency, if any, would require more of a focus on analyzed L2 knowledge and use of metalanguage among prospective teachers of English, which would help us better equip prospective teachers of English with requirements of knowing a foreign language and their profession as well.

A total of 233 Turkish EFL learners majoring at ELT department (120 first-year and 113 fourth-year students) participated in the present study. Data collection instruments for the present study comprised three tests designed to measure explicit L2 knowledge: an untimed grammaticality judgment test (UGJT), a language analysis test (LAT) and a metalinguistic knowledge test (MKT); a standardized reading comprehension test of English (IELTS) and a writing task designed to assess general L2 writing proficiency (IELTS). There was no time limit for the accomplishment of the tests of L2 explicit knowledge. UGJT and MKT were designed by R. Ellis and colleagues (2009). They both measured the knowledge of 17 grammatical structures that comprised both morphological and syntactic features "known to be universally problematic to learners," and corresponding to "a broad range of proficiency levels" (Ellis, 2009, p. 42). For the accomplishment of the UGJT, participants were required to judge the grammaticality of the sentences and to provide a correction for those that they thought

ungrammatical. MKT consisted of two parts. For Part 1, the participants were required to correct the sentence, and explain why it was incorrect referring to the grammar rules that were violated in each sentence. Part 2 consisted of two sections. In section 1, the participants were presented with a short passage to find one example for 19 specific grammatical features from the passage (such as a preposition or a finite verb). They were asked to write their example for each feature in the table provided. In section 2, they were presented with a set of four sentences and asked to underline the named grammatical parts (e.g., 'subject' and 'indirect object') in those sentences. LAT was adopted from Schmitt, Dörnyei, Adolphs, and Durow (2004). It consisted of a box of words/phrases and sentences from an imaginary language along with their English translation. Following this, there were 14 short English sentences, each with four possible translations into the imaginary language. Based on the examples given in the box, the participants were required to try and work out which of the four options was the correct translation of each sentence. The reading test used in the present study consisted of two similar IELTS General Training Reading Section-3 texts. The texts were followed by 12 and 13 questions, respectively, including summary completion, True/False/Not Given items, multiple matching and multiple-choice questions. For the writing task, the participants were asked to answer the following question in a total of 40 minutes using at least 250 words: "Some people think the teaching of a foreign language should be compulsory at all primary schools. To what extent do you agree or disagree with this view?". UGJT, LAT, MKT-Part 2 and the reading test were scored dichotomously. The scores for each item in MKT-Part 1 ranged between 0 and 2 and scoring procedures were prepared prior to the main data collection. The writing papers were scored by the researcher and a co-rater using a rubric.

Prior to the main data collection, the instruments were piloted with a total of 80 EFL learners majoring at ELT department at the same institution. After the pilot data were collected, item and reliability analyses were carried out. Item facility (IF) indexes, item differentiation (ID) indexes, item variance, test variance and test reliability were calculated. The main data were collected during Fall Term 2019-2020 and it took a total of five weeks. Item and reliability analyses were carried out for the main data, as well. The findings indicated that all the tests were reliable. In addition, regarding the writing test, inter-rater reliability was found to be 0.83, indicating that the two raters agreed with each other on %83 of the writing papers they rated.

Next, outliers were determined through boxplots for each test and the data were checked for normality and homogeneity, which are the two essential assumptions of parametric tests. Depending on the histograms, Q-Q plots, descriptive statistics and skweness and curtosis values, the data were found to be normally distributed. Finally, Levene's test was carried out to check the homogeneity of variance in the data.

As for the statistical procedures, first of all, descriptive statistics were found for each participant and all of the tests. Later, several statistical procedures were followed to be able to respond to the research questions addressed in the present study. In order to respond to the first research question, which is concerned with a comparison of first- and fourth-year students in explicit L2 knowledge, independent samples *t* test and between subject one-way MANOVA were used. In order to respond to the second research question, which is concerned with a comparison of the analyzed knowledge and metalinguistic knowledge, paired samples *t* test and one-way ANOVA with repeated measures were utilized. In order to respond to the third research question, which is concerned with exploring the relationship between L2 explicit knowledge and reading and writing performances of the participants, Pearson product moment correlations and hierarchical multiple regression analyses were carried out.

As a consequence of the preliminary analyses, the following findings were reached:

- The fourth-year participants outperformed the first-year participants in all of the tests designed to measure explicit L2 knowledge.
- Both groups showed a better performance of analyzed knowledge than metalinguistic knowledge.
- Both groups performed far better in the MKT-Part 2, which is the receptive part of the test, than in the MKT-Part 1, which is the productive part of the test.
- Both groups performed better in writing than in reading.
- The first-year participants outperformed the fourth-year participants in reading, while the fourth-year participants outperformed the first-year participants in writing.

Regarding the first research question, it was found that fourth-year Turkish EFL learners majoring at ELT have better explicit knowledge of English language than the first-year learners, indicating that fourth-year Turkish EFL learners majoring at ELT have more conscious awareness of what English (or maybe a language in general) consists of, and the roles that it plays in human life (Ellis, 2004). This finding also indicates that year

of study plays a role in building explicit knowledge of a foreign language and the more one is exposed to the foreign language, the more the explicit knowledge of that language grows. A further investigation of the participant's scores from the sub-components of explicit knowledge revealed that the significant difference between the first- and fourth-year learners is due to the difference in metalinguistic knowledge rather than analyzed knowledge. This means that although the two groups have similar knowledge about L2 items and structures of which they are aware but not necessarily conscious, fourth-year learners have better knowledge of English metalanguage, which is the language used to talk about, discuss, describe or make statements about a language**.**

Regarding the second research question, it was found that Turkish EFL learners majoring at ELT, regardless of their year of study, have a lot more analyzed knowledge than metalinguistic knowledge. This finding indicates that they can recognize and correct errors in English; however, they have difficulty in explaining the rule which is violated; even if they can explain the violation, they cannot/do not use metalingual terms in their explanation, and they have difficulty in giving examples for some grammatical functions from a paragraph as well. The results regarding the higher mean for analyzed knowledge than metalanguage are congruent with Alderson et al. (1997), Elder and Manwaring (2004) and Roehr (2008), who also examined explicit knowledge of the L2 as both analyzed knowledge and knowledge of metalanguage and found that learners' levels of analyzed knowledge tended to be higher than those of metalanguage. However, the present study differs from Gutiérrez (2016), who reports that in the course where the study took place grammar structures were often presented explicitly by the instructor using metalinguistic explanations accompanied by examples, which might be the explanation for the higher mean for metalanguage.

Regarding the third research question, stronger correlations were found between analyzed knowledge and L2 proficiency than between knowledge of metalanguage and L2 proficiency. This finding agrees with the findings of the other studies that looked at both analyzed knowledge and metalinguistic knowledge separately (Alderson et al., 1997; Elder & Ellis, 2009; Elder & Manwaring, 2004; Han & Ellis, 1998; Gutiérrez, 2012; Gutiérrez, 2016; Roehr, 2008). It was also found that analyzed knowledge and metalinguistic knowledge altogether explain 7.2 percent of the variance in reading and 10.2 percent of the variance in writing among Turkish EFL learners majoring at ELT. However, metalinguistic knowledge does not make a unique contribution to reading and

writing performances of Turkish EFL learners, while analyzed knowledge does. When the first- and fourth-year EFL learners majoring at ELT were compared in terms of the variance in reading and writing explained by L2 explicit knowledge, it was found that the variance explained is almost the same for writing across the two groups, whereas it is bigger for reading among the first-year learners. This means that L2 explicit knowledge makes a bigger contribution to reading performance of first-year Turkish EFL learners majoring at ELT. The greater role of the L2 explicit knowledge in reading comprehension of the first-year Turkish EFL learners majoring at ELT might be explained with the assumption that they might be employing lower-level processes of reading comprehension and bottom-up skills more than the fourth-year learners.

6.2. Pedagogical Implications

The present study investigates analyzed knowledge and metalinguistic knowledge, as two separate categories of L2 explicit knowledge, and their relationship to written proficiency, namely reading and writing, among Turkish EFL learners majoring at ELT. The findings reveal that fourth-year Turkish EFL learners majoring at ELT have better analyzed knowledge than first-year Turkish EFL learners majoring at ELT, while the two groups do not significantly differ from each other in terms of metalinguistic knowledge. In addition, regardless of year of study, Turkish EFL learners majoring at ELT have higher scores from the tests of analyzed knowledge than from those of metalinguistic knowledge. Also, analyzed knowledge is more highly and strongly correlated with reading and writing proficiency among Turkish EFL learners majoring at ELT. Furthermore, analyzed knowledge makes unique contribution to reading and writing. In other words, it predicts reading and writing proficiency in a foreign language to some extent. The very last part of these findings suggests that the present study owes a number of pedagogical implications for foreign language classroom instruction and ELT research. In other words, that explicit knowledge in general, and analyzed knowledge in particular, arguably plays a meaningful role in uses of language such as reading and writing makes it necessary to suggest some pedagogical implications.

Analyzed knowledge is the knowledge about L2 items and structures. Learners are aware of analyzed knowledge, but not necessarily fully conscious (Han & Ellis, 1998). It is derived from the implicit knowledge but it is also possible for learners to learn explicit rules directly through formal instruction (Bialystok, 1994). Analyzed knowledge can

manifest itself in language behavior that naturally occurs. However, it cannot be accessed easily and rapidly, and thus it requires deliberate language planning and monitoring (Han & Ellis, 1998). Therefore, role of cognitive understanding should be emphasized and consciousness-raising tasks designed to develop students' awareness of how specific linguistic features work should be carried out in foreign language classrooms. These tasks are also known as problem-solving tasks because for their accomplishment, learners are asked to consciously analyze data given and reach at an explicit representation of the target feature. One example of these tasks is grammar tasks (Fotos & Ellis, 1991). The main purposes of grammar tasks are developing L2 explicit knowledge and providing opportunities for interaction through exchange of information. They intend to raise learners' consciousness about grammatical features of the L2; they downplay the role of production; they require the exchange of information to enable learners to reach an agreed solution to a problem, and they are closed, which means that they have a single solution. Fotos and Ellis (1991) exemplify such tasks. This grammar task consists of four task cards and a task sheet. The task cards provide each group member with various grammatical and ungrammatical sentences illustrating the use of a specific grammatical feature. Which sentences are correct and which ones are incorrect are specified on these cards. The task sheet, on the other hand, supplies learners with some grammatical information and metalinguistic terminology related to that grammatical feature. Learners are expected to analyze the information provided, formulate rules, correct the incorrect sentences and make new sentences. For the accomplishment of this task, learners need to exchange information and discuss to agree on a solution. Tasks focusing on sociolinguistic learning problems as well as on purely formal problems can also be used in foreign language classrooms (Fotos and Ellis, 1991). If these tasks are too challenging for learners of lower proficiency because they are expected to talk about grammar, L1 could be allowed for the sake of enabling students to comprehend a specific language feature in particular or the systematicity of L2 in general.

The idea behind grammar tasks could be applied to other features of the L2 such as morphology, lexis, pragmatics and phonetics and phonology. For example, learners could be provided with a number of sentences illustrating correct and incorrect uses of various idioms on the task cards. They could also be given short paragraphs in which the same idioms are contextualized on the task sheet. They could be asked to write definitions for these idioms and use them in new sentences. Similarly, while teaching the plural in

English, a group of learners could be provided with cards on which different plural nouns are written and matched with allomorphs of the plural -s (/s/, /z/, /əz/) correctly and incorrectly. The teacher could pronounce some plural nouns as examples so that the students can find out the rule and correct the incorrect matches on their cards. The students could also be provided with some phonological explanations and metalingual terms such as voiced and voiceless consonants on a separate task sheet. They could exchange information with the group members, formulate the rule and give further examples orally. The same activity could also be conducted with past tense inflectional morphemes.

As an alternative to grammar tasks, error correction tasks could be used in the form of individual sentences or texts. This could also be applied to morphological, lexical, pragmatic and phonological features of the L2 as well as the syntactic features. For example, learners could be asked to find and correct pragmatically inappropriate parts in a list of sentences or in texts. Regarding syntactical error correction tasks, correction codes could be prepared (i.e. WWO-Wrong Word Order; SP-Spelling; Ag.-Subject-verb agreement, etc.) in order to trigger learners' knowledge of metalanguage as well as analyzed knowledge.

Moreover, research has shown that language learning aptitude and metalinguistic awareness are overlapping constructs in young learners (Ranta, 2005, Roehr-Brackin & Tellier, 2019; Sawyer & Ranta, 2001). Of the four components of language learning aptitude (phonetic coding ability, grammatical sensitivity, inductive language learning ability and associative memory, Carroll, 1962; 1981), grammatical sensitivity and inductive language learning ability, which have been subsumed under the label of language-analytical ability recently, have proved a reliable predictor of achievement in instructed adult L2 learning (Dörnyei & Skehan, 2003; Li, 2016). In this sense, enhancing language-analytical ability, which simply refers to making inferences about linguistic systematics from the input provided and arriving at generalizations, may enhance analyzed knowledge in particular and explicit knowledge in general as well. This could be accomplished through tasks similar to Part 4 (Words in Sentences) of the Modern Languages Aptitude Test (MLAT) (Carroll & Sapon, 1959). For this task, learners are provided with a list of sentence pairs in each of which they are expected to choose a word in a sentence that has the same grammatical function as another word given in the other sentence. In addition, tasks similar to the Language Analysis Test (LAT), used in the

current study, may also be helpful. For these tasks, learners are provided with words, phrases and sentences in a language that they are completely unfamiliar with or an artificial language and their translations into English. They are required to analyze this information, induce rules and apply these rules to new sentences by finding out the equivalent of a number of English sentences in the unfamiliar or artificial language given.

Although knowledge of metalanguage does not make a unique contribution to written proficiency, as the present study and some other studies have found, its potential contribution to analyzed knowledge in particular and explicit knowledge in general should not be ignored. It is worth noting once again that analyzed knowledge can exist independently of the language used to talk about language, namely metalanguage; however, "it may be preciser, clearer and better-structured if the learner has access to metalingual terms" (Han & Ellis, 1998: 6). In other words, access to metalingual terms facilitates access to analyzed knowledge (Gutiérrez, 2016). This is one reason why metalinguistic knowledge should be enhanced among EFL learners. In addition to this, in the case of EFL learners majoring at ELT particularly, two prominent research findings should be taken into consideration. The first one is about the role of explicit instruction in SLA. Norris and Ortega (2000) conducted a meta-analysis of studies that had investigated the effects of explicit and implicit instruction and found that explicit instruction is more effective than implicit instruction. In those studies, implicit instruction was operationalized with enriched input and asking learners to memorize a set of sentences containing the target feature, whereas explicit instruction was operationalized with metalinguistic explanation with/without production and practice. Recently, Spada and Tomita (2010) investigated interactions between type of instruction (explicit and implicit) and type of language features (simple and complex) in a meta-analysis of 41 studies. They also found larger effect sizes for explicit instruction over implicit instruction for simple and complex language features. In addition, they found that explicit L2 instruction promotes learners' controlled knowledge and spontaneous use of simple and complex language features. Similarly, Akakura (2012) showed evidence for the positive effect of explicit instruction for implicit knowledge as well as explicit knowledge. The second one is about the role of explicit feedback in SLA. Interaction Approach to SLA (Long, 1983; 1996) makes claims about the roles of implicit and explicit feedback, attributing a far more important role to metalinguistic feedback as opposed to implicit feedback, and underscores the role of attention in SLA. Loewen,

Erlam and Ellis, (2009), for example, found that explicit feedback in the form of metalinguistic information is more effective than implicit feedback and is beneficial for system as well as item learning. Although there are studies providing evidence that implicit methods of feedback can assist learning, the results of most other studies also suggest an advantage for explicit over implicit feedback (Carroll & Swain, 1993; Carroll, 2001; Muranoi, 2000; Havranek & Cesnik (2003); Lyster, 2004; Nagata, 1993; Rosa & Leow, 2004; Kim & Mathes, 2001, as cited in, Loewen, Erlam & Ellis 2009). Therefore, EFL learners majoring at ELT, as prospective teachers of English, should be equipped with knowledge of metalanguage in order to give explicit instruction and explicit feedback properly when they need. Considering that knowledge of metalanguage develops mainly through the formal study of grammar rules, the same grammar tasks mentioned above could be utilized to enhance knowledge of metalanguage.

In the case of EFL learners majoring at ELT particularly, there are two further suggestions for ELT departments in EFL countries like ours. First, instructors at ELT departments are suggested to foster metalinguistic discussion about writing. They could resort to dialogic teaching by means of opening up, sustaining and extending conversations about writing in order to support learners' metalinguistic learning about writing and language choices. This is important because writers must make a variety of decisions, including ideational, lexical, syntactical, textual and presentational levels, about the texts they are writing (Kellogg, 2008). Kellogg (2008) maintains that writing is more than grammatical accuracy or spelling; it is shaping ideas and content for the intended rhetorical purpose. Therefore, it is crucial for writers, especially writers of a foreign language as learners, to connect form and meaning properly. This is where they need metalinguistic knowledge and guidance from the instructor. Therefore, pedagogical activities that would increase learners' critical language awareness of grammatical features and/or lexical phrases could be employed in foreign language classrooms. For example, teacher and students could discuss the differences between passive voice and active voice for a text they are writing about a famous writer or poet and his works of art. Similarly, students could analyze lexical phrases within concordance lines using freely available academic English written corpora and discuss their functions in class (Çandarlı, 2018). Such activities would perfectly fit in academic writing, academic reading, literature and translation classes.

It is worth noting that Myhill, Jones and Wilson (2016) provide evidence for the role of metalinguistic talk in writing through their experimental intervention with 54 schools across the UK, in which teachers were mentored in a pedagogical approach which involved explicit attention to grammatical choices and advocated high-level metalinguistic discussion about textual choices. They found that metalinguistic talk about writing plays an important role in helping students recognize the interrelationship between form and meaning in writing. They also found that teachers' ability to manage dialogic metalinguistic talk about writing depends heavily on their grammatical subject knowledge. Although the aforementioned study was conducted with native speakers of English (both teachers and students) and the participants were young learners, such an approach might be potentially beneficial in EFL environment and with adult learners, and help learners improve their writing performance as well as boosting their metalinguistic knowledge. In a similar vein, Çandarlı (2018) investigated L1-Turkish-speaking first-year university students' metalinguistic knowledge of the lexical phrases they use in their own academic writing in English, and found a moderate negative relationship between the frequency of lexical phrases and L2 writers' self-reported metalinguistic knowledge of them. Those who had a high level of metalinguistic knowledge used lexical phrases less frequently, which was reported to be in line with L1 writers according to the sub-corpus of BAWE (British Academic Written English Corpus), while those who had a lower level of metalinguistic knowledge used lexical phrases more than their peers, and these frequencies greatly differed those in the sub-corpus of BAWE.

The second suggestion for ELT departments in particular is having pedagogical grammar lesson in the undergraduate curriculum. The main objective of this lesson could be to present explicit written or oral descriptions of linguistic systematicies to learners as a source of information about the L2, which is what the notion of pedagogical grammar is concerned with as Roehr (2008) notes. Roehr (2008) maintains that learners' metalinguistic knowledge may emerge from their engagement in pedagogical grammar as well as by means of rule-based or other forms of form-focused instruction. She further maintains that pedagogical grammar has emerged from the metalinguistic knowledge of applied linguists, L2 teachers and material designers. Therefore, it can be assumed that, in the case of these two notions, one can pave the way for the other.

Lastly, as an overall suggestion, raising learners' awareness of the linguistic differences between L1 and L2, and of the markedness and/or prototypicality of the L2

forms may help ameliorate L3 explicit knowledge. In addition, EFL learners could be encouraged to learn a third language (L3) to increase their metalinguistic awareness. Research on multilingualism involves a higher level of metalinguistic awareness than L2 acquisition and bilingualism (Jung, 2013). By the same token, it is worth mentioning that an increased metalinguistic awareness in L2 is beneficial for the process of acquiring L3.

As a final comment, as Tokunaga (2014) notes, despite the importance of metalanguage and explicit knowledge, teaching metalanguage for its own sake or a return to a teacher-centered grammar translation method are not advised at all. It is important to recognize that how much or how little metalanguage should be used varies and the metalanguage used should be understood by the majority. In this regard, Tokunaga (2014) suggests that the terms that have confusing names but are necessary in instruction should be replaced with less-confusing names. The taxonomy of explicit learning difficulty, put forward by Roehr and Gánem-Gutiérrez (2009b), could be taken into consideration in this respect. According to this taxonomy, learners are likely to show better performance on items targeting linguistic constructions that can be described by pedagogical grammar rules that are high in schematicty and truth value, and low in conceptual complexity and technicality of metalanguage. It is worth noting that schematicity is concerned with whether a metalinguistic description exemplifies a specific linguistic construction; truth value has to do with the exceptions that a metalinguistic description applies; conceptual complexity refers to the number of elements in a metalinguistic description, and technicality of metalanguage indicates the familiarity and abstractness of metalanguage in a metalinguistic description (Roehr-Brackin, 2015).

6.3. Suggestions for Further Research

Considering the exploration of explicit knowledge among Turkish EFL learners majoring at ELT, a number of suggestions could be made for further research. First, bearing in mind the significantly better performance of the fourth-year Turkish EFL learners majoring at ELT as compared to the first-year learners, it could be worthwhile to conduct a longitudinal study to find out how explicit L2 knowledge develops or changes at ELT departments throughout the participants' undergraduate studies for four years. The fluctuations in the participants' explicit knowledge, if any, could be associated with their lessons each year. Second, another longitudinal but relatively shorter study could be carried out to see the effects of pre-service teaching on explicit knowledge, especially

metalinguistic knowledge. For such a research, fourth-year ELT majors could be tested on their analyzed and metalinguistic knowledge at the beginning and end of the first term and at the end of the second term. Third, the present research could be replicated adding retrospective information about the strategies the subjects employ when completing the various tests of explicit knowledge so that we can gain better insights into how L2 learners utilize explicit knowledge. For such a research, think-aloud protocols could be utilized. Also, a study replicating the present research with late L2 learners at different proficiency levels could also be conducted. Finally, the relationship between learners' LI (Turkish in our case) and L2 (English) explicit knowledge could be examined.

Regarding the relationship between L2 explicit knowledge and L2 proficiency, some other suggestions could be made. For example, it might be worthwhile to examine the unique contribution of explicit knowledge, particularly analyzed knowledge, to L2 reading and writing comprehension above and beyond other factors such as syntactic knowledge, vocabulary knowledge, reading strategies, topic, task type, etc. Furthermore, considering that explicit knowledge might be useful for some structures but not for others (R. Ellis, 2006; Roehr & Gánem-Gutiérrez, 2009a), whether there is a relationship between metalinguistic knowledge about a specific grammatical structure and the ability to use that structure accurately in spontaneous and controlled production could also be examined.

Finally, methodology-wise, eye-tracking, which has gained popularity recently, could be suggested for further research in order to find out whether learners access linguistic knowledge during real-time processing. It could also be utilized to investigate the role of attention during L2 processing of unfamiliar forms and the influence of instructional treatments on L2 processing (Godfroid & Winke, 2015).

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APPENDICES

APPENDIX 1-Etik Kurul Onayı

Evrak Kayıt Tarihi: 26.02.2019	Protokol No: 16948	Tarih: 28.03.2019

ANADOLU ÜNİVERSİTESİ
SOSYAL VE BEŞERÎ BİLİMLER BİLİMSEL ARAŞTIRMA VE YAYIN ETİĞİ KURULU
KARAR BELGESİ

ÇALIŞMANIN TÜRÜ:	Doktora Tez Çalışması
KONU:	Eğitim Bilimleri
BAŞLIK:	Çözümlenmiş Bilgi ve Üstdil İşlevi Bilgisinden Oluşan Açık Yabancı Dil Bilgisi ve Bu Bilginin İngilizce Öğretmenliği Programı Birinci ve Dördüncü Sınıf Öğrencilerin Yabancı Dilde Okuma ve Yazma Performanslarına Yansımasının İncelenmesi (Investigating L2 Explicit Knowledge (Operationalized as Analyzed Knowledge and Metalinguistic Knowledge) and Its Reflection in Written Proficiency (Reading and Writing Performance) of Turkish EFL Learners: A Cross-sectional Study with First-year and Forth-year ELT Students)
~~PROJE~~/TEZ YÜRÜTÜCÜSÜ:	Prof. Dr. Gül DURMUŞOĞLU KÖSE
TEZ YAZARI:	Fatma AYDIN
ALT KOMİSYON GÖRÜŞÜ:	-
KARAR:	Olumlu

Prof.Dr. Coşkun BAYRAK *(Başkan-Eğitim Fak.)*	
Prof.Dr. T. Volkan YÜZER *(Başkan Yardımcısı-Açıköğretim Fak.)*	**Prof.Dr. Esra CEYHAN** *(Eğitim Fak.)*
Prof.Dr. Münevver ÇAKI *(Güzel Sanatlar Fak.)*	**Prof.Dr. M. Erkan ÜYÜMEZ** *(İkt. ve İdari Bil. Fak.)*
Prof.Dr. Handan DEVECİ *(Eğitim Fak.)*	**Prof.Dr. Emel ŞIKLAR** *(İkt. ve İdari Bil. Fak.)*

APPENDIX 2-Consent Form

ÖRNEK ARAŞTIRMA GÖNÜLLÜ KATILIM FORMU

Bu çalışma, "Çözümlenmiş bilgi ve üstdil işlevi bilgisinden oluşan açık yabancı dil bilgisi ve bu bilginin İngilizce öğretmenliği programı birinci ve dördüncü sınıf öğrencilerin yabancı dilde okuma ve yazma performanslarına yansımasının incelenmesi" (Investigating L2 Explicit Knowledge (Operationalized as Analyzed Knowledge and Metalinguistic Knowledge) and Its Reflection in Written Proficiency (Reading and Writing Performance) of Turkish EFL Learners: A Cross-sectional Study with First-year and Forth-year ELT Students) başlıklı bir araştırma çalışması olup, İngilizce'yi yabancı dil olarak öğrenen Türk öğrencilerin çözümlenmiş bilgi ve üstdil bilgisinden oluşan açık yabancı dil bilgisinin ne düzeyde olduğunu ve bu bilginin yabancı dilde okuma ve yazma performanslarına yansımasını incelemeyi ve bu bağlamda birinci ve dördüncü sınıfları karşılaştırmayı amaçlamaktadır. Çalışma, Fatma AYDIN tarafından yürütülmekte ve sonuçları ile öğrencilerin açık yabancı dil bilgisi ve bu bilgi ile okuma-yazma becerisi arasındaki ilişki ortaya konacak, böylelikle öğrencilerin yabancı dil gelişimine ışık tutulacaktır.

- Bu çalışmaya katılımınız gönüllülük esasına dayanmaktadır.
- Çalışmanın amacı doğrultusunda, çeşitli bilgi testleri, bir İngilizce okuduğunu anlama testi ve bir İngilizce kompozisyon uygulanarak sizden veriler toplanacaktır.
- İsminizi yazmak ya da kimliğinizi açığa çıkaracak bir bilgi vermek zorunda değilsiniz/araştırmada katılımcıların isimleri gizli tutulacaktır.
- Araştırma kapsamında toplanan veriler, sadece bilimsel amaçlar doğrultusunda kullanılacak, araştırmanın amacı dışında ya da bir başka araştırmada kullanılmayacak ve gerekmesi halinde, sizin (yazılı) izniniz olmadan başkalarıyla paylaşılmayacaktır.
- İstemeniz halinde sizden toplanan verileri inceleme hakkınız bulunmaktadır.
- Sizden toplanan veriler bilgisayar depolama ve klasik dosyalama yöntemi ile korunacak ve araştırma bitiminde arşivlenecek veya imha edilecektir.
- Veri toplama sürecinde/süreçlerinde size rahatsızlık verebilecek herhangi bir soru/talep olmayacaktır. Yine de katılımınız sırasında herhangi bir sebepten rahatsızlık hissederseniz çalışmadan istediğiniz zamanda ayrılabileceksiniz. Çalışmadan ayrılmanız durumunda sizden toplanan veriler çalışmadan çıkarılacak ve imha edilecektir.

Gönüllü katılım formunu okumak ve değerlendirmek üzere ayırdığınız zaman için teşekkür ederim. Çalışma hakkındaki sorularınızı Anadolu Üniversitesi Yabancı Diller Yüksekokulu'ndan Fatma AYDIN'a yöneltebilirsiniz.

Araştırmacı Adı: Fatma AYDIN
Adres: Anadolu Üniversitesi,
Yabancı Diller Yüksekokulu
İş Tel: 0222 335 05 80-6194
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Bu çalışmaya tamamen kendi rızamla, istediğim takdirde çalışmadan ayrılabileceğimi bilerek verdiğim bilgilerin bilimsel amaçlarla kullanılmasını kabul ediyorum.
(Lütfen bu formu doldurup imzaladıktan sonra veri toplayan kişiye veriniz.)

Katılımcı Ad ve Soyadı:
İmza:
Tarih:

APPENDIX 3-Grammatical Structures Included in the UGJT and LAT

Structure	Example of Learner Error	When Acquired	Pedagogic Grading	Grammatical Type
Verb complements	Liao says he wants buying a new car.	Early	Lower intermediate	Syntactical
Regular past tense	Martin complete his assignment yesterday.	Intermediate	Elementary/Lower intermediate	Morphological
Question tags	We will leave tomorrow, isn't it?	Late	No clear focus at any level	Syntactical
Yes/no questions	Did Keiko completed her homework?	Intermediate	Elementary/Lower intermediate	Morphological
Modal verbs	I must to brush my teeth now.	Early	Various levels	Morphological
Unreal conditionals	If he had been richer, she will marry him.	Late	Lower intermediate/Intermediate	Syntactical
Since and *for*	He has been living in New Zealand since three years.	Intermediate	Lower intermediate	Syntactical
Indefinite article	They had the very good time at the party.	Late	Elementary	Morphological

Ergative verbs	Between 1990 and 2000 the population of New Zealand was increased.	Late	Various levels	Syntactical
Possessive -s	Liao is still living in his rich uncle house.	Late	Elementary	Morphological
Plural -s	Martin sold a few old coin to a shop.	Early	No clear focus at any level	Morphological
Third person -s	Hiroshi live with his friend Koji.	Late	Elementary/Lower intermediate	Morphological
Relative clauses	The boat that my father bought it has sunk.	Late	Intermediate/Advanced	Syntactical
Embedded questions	Tom wanted to know what had I done.	Late	Intermediate	Syntactical
Dative alternation	The teacher explained John the answer.	Late	No clear focus at any level	Syntactical
Comparatives	The building is more bigger than your house.	Late	Elementary/Intermediate	Syntactical
Adverb placement	She writes very well English.	Late	Elementary/Lower intermediate	Syntactical

APPENDIX 4-Untimed Grammaticality Judgment Test

Name: _____

Read the following sentences. If you think that the sentence is grammatically correct, circle G for grammatical. If you think that the sentence is grammatically incorrect, circle U for ungrammatical. Also, correct the incorrect sentences and rewrite them.

1. I haven't seen him for a long time.
   G / U _____
2. I think that he is nicer and more intelligent than all the other students.
   G / U _____
3. The teacher explained the problem to the students.
   G / U _____
4. Liao says he wants buying a car next week.
   G / U _____
5. Martin completed his assignment and print it out.
   G / U _____
6. We will leave tomorrow, isn't it?
   G / U _____
7. He plays soccer very well.
   G / U _____
8. Did Keiko completed her homework?
   G / U _____
9. I must to brush my teeth now.
   G / U _____
10. If he had been richer, she will marry him.
    G / U _____
11. He has been living in New Zealand since three years.
    G / U _____
12. Pam wanted to know what I had told John.
    G / U _____
13. They had the very good time at the party.
    G / U _____
14. Between 1990 and 2000 the population of New Zealand was increased.
    G / U _____
15. Liao is still living in his rich uncle house.
    G / U _____
16. Martin sold a few old coins and banknote to a shop.
    G / U _____
17. I have been studying English since a long time.
    G / U _____
18. I can to speak French very well.
    G / U _____
19. Joseph miss an interesting party last weekend.
    G / U _____

APPENDIX 4 (Cont.)-Untimed Grammaticality Judgment Test

20. Keiko eats a lot of sushi.
G / U _____

21. Bill wanted to know where I had been.
G / U _____

22. Did Cathy cook dinner last night?
G / U _____

23. Rosemary reported the crime to the police.
G / U _____

24. Mary is taller than her sisters.
G / U _____

25. Hirashi live with his friend Koji.
G / U _____

26. Keum wants to buy a computer this weekend.
G / U _____

27. She writes very well English.
G / U _____

28. If she had worked hard, she would have passed the exam.
G / U _____

29. Tom wanted to know whether was I going.
G / U _____

30. I watched very funny movie last night.
G / U _____

31. The teacher explained John the answer.
G / U _____

32. I must finish my homework tonight.
G / U _____

33. Keum went to the school to speak to her children teacher.
G / U _____

34. Keiko has been studying in Auckland for three years.
G / U _____

35. This building is more bigger than your house.
G / U _____

36. That book isn't very interesting, is it?
G / U _____

37. Her English vocabulary increased a lot last year.
G / U _____

38. Hiroshi received a letter from his father yesterday.
G / U _____

39. Does Keum live in Auckland?
G / U _____

40. Liao left some pens and pencils at school.
G / U _____

41. If he hadn't come to New Zealand, he will stay in Japan.
G / U _____

APPENDIX 4 (Cont.)-Untimed Grammaticality Judgment Test

42. My car is more faster and more powerful than your car.
G / U _____
43. Joseph flew to Washington to meet the President's advisor.
G / U _____
44. Joseph wants finding a new job next month.
G / U _____
45. Liao works very hard but earns very little.
G / U _____
46. Japan is a very interesting country.
G / U _____
47. I can cook Chinese food very well.
G / U _____
48. They enjoyed the party very much.
G / U _____
49. The boys went to bed late last night, is it?
G / U _____
50. She wanted to know why had he studied German.
G / U _____
51. He reported his father the bad news.
G / U _____
52. Keiko spoke to the professor's secretary.
G / U _____
53. Liao stayed at home all day and finished the book.
G / U _____
54. Hiroshi found some keys on the ground.
G / U _____
55. They did not come at the right time.
G / U _____
56. If he had bought a ticket, he might have won the prize.
G / U _____
57. Martin says he wants to get married next year.
G / U _____
58. An accident was happened on the motorway.
G / U _____
59. Keum lives in Hamilton but work in Auckland.
G / U _____
60. She likes always watching television.
G / U _____
61. Did Martin visited his father yesterday?
G / U _____
62. Something bad happened last weekend.
G / U _____
63. Keum bought two present for her children.
G / U _____

APPENDIX 4 (Cont.)-Untimed Grammaticality Judgment Test

64. She is working very hard, isn't she?
G / U _____

65. The bird that my brother caught it has died.
G / U _____

66. The boat that my father bought it has sunk.
G / U _____

67. The book that Mary wrote won the prize.
G / U _____

68. The car that Bill has rented is a Toyota.
G / U _____

APPENDIX 5-Language Analysis Test

LANGUAGE ANALYSIS

Name: _____

The list in the box below contains words/phrases from an imaginary language along with their English translation. Following this, there will be 14 short English sentences, each with four possible translations into the imaginary language. Based on the examples given in the box, we would like to ask you to try and work out which of the four options is the correct translation of each sentence. Thank you very much.

kau	dog	**pa**	we, us
meu	cat	**xa**	you
kau meud bo	The dog is chasing the cat.	**pasau meud bo**	Our dog is chasing the cat.
kau meud bi	The dog was chasing the cat.	**pa meud bo**	We are chasing the cat.
so	watch	**paxbo**	We are chasing you.
ciu	mouse	**pa meud bor**	We aren't chasing the cat.

1. The dog is watching the cat.

a. kau meud so b. kau meud si

c. meu kaud so d. meu kaud si

2. The cat was watching the mouse.

a. meud ciu so b. meu ciud so

c. meud ciu si d. meu ciud si

3. You are watching us.

a. paxbo b. paxso

c. xapbo d. xapso

4. You were chasing the dog.

a. xa kaud bo b. pa kaud bo

c. pa kaud bi d. xa kaud bi

5. We were watching you.

a. xapsi b. paxso

c. paxsi d. paxbi

6. You are not watching the cat.

a. xa meud bor b. xa meud sor

c. xa meud sir d. xa meu sor

7. You are not chasing us.

a. paxbor b. xapbo

c. xapabor d. xapbor

8. We were not watching the dog.

a. pa kaud sir b. pa kau sir

c. pa kaud sor d. pa kaud bir

9. We were not chasing you.

a. xapbir b. paxbir

c. paxbor d. xapbor

10. Your cat is chasing the mouse.

a. xacu meud bo b. xaseu ciud bo

c. meuxa ciud bo d. ciuxa meud bo

11. You are not watching our dog.

a. xa paseud bor b. xa pasaud sor

c. xa pasaud so d. xa pasaud bor

12. Our mouse was not chasing the dog.

a. oasiu kaud bi b. xasiu kaud sir

c. xasiu kaud bi d. pasiu kaud bir

13. Your mouse is chasing us.

a. xa ciu pabo b. xasiu pbo

c. xaciu pa bo d. xasiu pabo

14. Our cat was not chasing your dog.

a. pseu xasaud bir b. pseu xsaud bir

c. paseu xasaud bir d. paseu xsaud bir

APPENDIX 6-Metalinguistic Knowledge Test

Name: _____

Part 1

In this part, there are 17 sentences. They are all ungrammatical. The part of the sentence containing the error is underlined. For each sentence, if you know a rule that explains why the sentence is ungrammatical, write it in English (or Turkish if you want) in the space provided. If you do not know a rule, leave it blank and go on to the next sentence.

Example:

This is the worstest film that I have ever seen.

Sıfatları superlative yapmak için sonuna *–est suffix* eklememiz gerekir. Ama bazı sıfatlar düzensizdir. "Bad" bulardan biridir ve *superlative* hali "the worst" tür. Yani sonuna tekrar *–est* ekleyemeyiz. Yukarıdaki altı çizili kelime sonundaki *–est suffix* yüzünden yanlıştır. Bu cümlenin doğrusu "This is the worst film that I have ever seen." olmalıdır.

Now start the test.

1. I have lost mine ring.

_____
_____
_____
_____

2. He saw a elephant.

_____
_____
_____
_____

3. I must to wash my hands.

_____
_____
_____
_____

4. Hiroshi wants visiting the United States this year.

_____
_____
_____
_____

APPENDIX 6 (Cont.)-Metalinguistic Knowledge Test

5. If Jane had asked me, I would give her some money.

6. Learning a language is more easier when you are young.

7. Keiko grew some rose in her garden.

8. His school grades were improved last year.

9. Martin lost his friend book.

10. Keum meet an old friend yesterday.

11. Because he was late, he called taxi.

APPENDIX 6 (Cont.)-Metalinguistic Knowledge Test

12. They were interested in what was I doing.

13. Does Liao has a Chinese wife?

14. Jenny likes very much her new job.

15. They have already finished, isn't it?

16. He has been saving money since 10 years.

17. The cake that you baked it tastes very nice.

Part 2

Section 1: Read the short passage below. Find ONE example in the passage for each of the grammatical features listed in the table. Write the examples in the table in the spaces provided. The first one is done for you.

APPENDIX 6 (Cont.)-Metalinguistic Knowledge Test

The materials are delivered to the factory by a supplier, who usually has no technical knowledge, but who happens to have the right contacts. We would normally expect the materials to arrive within three days, but this time it has taken longer.

Grammatical Feature	**Example**
definite article	the
verb	
noun	
preposition	
passive verb	
conditional verb	
adjective	
adverb	
countable noun	
indefinite article	
relative pronoun	
auxiliary verb	
modal verb	
past participle	
conjunction	
finite verb	
infinitive verb	
agent	
comparative form	
pronoun	

APPENDIX 6 (Cont.)-Metalinguistic Knowledge Test

Section 2: In the following sentences, underline the item requested in brackets:

1. Poor little Joe stood out in the snow. (SUBJECT)
2. Joe had nowhere to stay. (INFINITIVE)
3. The policeman chased Joe down the street. (DIRECT OBJECT)
4. The woman gave him some money. (INDIRECT OBJECT)

APPENDIX 7-MKT Part 1_Answer Key

MKT-Part I Items	Answer Key and Essential Terms	Additional Terms
1. I have lost mine ring.	**Possessive pronouns** replace nouns so they are not used with nouns. We can use a **possessive adjective** in this sentence instead.	
2. He saw a elephant.	We use **indefinite article** "an" before countable nouns beginning with a **vowel**.	consonant
3. I must to wash my hands.	**Modal verbs** should be followed by the **base form** of the verb.	bare infinitive
4. Hiroshi wants visiting the United States this year.	The verb following 'want' must be an **infinitive** not a **gerund**.	
5. If Jane had asked me, I would give her some money.	When '**if' clause** is in the **past perfect tense**, main clause verb is in the **past conditional**.	Type III, unreal past
6. Learning a language is more easier when you are young.	The 'er' ending indicates **comparison**, so 'more' is not needed.	short adjectives, long adjectives
7. Keiko grew some rose in her garden.	The noun is **countable**, so after 'some' use the **plural form**.	uncountable nouns, singular, quantifiers
8. His school grades were improved last year.	'Improve' should take the **active form** even though the **subject** is not the **agent**.	transitive, intransitive, passive voice
9. Martin lost his friend book.	We need **possessive 's'** to show that the friend owns the book.	
10. Keum meet an old friend yesterday.	It took place yesterday, so we should use the **past form of the verb**.	time adverb
11. Because he was late, he called taxi.	We should use the **indefinite article** "a" because it is not a specific taxi.	definite article, countable nouns
12. They were interested in what was I doing.	In **embedded questions/noun clauses**, the **word order** is the	

	same as that in **statements**.	
13. Does Liao has a Chinese wife?	We must use the **base form of the verb** in **questions** in **simple present tense**.	auxiliary verb,-s suffix, interrogatives
14. Jenny likes very much her new job.	**Verbs** are followed by **objects,** and **adverbial phrases** are used in the end.	word order
15. They have already finished, isn't it?	The form of the **question tag** must relate to the **subject** and **verb** in the **main clause**.	
16. He has been saving money since 10 years.	Use 'for' not 'since' for a noun phrase referring to **a period of time**.	the exact date
17. The cake that you baked it tastes very nice.	We should omit the **pronoun** 'it' in the **relative clause** because it refers to same thing as the **relative pronoun** 'that'.	

APPENDIX 8-MKT Part 2_Answer Key

The materials are delivered to the factory by a supplier, who usually has no technical knowledge, but who happens to have the right contacts. We would normally expect the materials to arrive within three days, but this time it has taken longer.

Grammatical Feature	**Example**
definite article	the
verb	delivered, has, happens, have, would, expect, arrive, take
noun	materials, factory, supplier, knowledge, contacts, materials, days, time
preposition	to, buy, within
passive verb	are delivered
conditional verb	would expect
adjective	no, technical, right, three
adverb	within three days, longer, normally, usually
countable noun	materials, factory, supplier, contacts, days
indefinite article	a
relative pronoun	who
auxiliary verb	are, would, has
modal verb	would
past participle	delivered, taken
conjunction	but
finite verb	has, happens**,** are delivered, would expect, has taken
infinitive verb	to have, to arrive
agent	a supplier
comparative form	longer
pronoun	we, it, who

APPENDIX 9-Reading Test

READING PASSAGE I – QUESTIONS 1-12

HOW BABIES LEARN LANGUAGE

During the first year of a child's life, parents and carers are concerned with its physical development; during the second year, they watch the baby's language development very carefully. It is interesting just how easily children learn language. Children who are just three or four years old, who cannot yet tie their shoelaces, are able to speak in full sentences without any specific language training.

The current view of child language development is that it is an instinct - something as natural as eating or sleeping. According to experts in this area, this language instinct is innate - something each of us is born with. But this prevailing view has not always enjoyed widespread acceptance.

In the middle of last century, experts of the time, including a renowned professor at Harvard University in the United States, regarded child language development as the process of learning through mere repetition. Language "habits" developed as young children were rewarded for repeating language correctly and ignored or punished when they used incorrect forms of language. Over time, a child, according to this theory, would learn language much like a dog might learn to behave properly through training.

Yet even though the modern view holds that language is instinctive, experts like Assistant Professor Lise Eliot are convinced that the interaction a child has with its parents and caregivers is crucial to its developments. The language of the parents and caregivers act as models for the developing child. In fact, a baby's day-to-day experience is so important that the child will learn to speak in a manner very similar to the model speakers it hears.

Given that the models parents provide are so important, it is interesting to consider the role of "baby talk" in the child's language development. Baby talk is the language produced by an adult speaker who is trying to exaggerate certain aspects of the language to capture the attention of a young baby.

Dr Roberta Golinkoff believes that babies benefit from baby talk. Experiments show that immediately after birth babies respond more to infant-directed talk than they do to adult-directed talk. When using baby talk, people exaggerate their facial expressions, which helps the baby to begin to understand what is being communicated. She also notes that the exaggerated nature and repetition of baby talk helps infants to learn the difference between sounds. Since babies have a great deal of information to process, baby talk helps. Although there is concern that baby talk may persist too long, Dr Golinkoff says that it stops being used as the child gets older, that is, when the child is better able to communicate with the parents.

APPENDIX 9 (Cont.)-Reading Test

Professor Jusczyk has made a particular study of babies' ability to recognise sounds, and says they recognise the sound of their own names as early as four and a half months. Babies know the meaning of Mummy and Daddy by about six months, which is earlier than was previously believed. By about nine months, babies begin recognizing frequent patterns in language. A baby will listen longer to the sounds that occur frequently, so it is good to frequently call the infant by its name.

An experiment at Johns Hopkins University in USA, in which researchers went to the homes of 16 nine-month-olds, confirms this view. The researchers arranged their visits for ten days out of a two week period. During each visit the researcher played an audio tape that included the same three stories. The stories included odd words such as "python" or "hornbill", words that were unlikely to be encountered in the babies' everyday experience. After a couple of weeks during which nothing was done, the babies were brought to the research lab, where they listened to two recorded lists of words. The first list included words heard in the story. The second included similar words, but not the exact ones that were used in the stories.

Jusczyk found the babies listened longer to the words that had appeared in the stories, which indicated that the babies had extracted individual words from the story. When a control group of 16 nine-month-olds, who had not heard the stories, listened to the two groups of words, they showed no preference for either list.

This does not mean that the babies actually understand the meanings of the words, just the sound patterns. It supports the idea that people are born to speak, and have the capacity to learn language from the day they are born. This ability is enhanced if they are involved in conversation. And, significantly, Dr Eliot reminds parents that babies and toddlers need to feel they are communicating. Clearly, sitting in front of the television is not enough; the baby must be having an interaction with another speaker.

READING PASSAGE II – QUESTIONS 13-25

TALKING POINT

Learning a second language fuels children's intelligence and makes their job prospects brighter. But the fact is, in New Zealand, as in many other English-speaking countries, speakers of two or more languages are in the minority. Eighty-four per cent of New Zealanders are monolingual (speakers of only one language). This leaves a small number who claim to speak two or more languages — a small percentage of whom were born in New Zealand.

No matter how proud people are of their cultural roots, to speak anything other than English is a marker of difference here. That's why eight-year-old Tiffany Dvorak no longer wishes to speak

APPENDIX 9 (Cont.)-Reading Test

her mother-tongue, German, and eight-year-old Ani Powell is embarrassed when people comment on the fact that she is able to speak Maori*, As Joanne Powell, Ani's mother, points out: 'In Europe, it's not unusual for kids to be bilingual. But, if you speak another language to your children in New Zealand, there are some people who think that you are not helping them to become a member of society."

But in fact, the general agreement among experts is that learning a second language is good for children. Experts believe that bilinguals — people who speak two languages — have a clear learning advantage over their monolingual schoolmates. This depends on how much of each language they can speak, not on which language is used, so it doesn't matter whether they are learning Maori or German or Chinese or any other language.

Cathie Elder, a professor of Language Teaching and Learning at Auckland University, says: 'A lot of studies have shown that children who speak more than one language sometimes learn one language more slowly, but in the end they do as well as their monolingual schoolmates, and often better, in other subjects. The view is that there is an improvement in general intelligence from the effort of learning another language.

Dr. Brigitte Halford, a professor of linguistics at Freiburg University in Germany, agrees. 'Bilinguals tend to use language better as a whole,' she says. 'They also display greater creativity and problem-solving ability, and they learn further languages more easily."

So with all of the benefits, why do we not show more enthusiasm for learning other languages? Parents and teachers involved in bilingual education say pressure from friends at school, general attitudes to other languages in English-speaking countries, and problems in the school system are to blame.

In New Zealand, immigrants face the possibility of culture being lost along with the language their children no longer wish to speak. Tiffany's mother, Susanne Dvorak, has experienced this. When she and husband Dieter left Germany six years ago to start up a new life in New Zealand, they thought it would be the perfect opportunity to raise their two-year-old as a bilingual. After all, bilingual Turkish families in Germany were normal and Susanne had read all the books she could find on the subject.

***Maori:** the language spoken by the Maori people, the first native people of New Zealand

The idea was to have home as a German language environment and for Tiffany to learn English at nursery school. But when Tiffany went to nursery school she stopped talking completely. She was quiet for about two or three months. Then, when she took up talking again, it was only in English. Concerned for her language development, Dieter started speaking English to his daughter while Susanne continued in German.

APPENDIX 9 (Cont.)-Reading Test

Today, when Susanne speaks to her daughter in German, she still answers in English. 'Or sometimes she speaks half and half. I checked with her teacher and she very seldom mixes up German and English at school. She speaks English like a New Zealander. It's her German that's behind,' says Susanne.

Professor Halford, also a mother of two bilingual children, says, “It's normal for kids to refuse to speak their home language at the stage when they start to socialise with other kids in kindergarten or school. But, she says, this depends a lot on the attitudes of the societies in question. In monolingual societies, like New Zealand, 'kids want to be like all the others and sometimes use bilingualism as one of the battlefields for finding their own identity in contrast to that of their parents.”

She supports Susanne's approach of not pressuring her daughter. 'Never force the child to use a specific language, just keep using it yourself. The child will accept that. There is often a time when children or teenagers will need to establish their own identity as different from their schoolmates and they may use their other language to do so.

Cathie Elder thinks immigrant parents should only speak English to their children if they are able to use English well themselves. “What parents should do is provide rich language experiences for their children in whatever language they speak well. They may feel like outsiders and want to speak the local language, but it is more important for the child's language development to provide a lot of language experience in any language.

There can be differences between children in attitudes to learning languages. Susanne Dvorak's two-year-old son, Danyon, is already showing signs of speaking German and English equally well. While her 'ideal' scenario hasn't happened with Tiffany, she is aware that her daughter has a certain bilingual ability which, although mainly passive at this stage, may develop later on.

Joanne Powell feels the same way about her daughter, Ani. 'At the moment she may not want to speak Maori but that's okay because she'll pick it up again in her own time. It's more important that she has the ability to understand who she is. By learning another language she can open the door to another culture.'

Donna Chan, 25, a marketing specialist for IBM, arrived here with her parents from Hong Kong when she was four. She also remembers refusing to speak Chinese when she started primary school. But now she appreciates she had the chance to be bilingual. "It's quite beneficial speaking another language in my job. Last year, my company sent me to a trade fair in Hong Kong because I could speak Chinese. Being bilingual definitely opens doors," she says.

APPENDIX 9 (Cont.)-Reading Test

You have 40 MINUTES to complete this test. Write all your answers on the answer sheet.

Reading Passage I - Questions 1-6

Complete the summary below.

Choose NO MORE THAN THREE WORDS AND/OR NUMBERS for each answer!!!

The study of **(1)** ..... in very young children has changed considerably in the last 50 years. It has been established that children can speak independently at age **(2)** ....., and that this ability is innate. The child will, in fact, follow the speech patterns and linguistic behaviour of its carers and parents who act as **(3)** .....

Babies actually benefit from "baby talk", in which adults **(4)** ..... both sounds and facial expressions. Babies' ability to **(5)** ..... sound patterns rather than words comes earlier than was previously thought. It is very important that babies are included in **(6)** .....

Questions 7-12

Do the following statements agree with the views of the writer in the Reading Passage? Write:

YES	*if the statement agrees with the views of the writer.*
NO	*if the statement contradicts what the writer thinks.*
NOT GIVEN	*if it is impossible to know what the writer's point of view is.*

7) Children can learn their first language without being taught.
8) From the time of their birth, humans seem to have an ability to learn language.
9) According to experts in the 1950s and '60s, language learning is very similar to the training of animals.
10) Repetition in language learning is important, according to Dr Eliot.
11) Dr Golinkoff is concerned that "baby talk" is spoken too much by some parents.
12) The first word a child learns to recognise is usually "Mummy" or "Daddy".

APPENDIX 9 (Cont.)-Reading Test

Reading Passage II - Questions 13-16

Do the following statements agree with the views of the writer in the Reading Passage? Write:

YES	*if the statement agrees with the views of the writer.*
NO	*if the statement contradicts what the writer thinks.*
NOT GIVEN	*if it is impossible to know what the writer's point of view is.*

13) Most people who speak a second language in New Zealand were born in another country.

14) Most New Zealanders believe it is good to teach children a second language.

15) Chinese is the most common foreign language in New Zealand.

16) Some languages develop your intelligence more than others.

Questions 17-23

Look at the following statements (Questions 17-23) and the list of people below. Match each statement with the correct person, A-E. Write the correct letter, A-E, on your answer sheet. You may use any letter more than once.

17) Children learning two languages may learn one language faster.

18) It has been unexpectedly difficult to raise a bilingual child in New Zealand.

19) Her daughter sometimes speaks a mixture of two languages.

20) Children's attitudes to language depend on general social attitudes.

21) It is not important which language parents speak with their children.

22) Learning a second language provides opportunities to learn another culture.

23) Speaking a second language provides work opportunities.

List of People

A. Cathie Elder

B. Brigitte Halford

C. Susanne Dvorak

D. Joanne Powell

E. Donna Chan

APPENDIX 9 (Cont.)-Reading Test

Question 24
Choose TWO letters, A-F.
Write the correct letters on your answer sheet.

24) Which TWO people stopped speaking one language as a child?

A Donna Chan
B Susanne Dvorak
C Tiffany Dvorak
D Cathie Elder
E Brigitte Halford
F Joanne Powell

Question 25
Choose TWO letters, A-F.
Write the correct letters on your answer sheet.

25) Which TWO people think that their children's language may develop as they get older?

E Donna Chan
F Susanne Dvorak
G Tiffany Dvorak
H Cathie Elder
G Brigitte Halford
H Joanne Powell

APPENDIX 9 (Cont.)-Reading Test

Name:_____

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

14. _____

15. _____

16. _____

17. _____

18. _____

19. _____

20. _____

21. _____

22. _____

23. _____

24. _____

25. _____

APPENDIX 10-Writing Test

Name:_____

You should spend about 40 minutes on this task.

Write about the following topic:

Some people think the teaching of a foreign language should be compulsory at all primary schools. To what extent do you agree or disagree with this view?"

Give reasons for your answer and include any relevant examples from your own knowledge of experience.

Write at least 250 words.

Write your text on the next page.

APPENDIX 11-Writing Rubric

General Writing Rubric

This rubric uses four 5-point scales (20 total points). Select some or all of the topics for assessment purposes. For example, vocabulary may be deleted or combined with another category.

Content

5 Contextually correct
Almost error-free
Genuine effort to write like a native speaker
4 Comprehensible, generally correct
Occasional error
3 Frequent errors that confuse reader and require guessing at meaning
Obvious translation from English that is difficult to follow
2 Errors interfere with comprehensibility
1 Most clauses contain errors
Many phrases are incomprehensible
Fails to communicate main ideas
0 No response
Does not fit topic

Coherency

5 Smooth flow
Very good transition
Appropriate punctuation
4 Good use of transition, flow
Each clause fits within context
3 Choppy
Visibly translated
Comprehensible
2 Much use of English
Many restatements of same information
Uses language significantly below expected level
1 Inappropriate phrases, isolated words
Uses unrelated vocabulary
0 Incomprehensible
No response

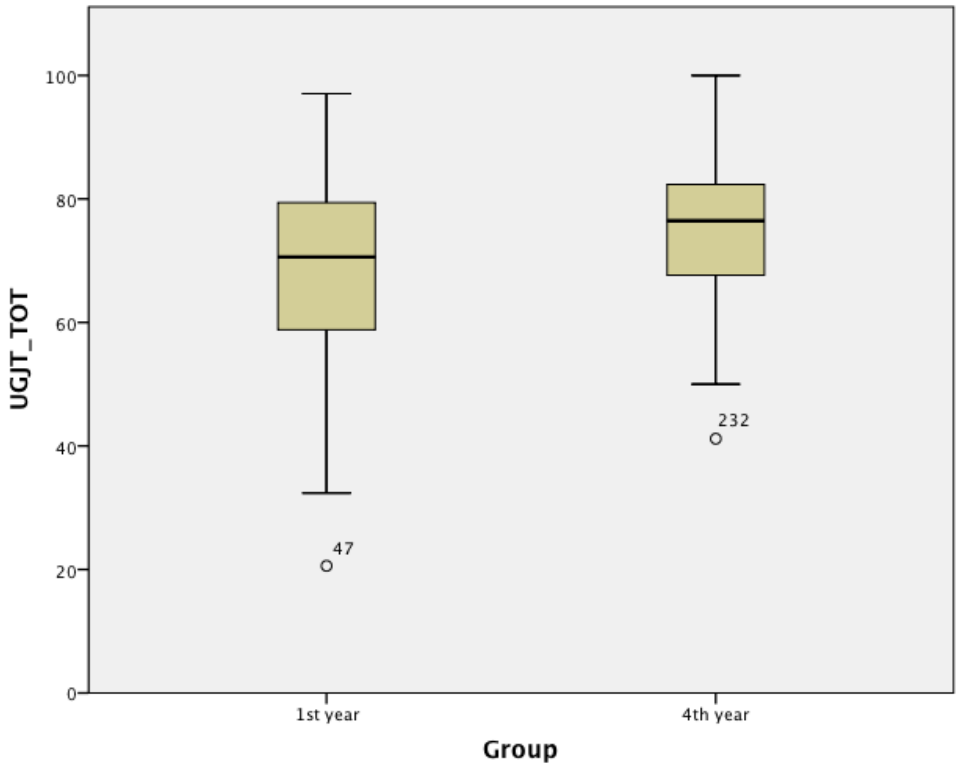
Syntax

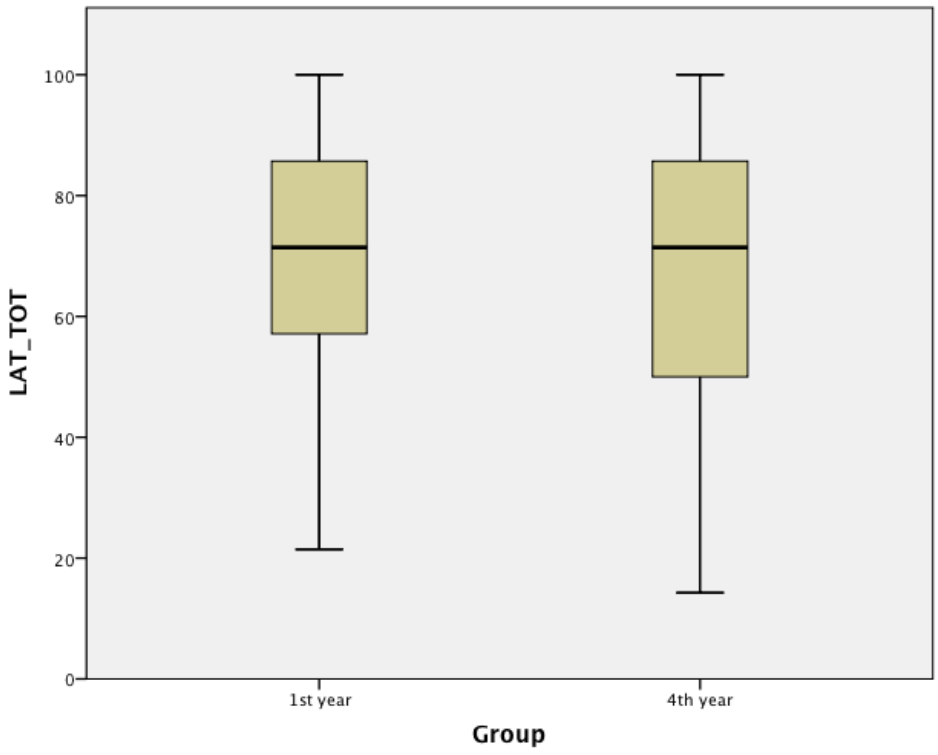
5 No grammatical errors
4 Few syntax errors
Minor errors that do not impede communication
3 Frequent errors
2 Many errors (agreement, verb forms)
Errors in basic structures
Errors impede communication
1 Most structures incorrect
Constant use of infinitive; no conjugation
Reader understands only because of past experience
0 No attempt
Indecipherable or illegible response

Vocabulary

5 Very good; wide range
Uses appropriate and new words and expressions
Interesting response
4 Good, appropriate vocabulary
Generally good response
3 Vocabulary is just adequate to respond
No attempt to vary expressions
Basic
2 Inadequate vocabulary or incorrect use of lexical items
Communication difficult
1 Incomplete sentences or fragments
Vocabulary repeated
Inappropriate vocabulary
0 No attempt
Totally irrelevant answer

APPENDIX 12-Boxplots and Outliers





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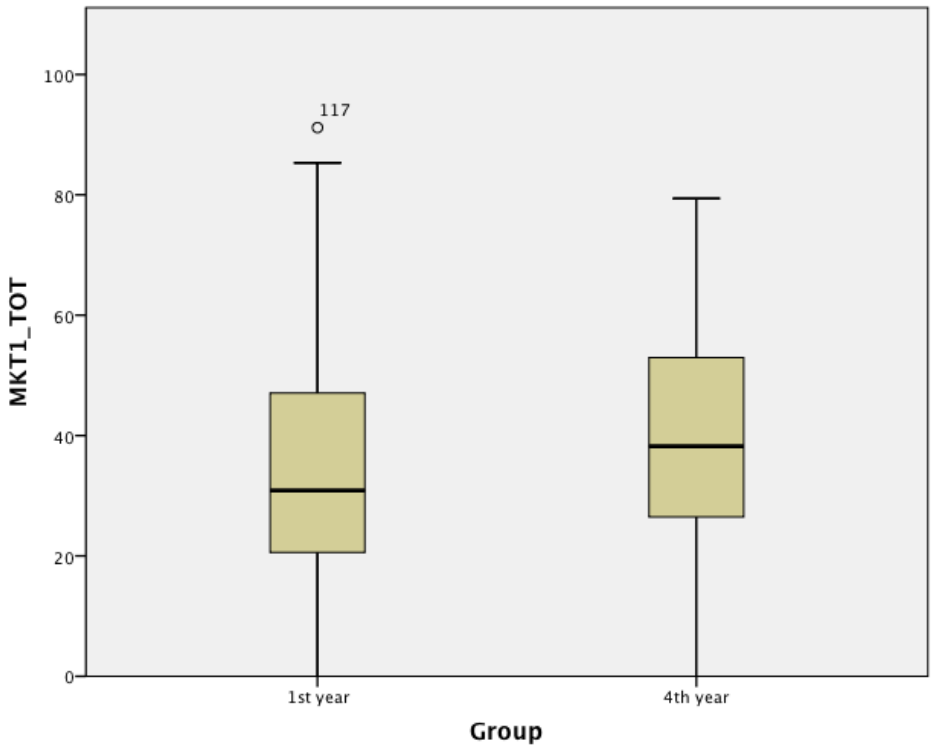

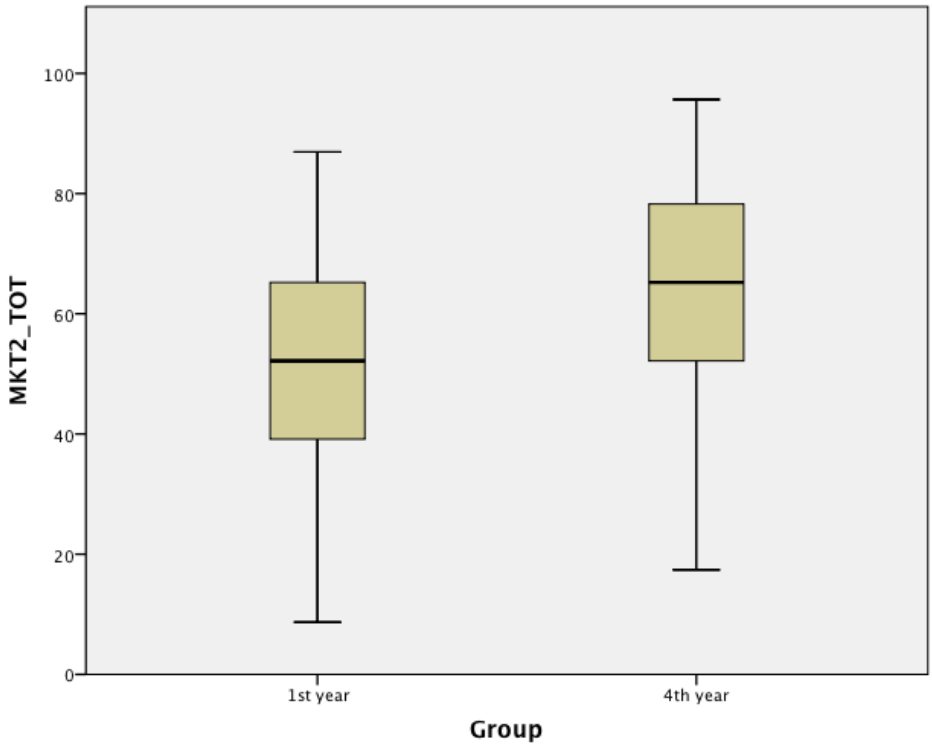

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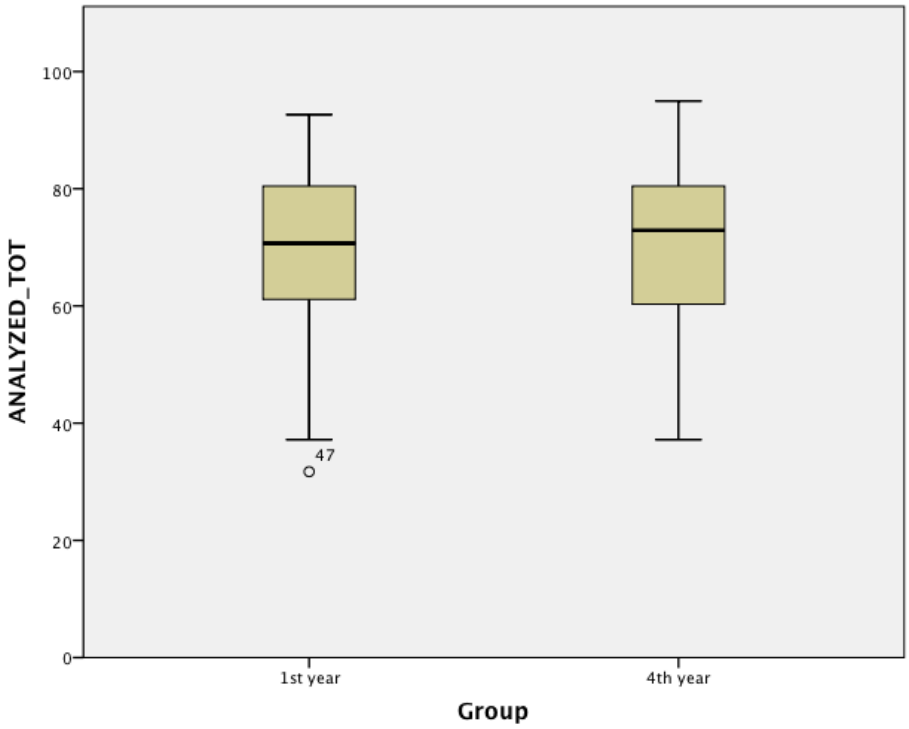

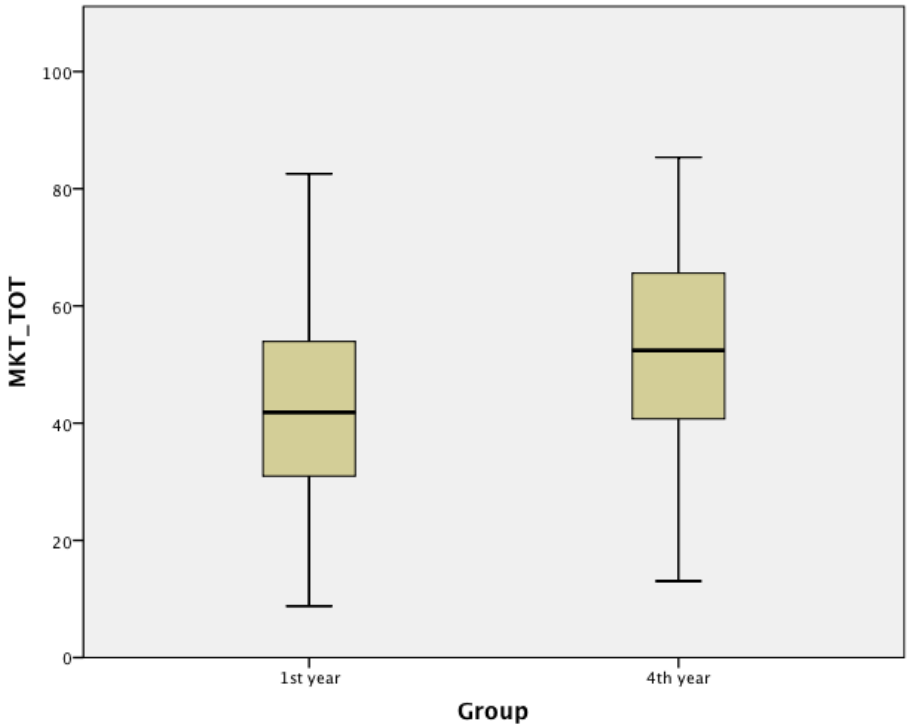

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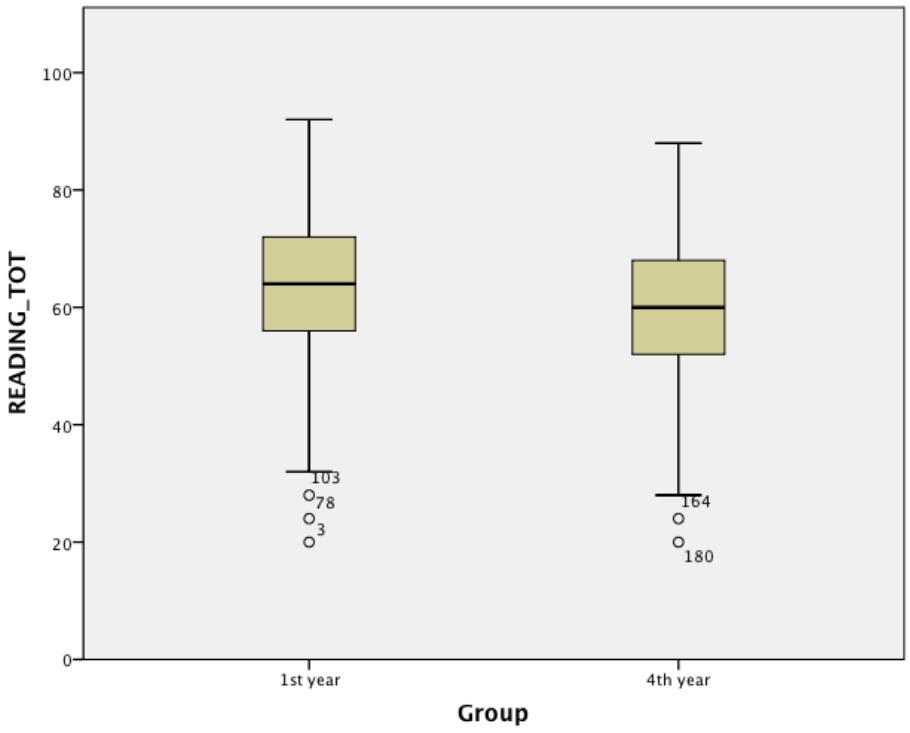
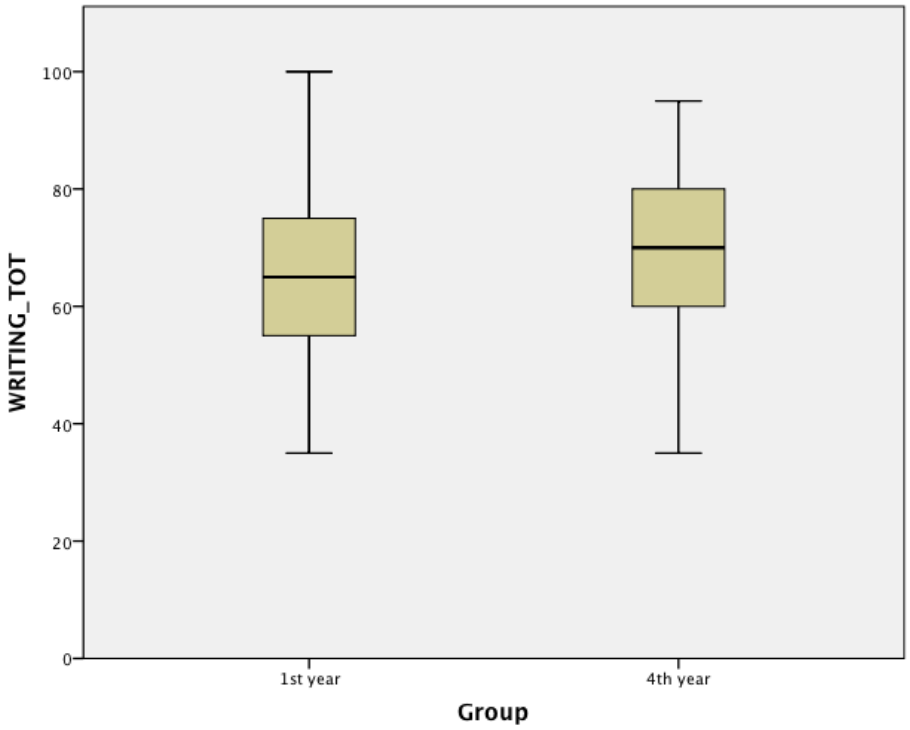
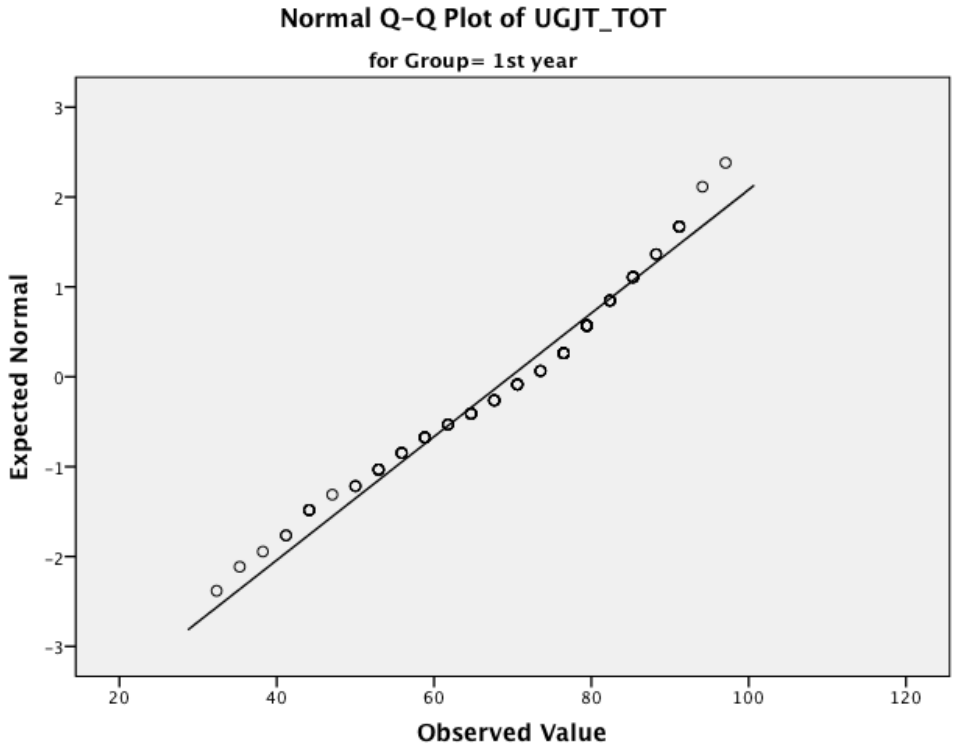
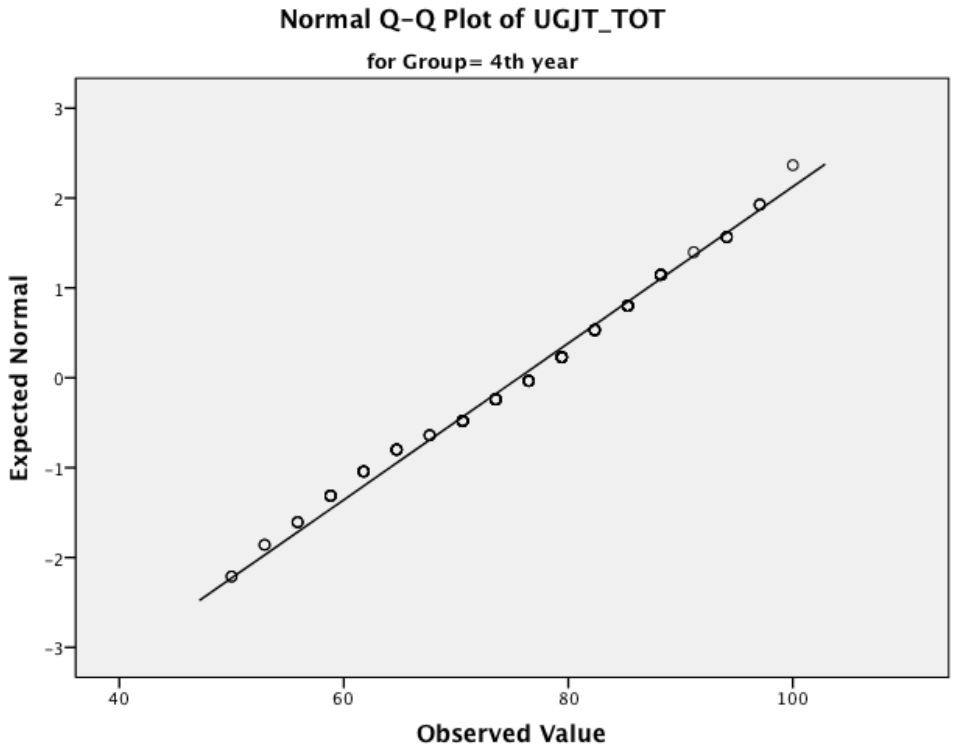




APPENDIX 13_Q-Q Plots and Histograms





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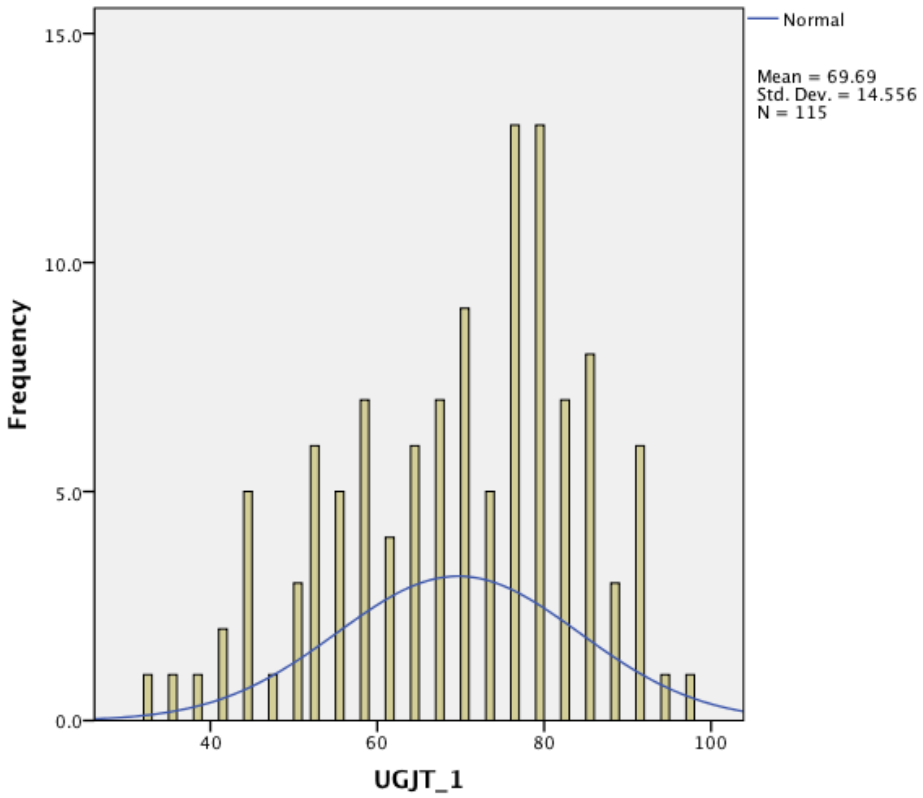

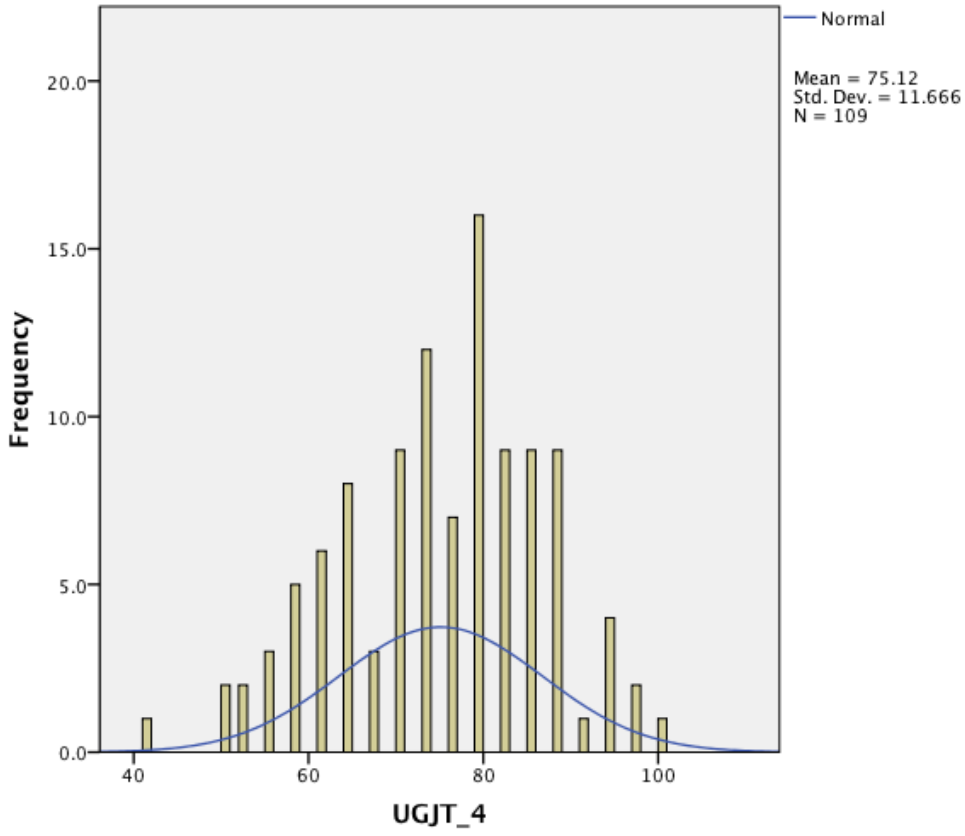

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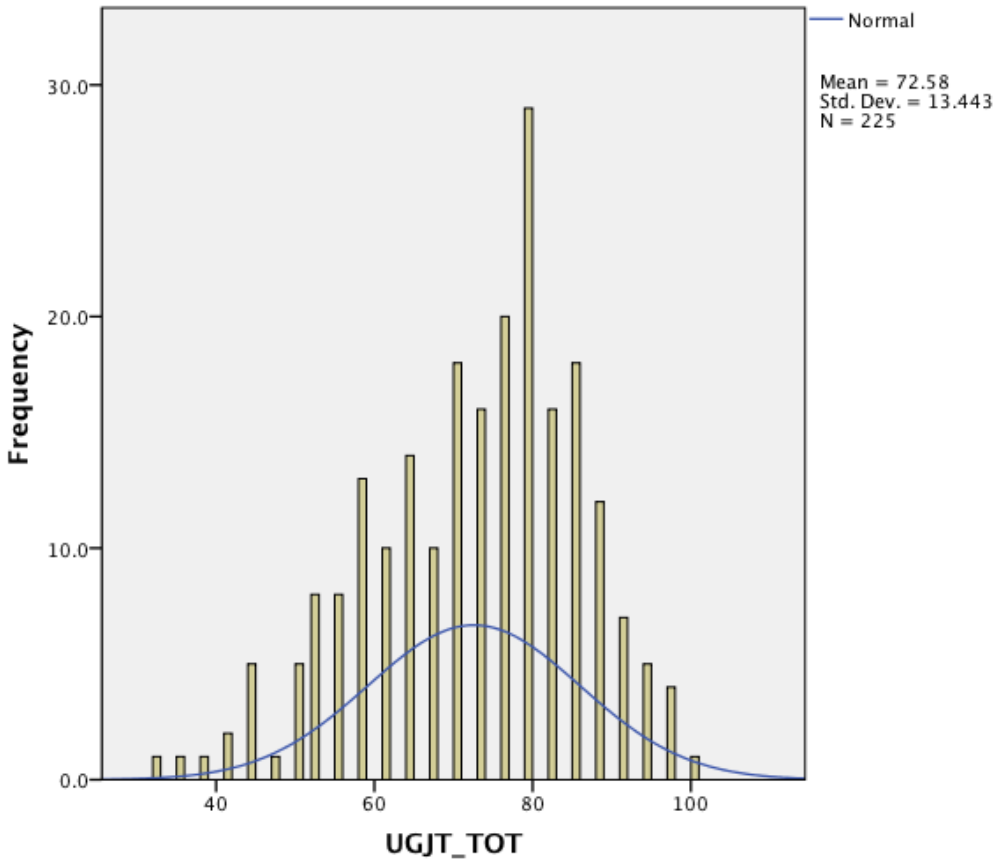

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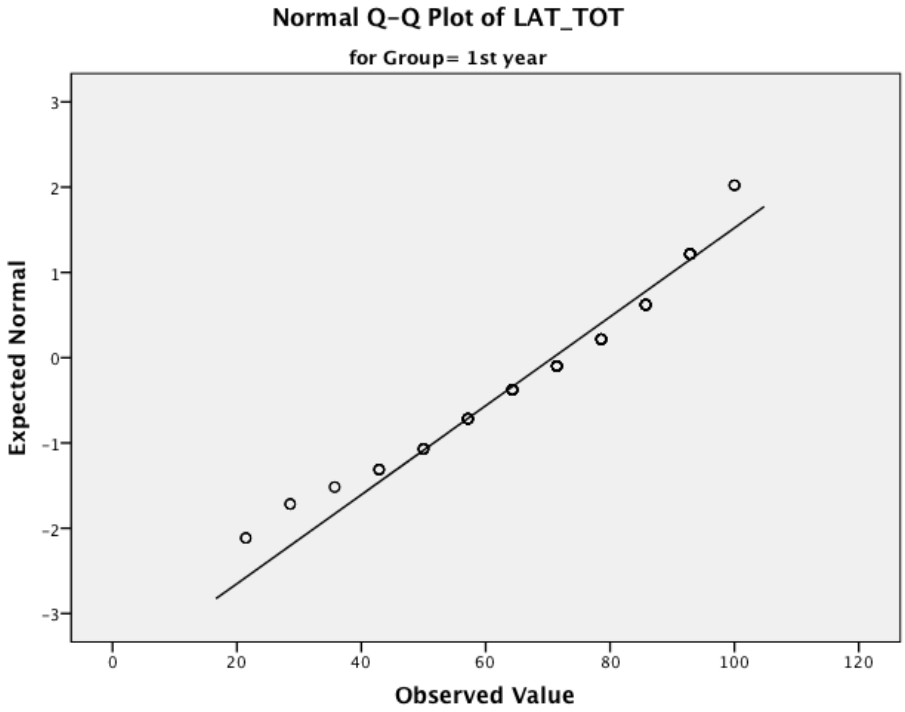

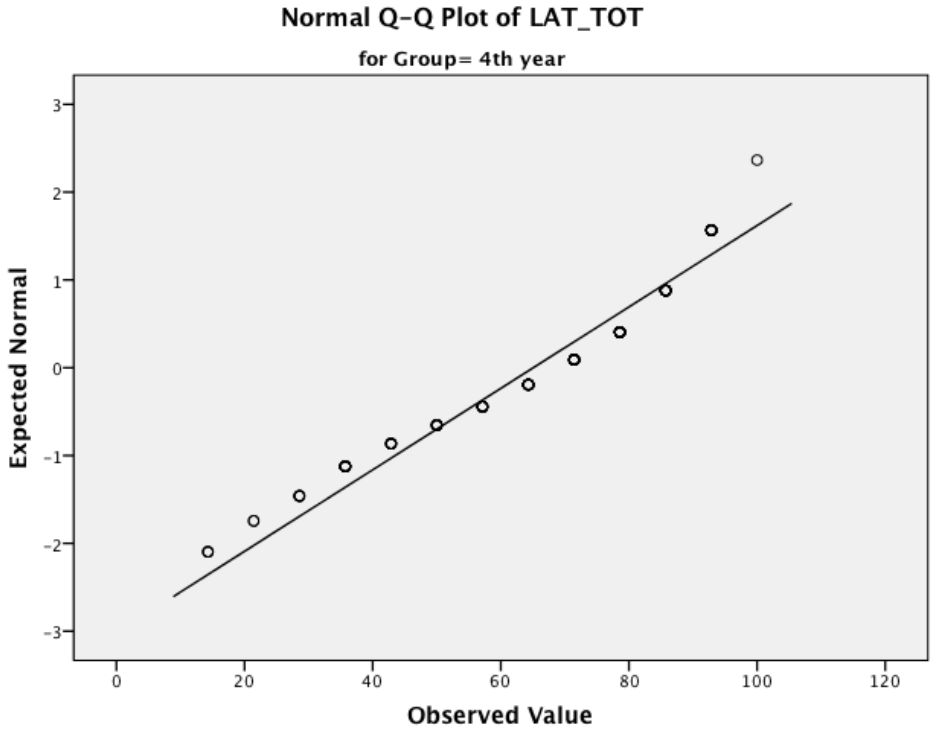

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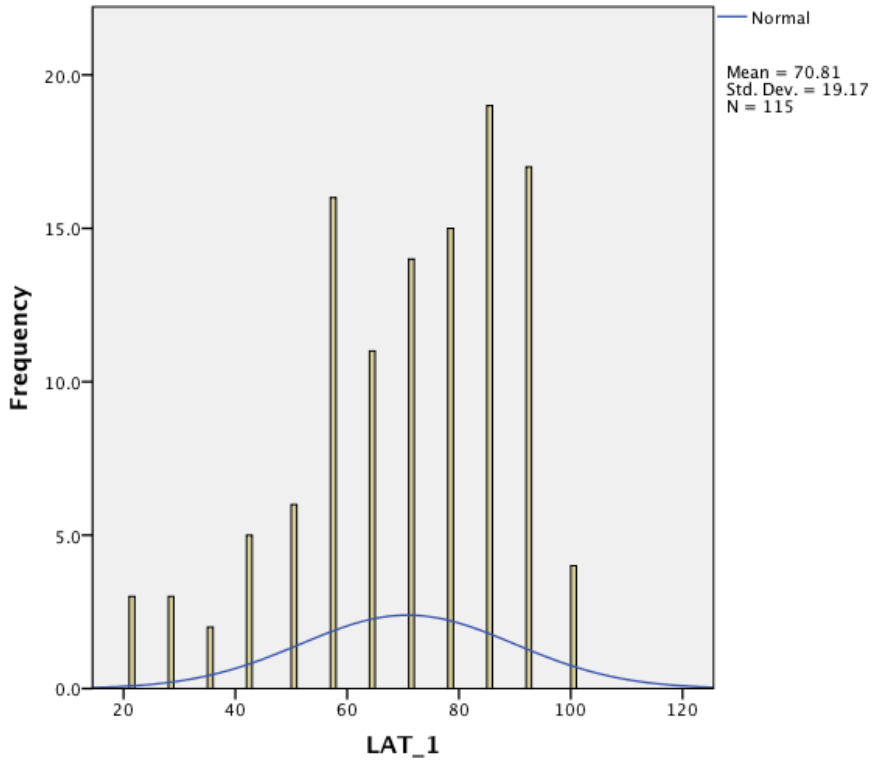

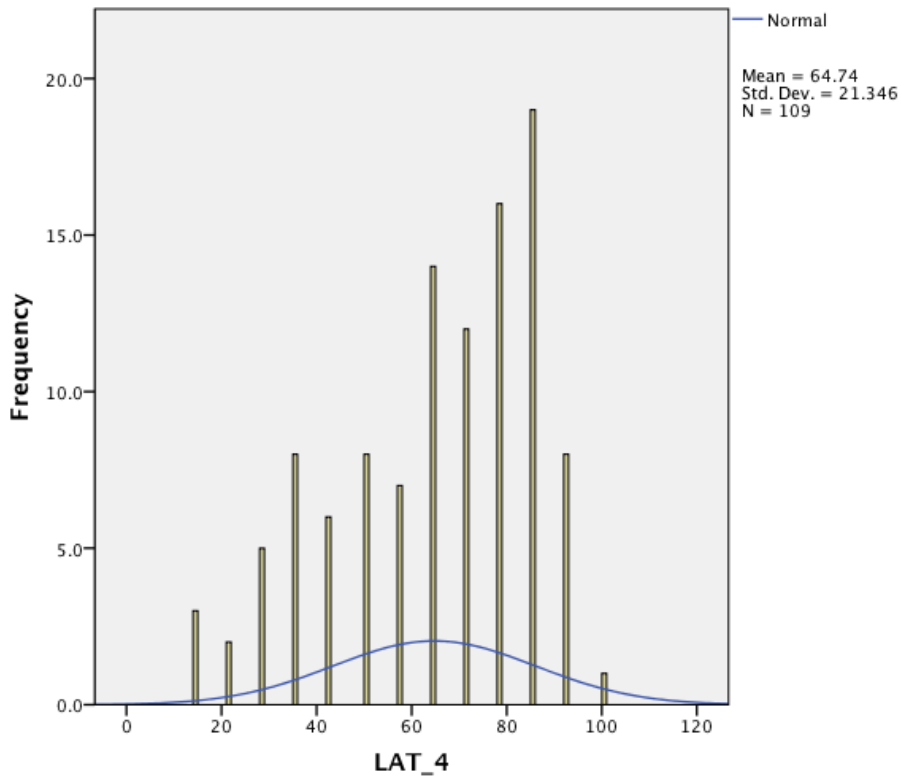

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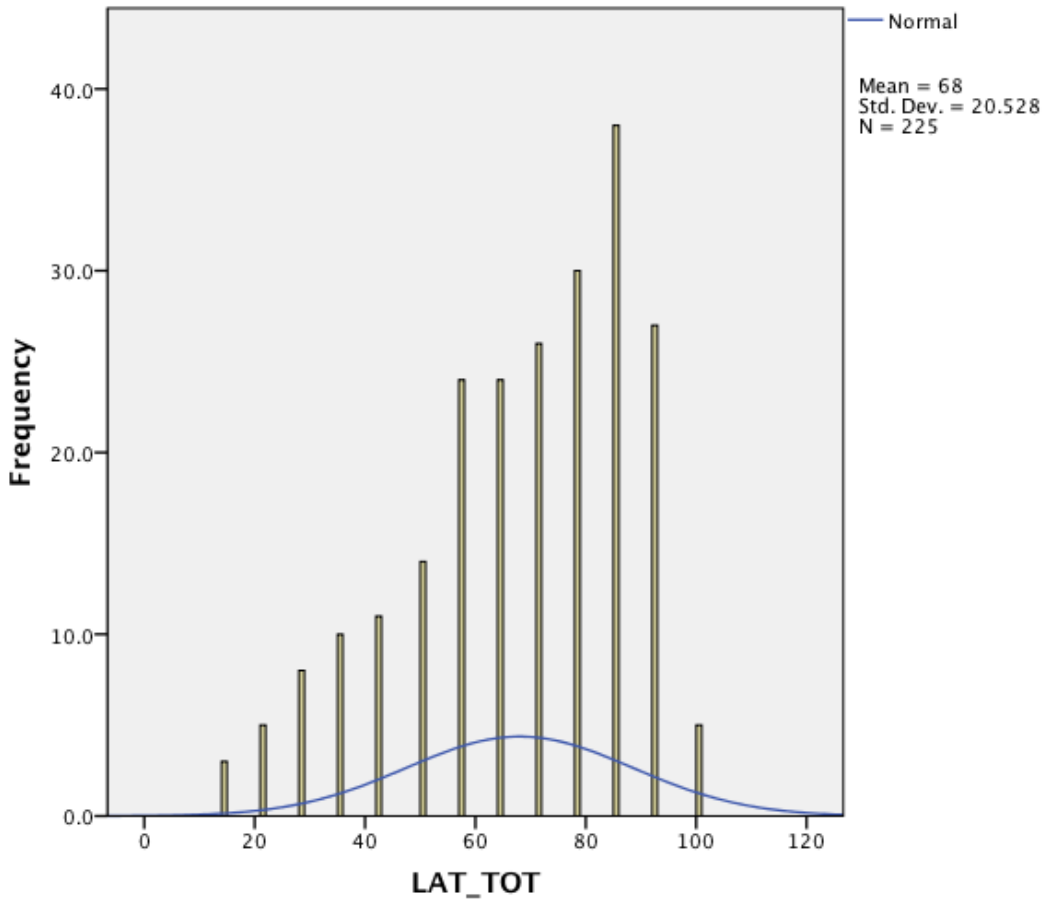

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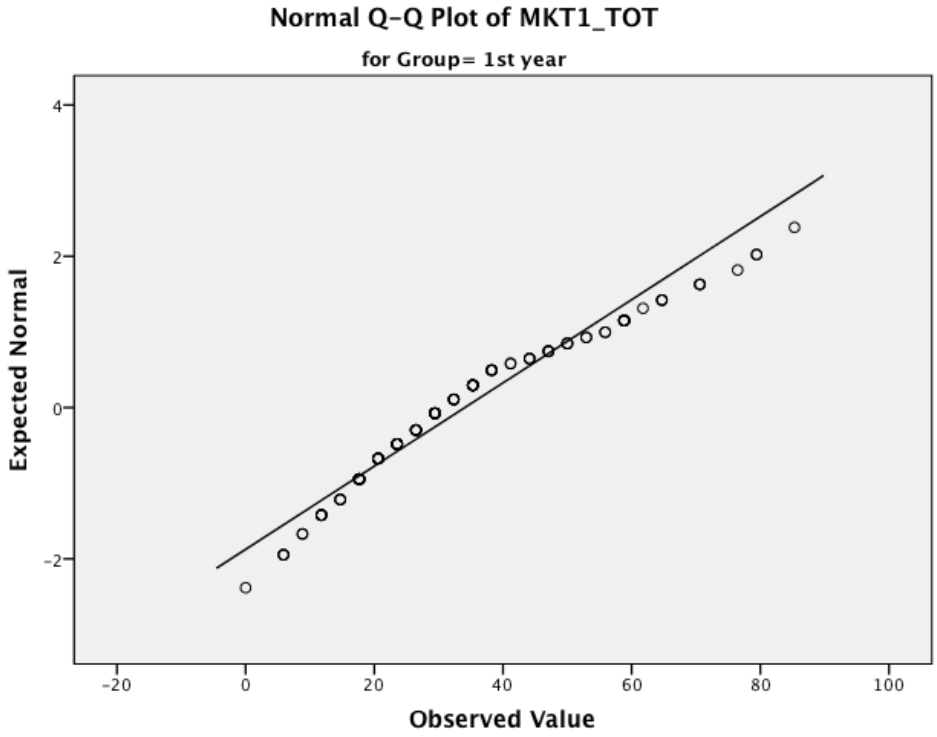

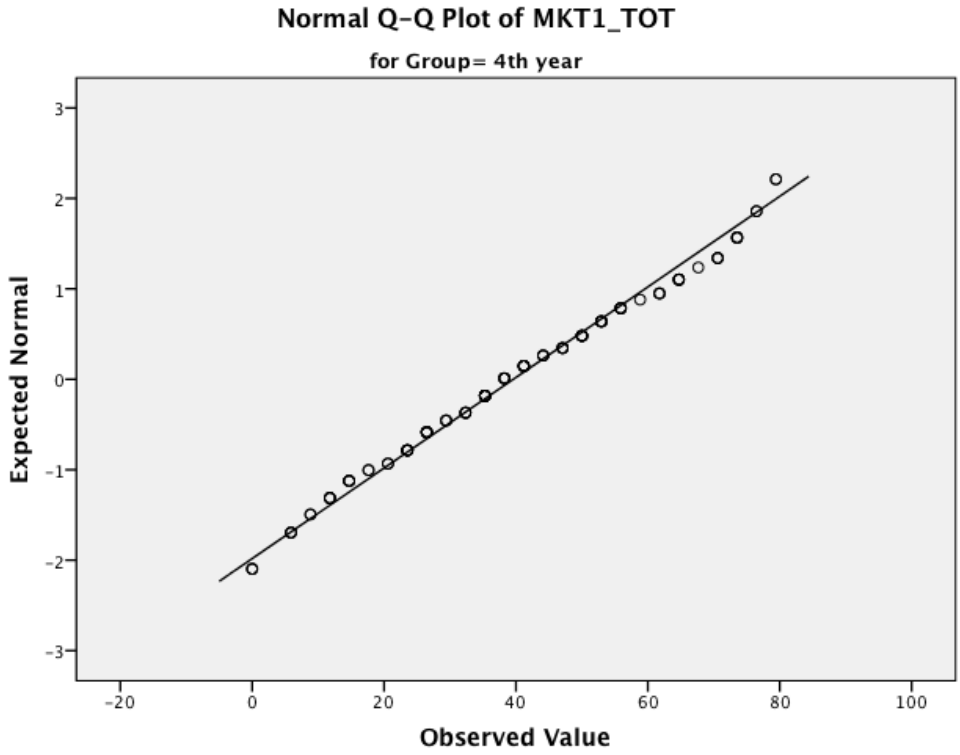

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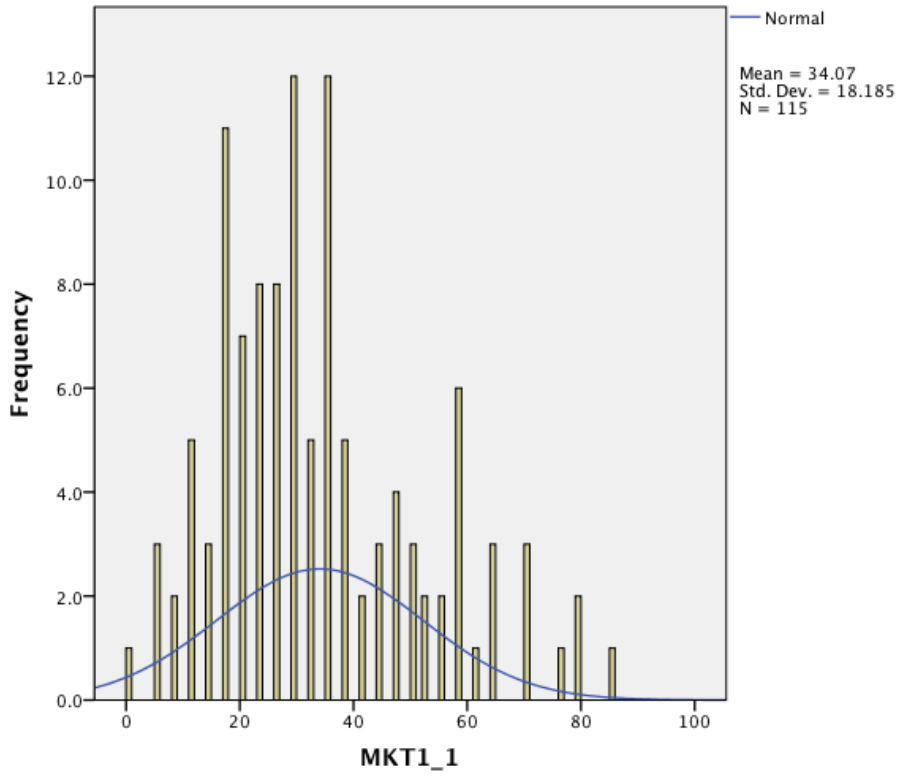

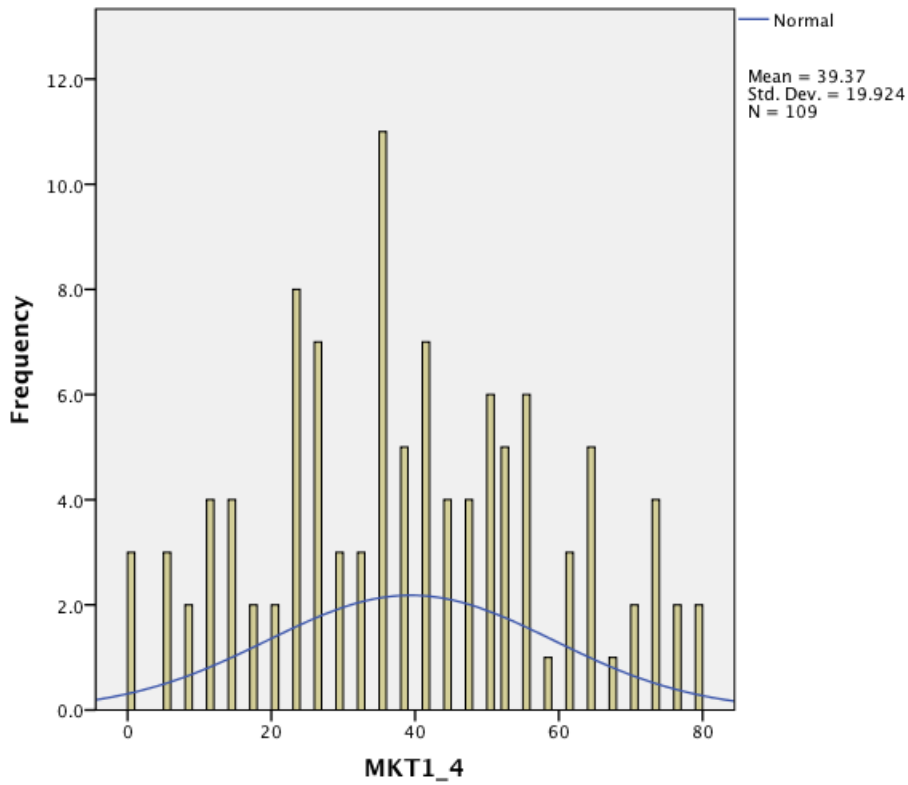

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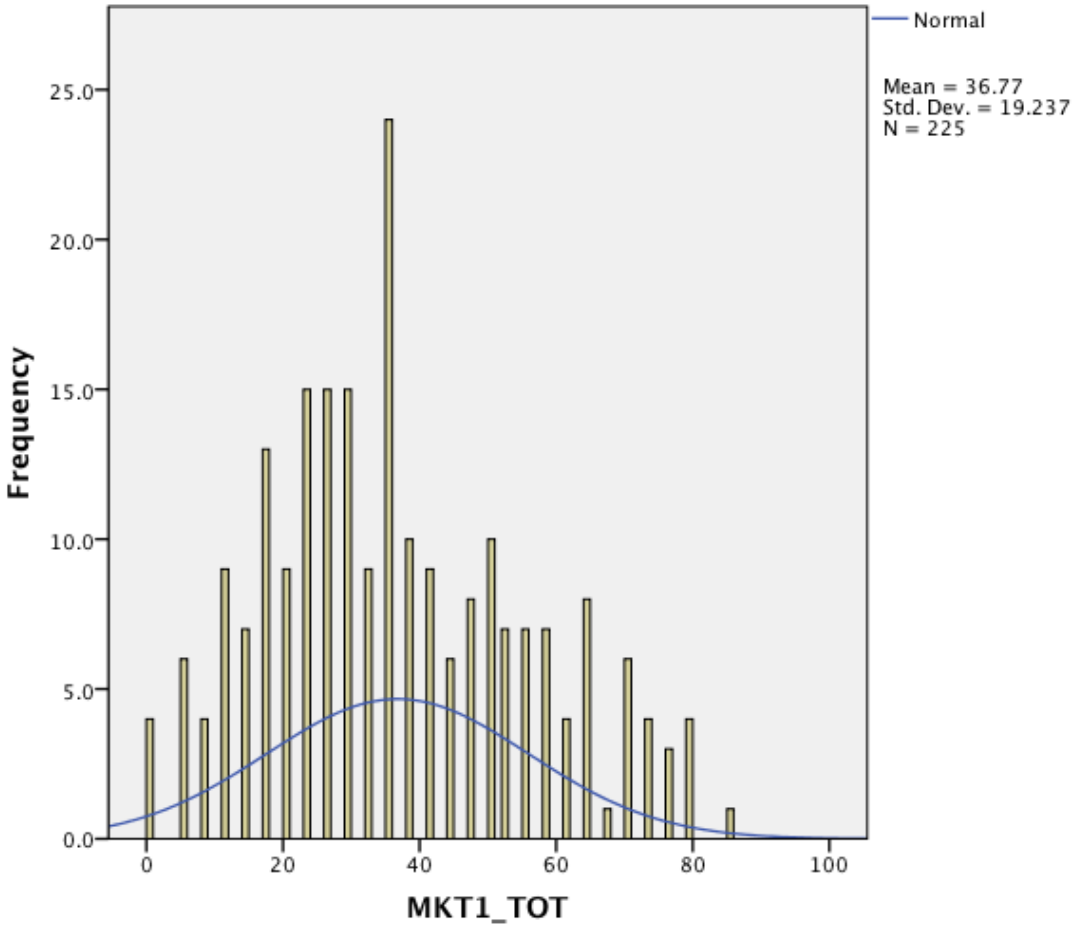

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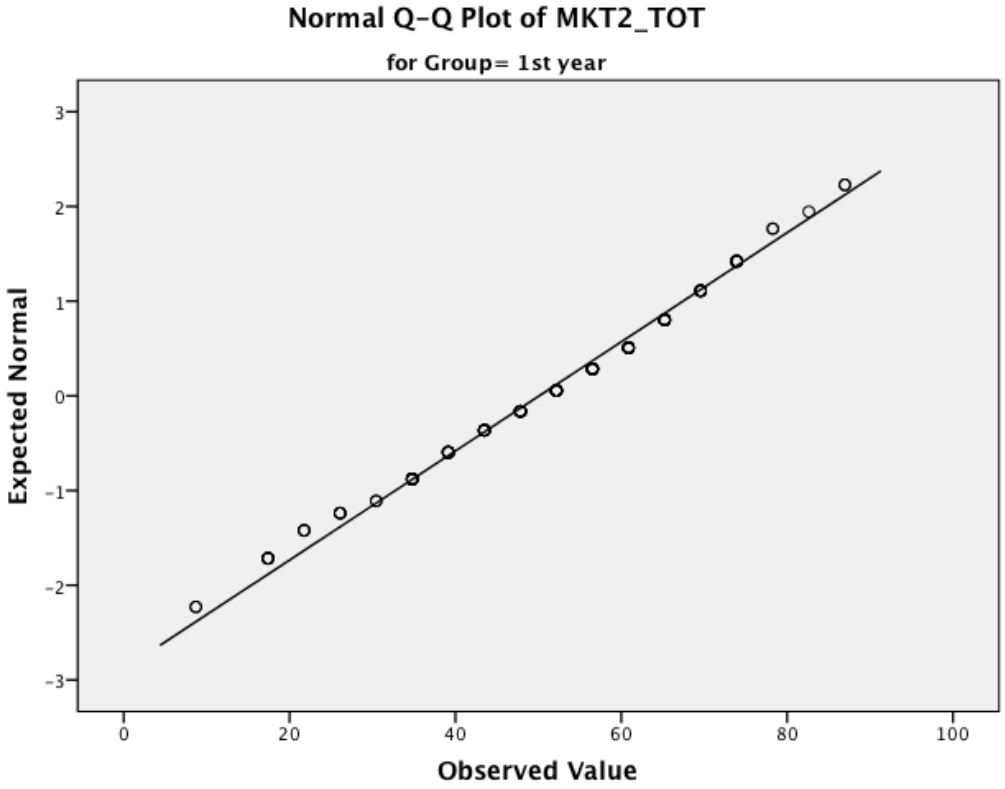

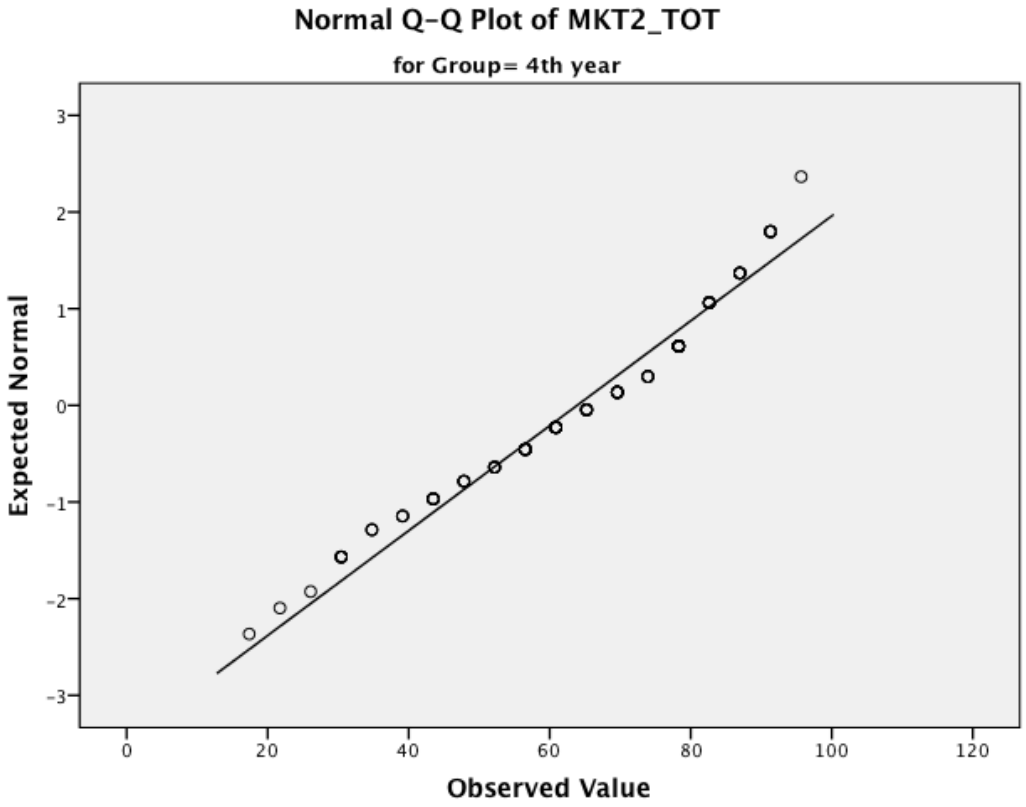

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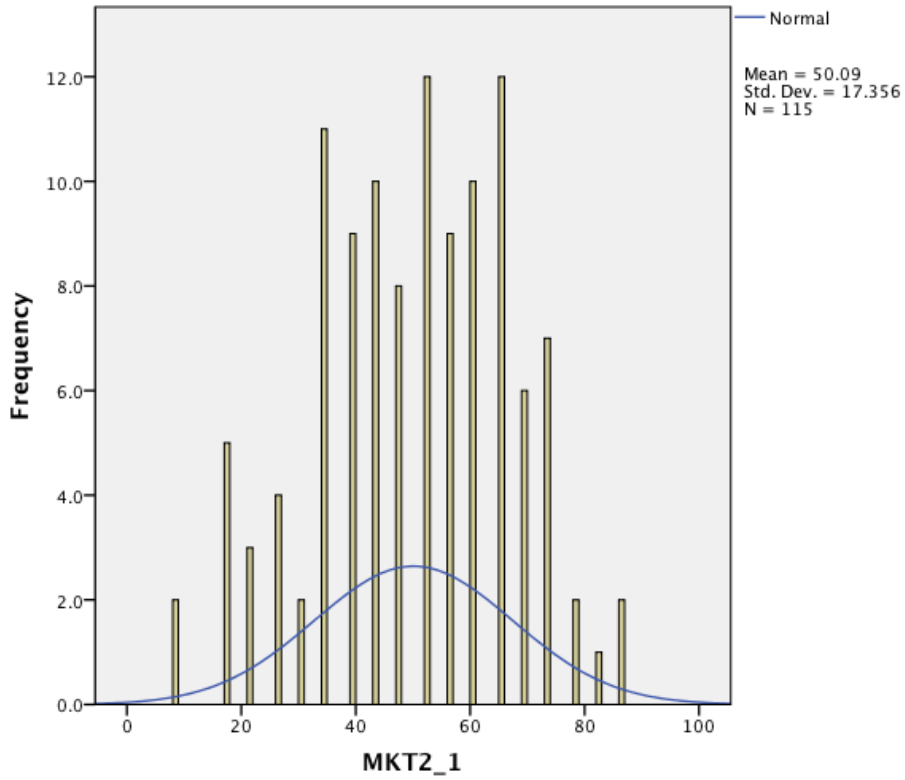

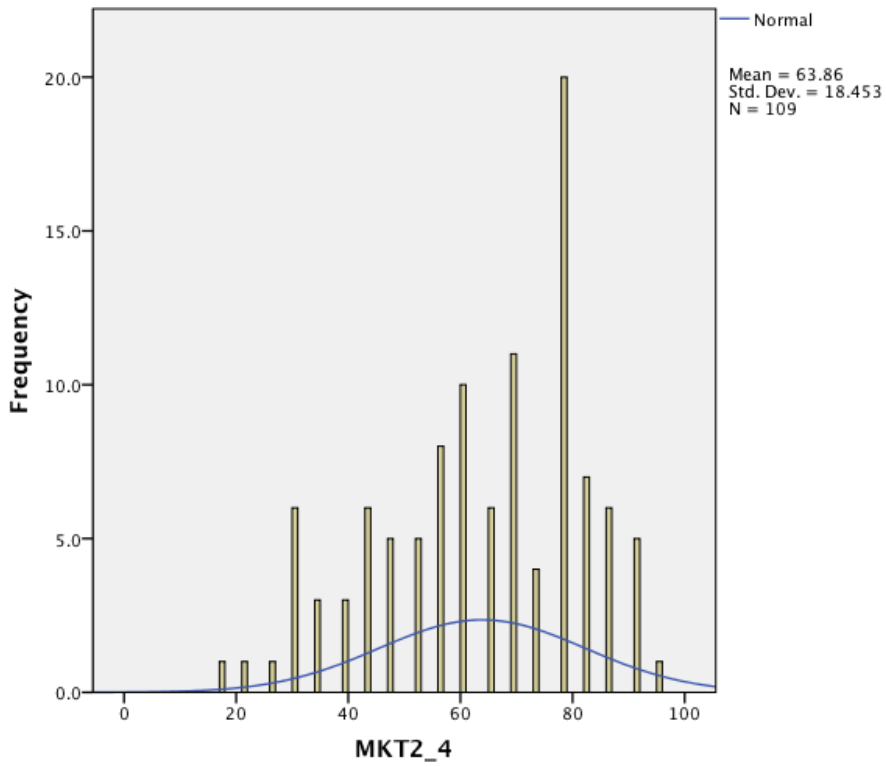

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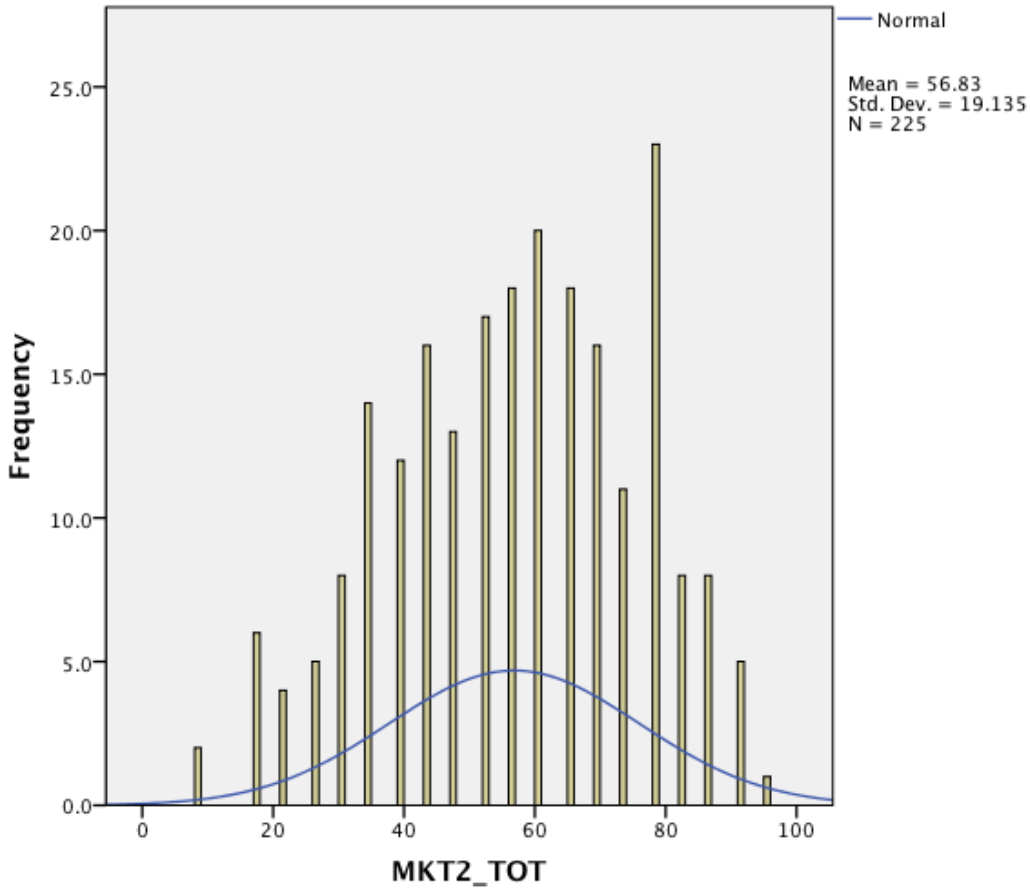

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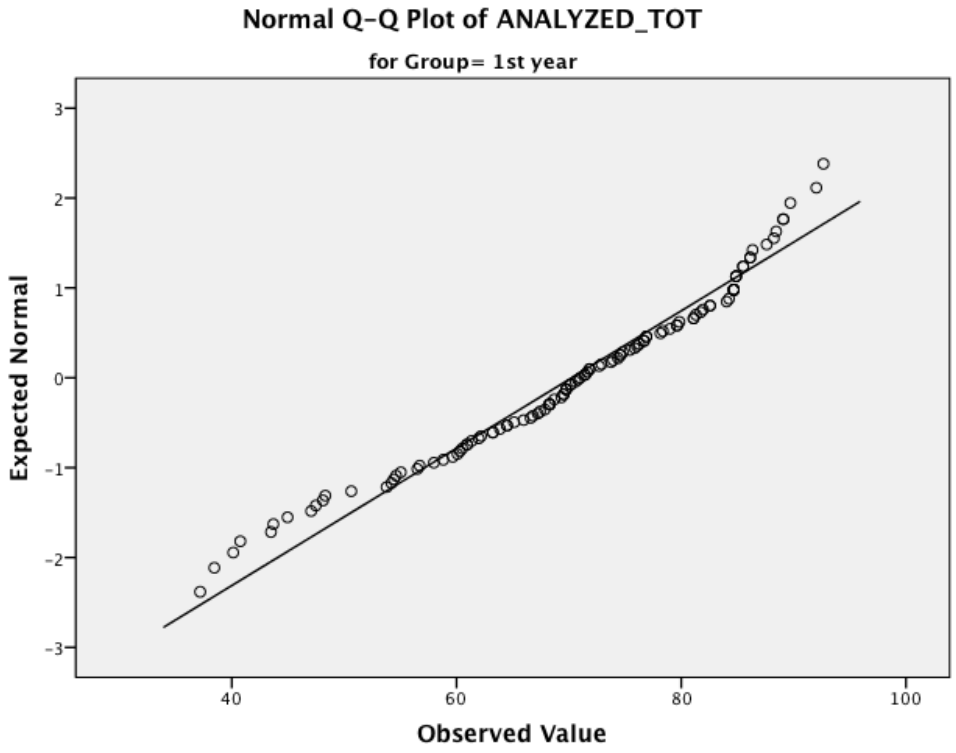

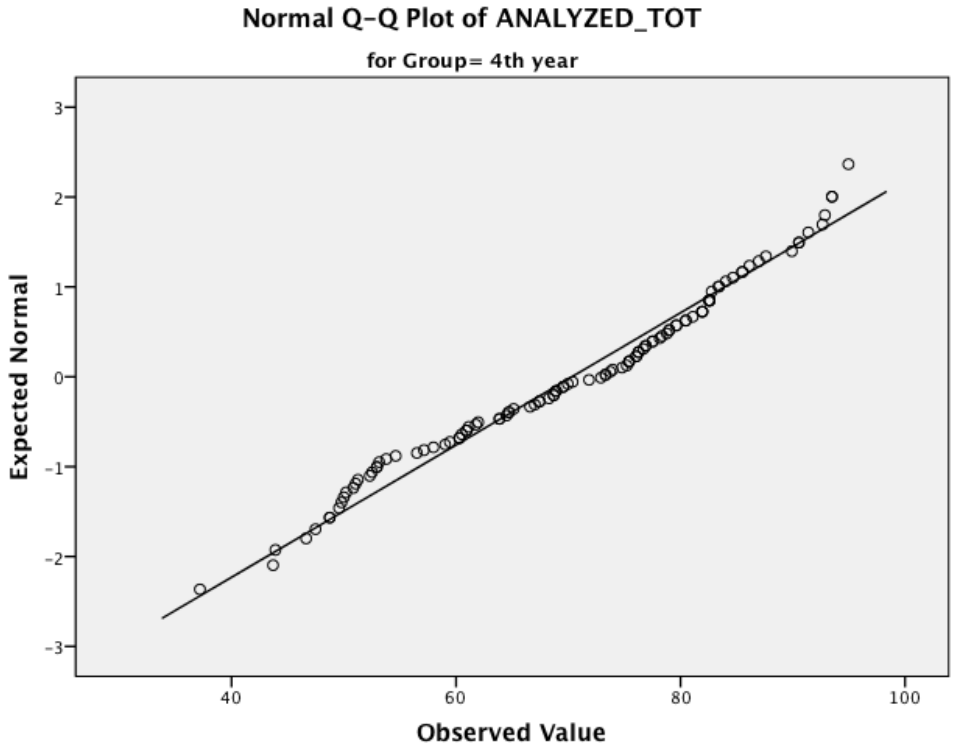

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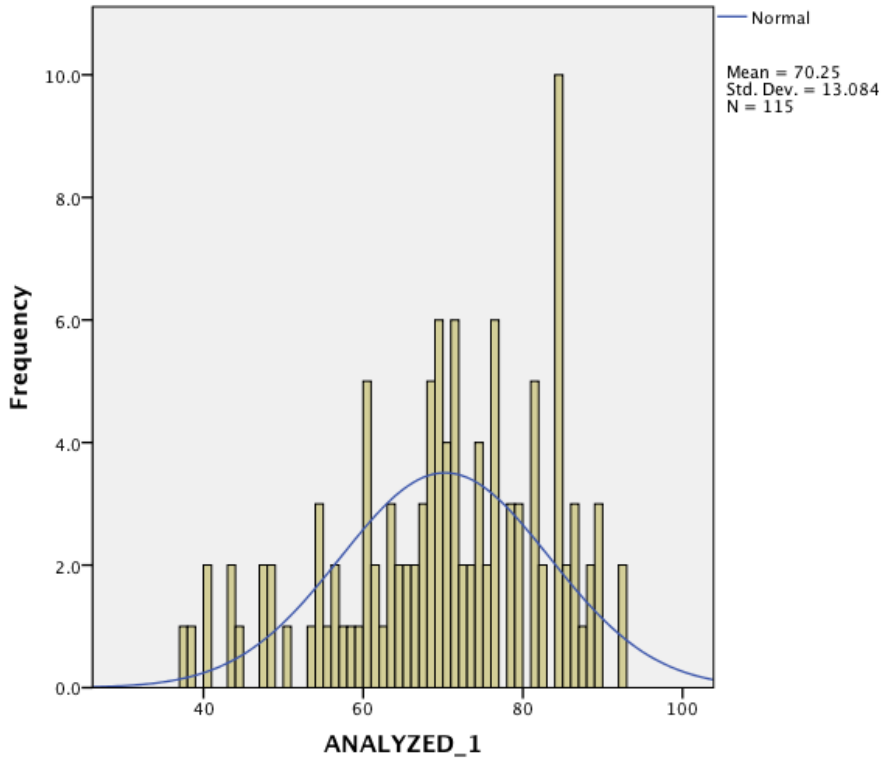

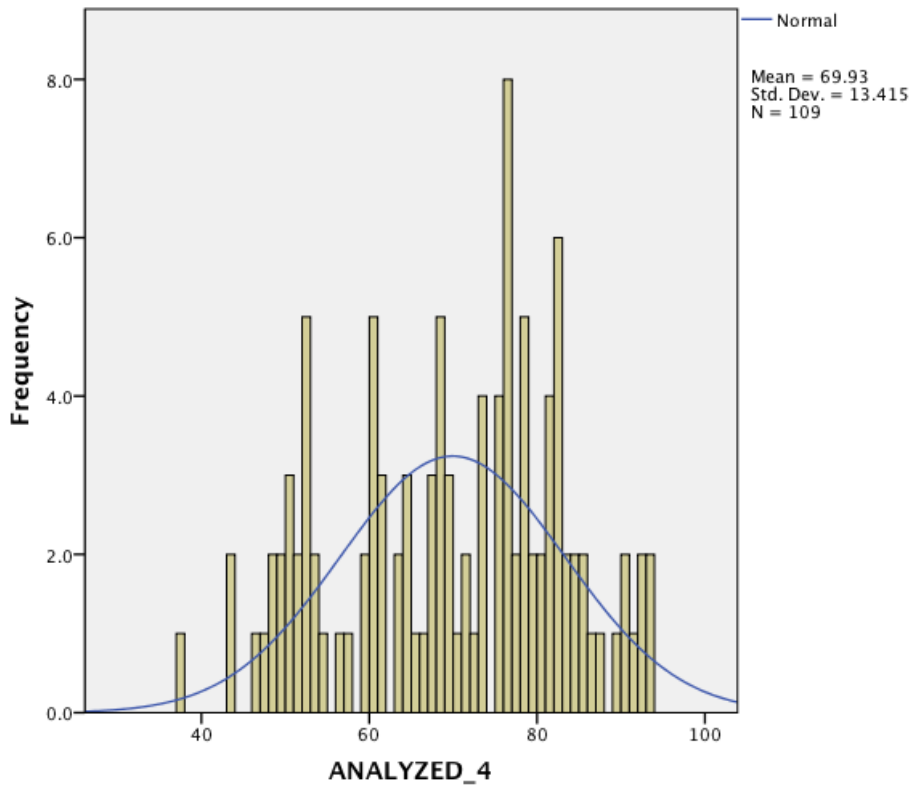

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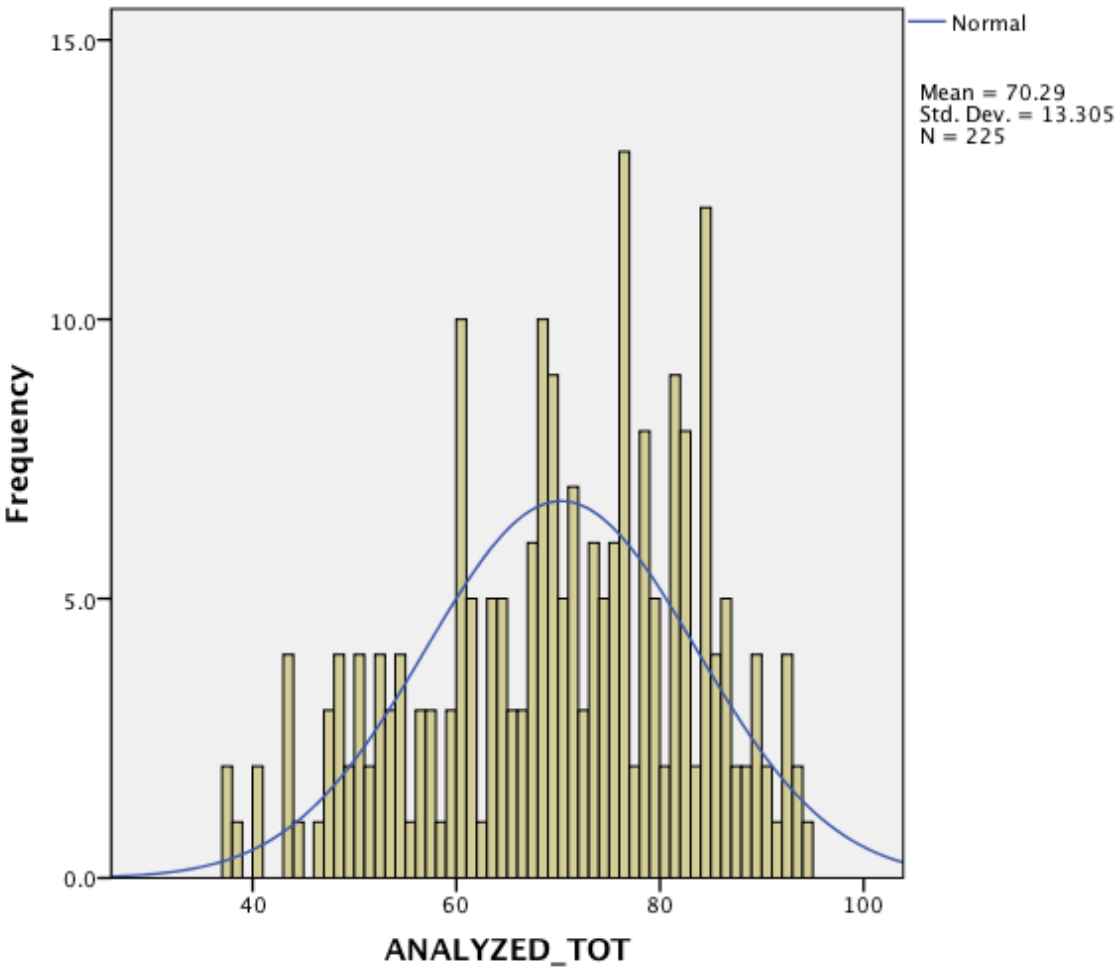
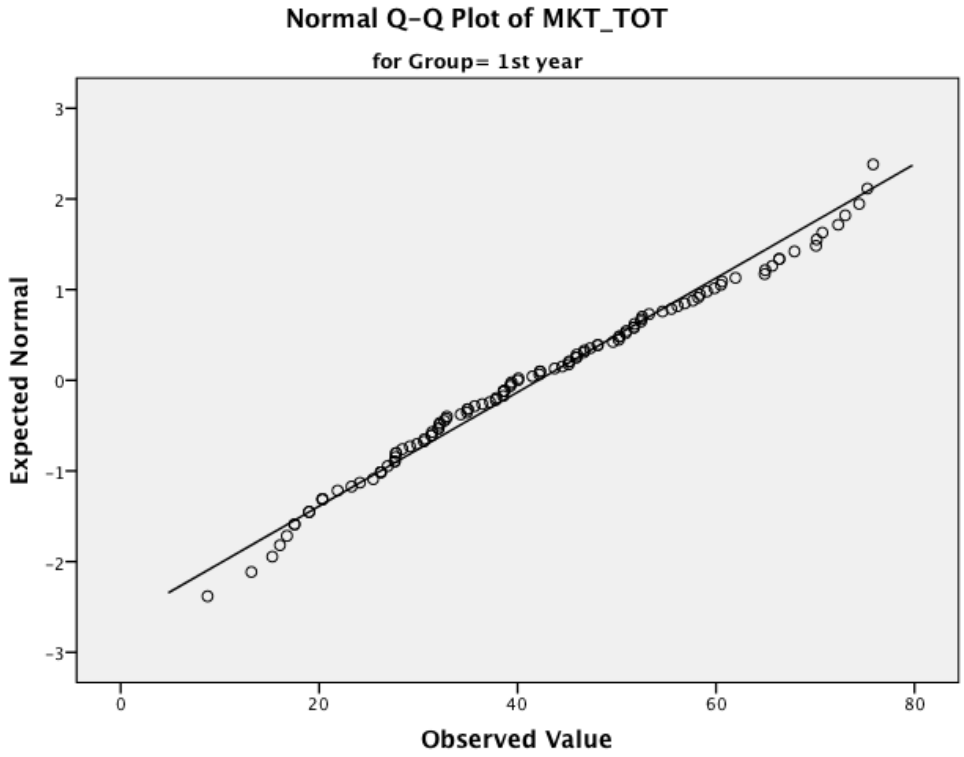
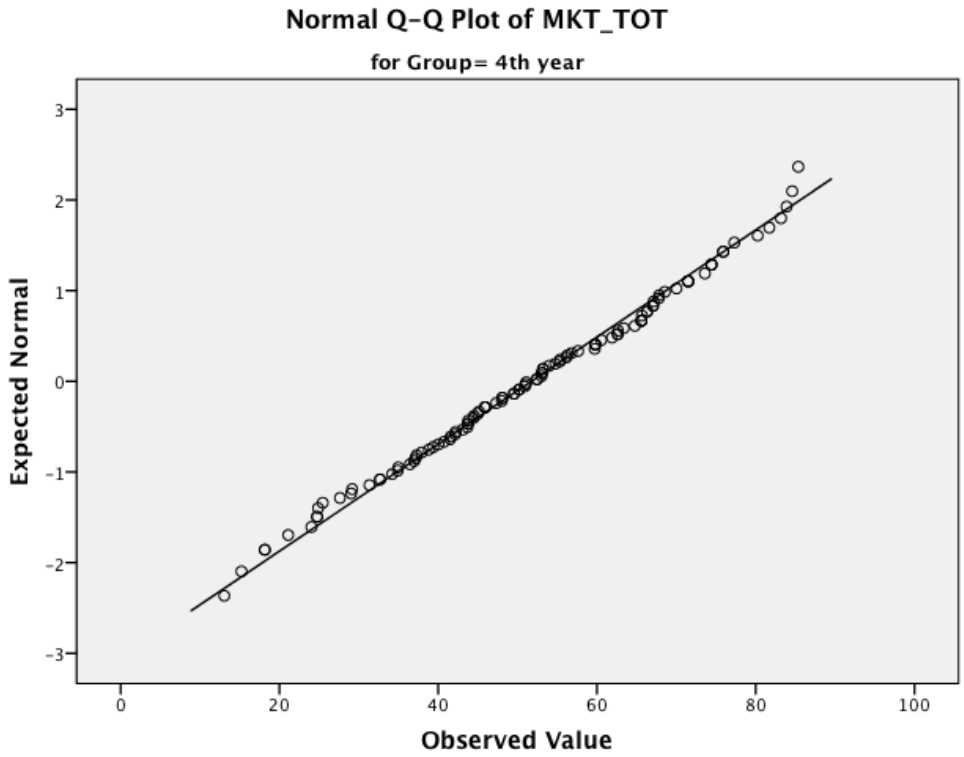
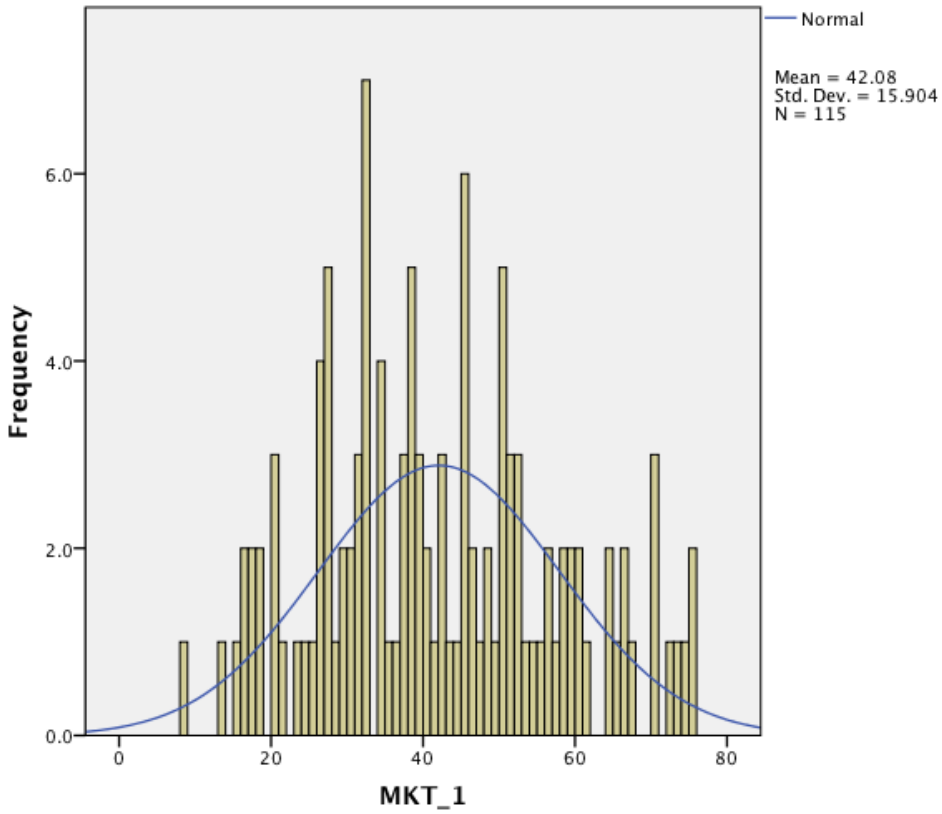


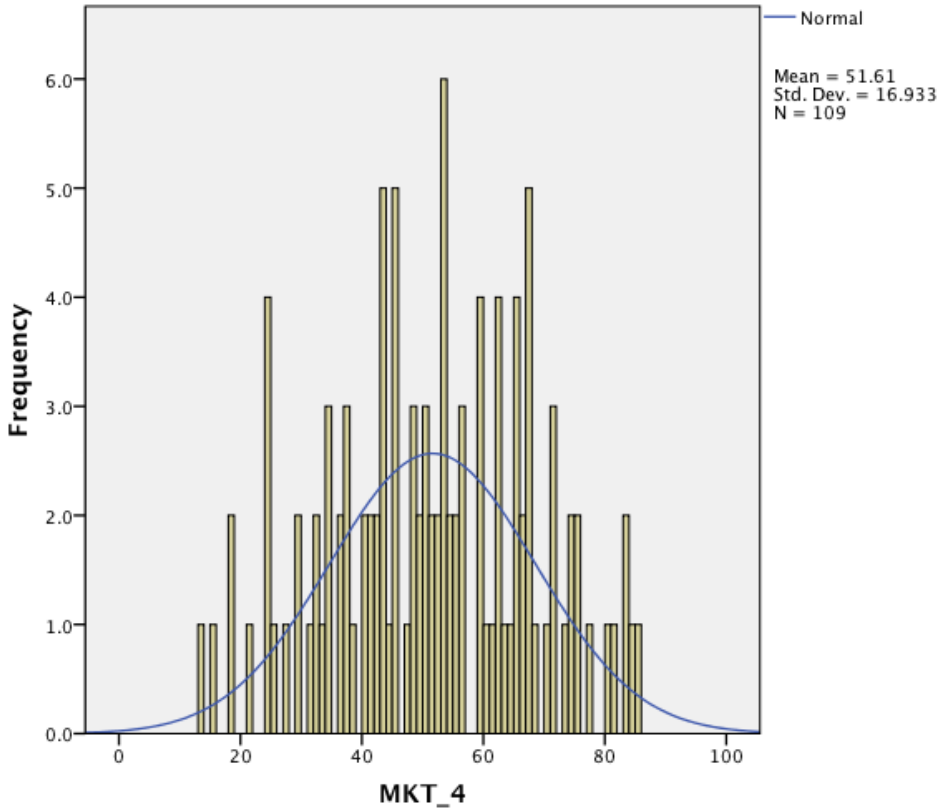
APPENDIX 13 (Cont.)_Q-Q Plots and Histogram



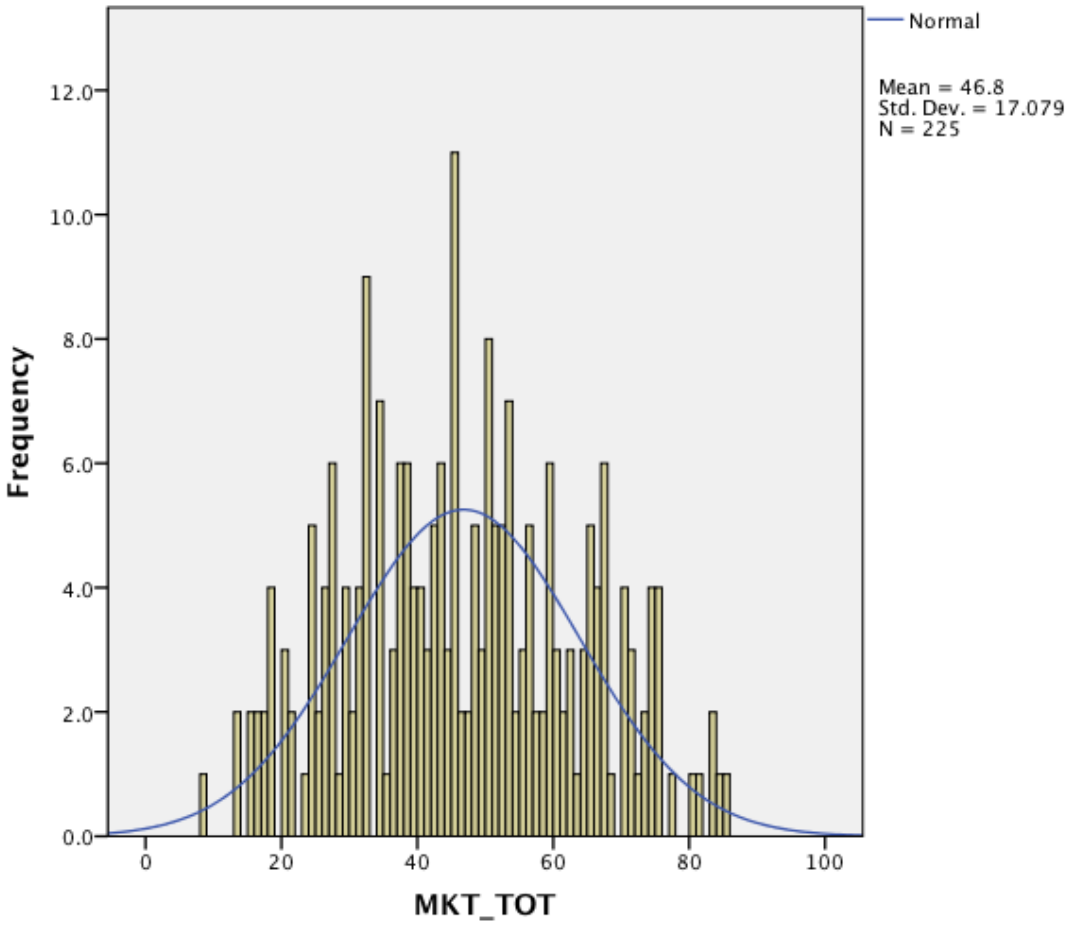


APPENDIX 13 (Cont.)_Q-Q Plots and Histogram

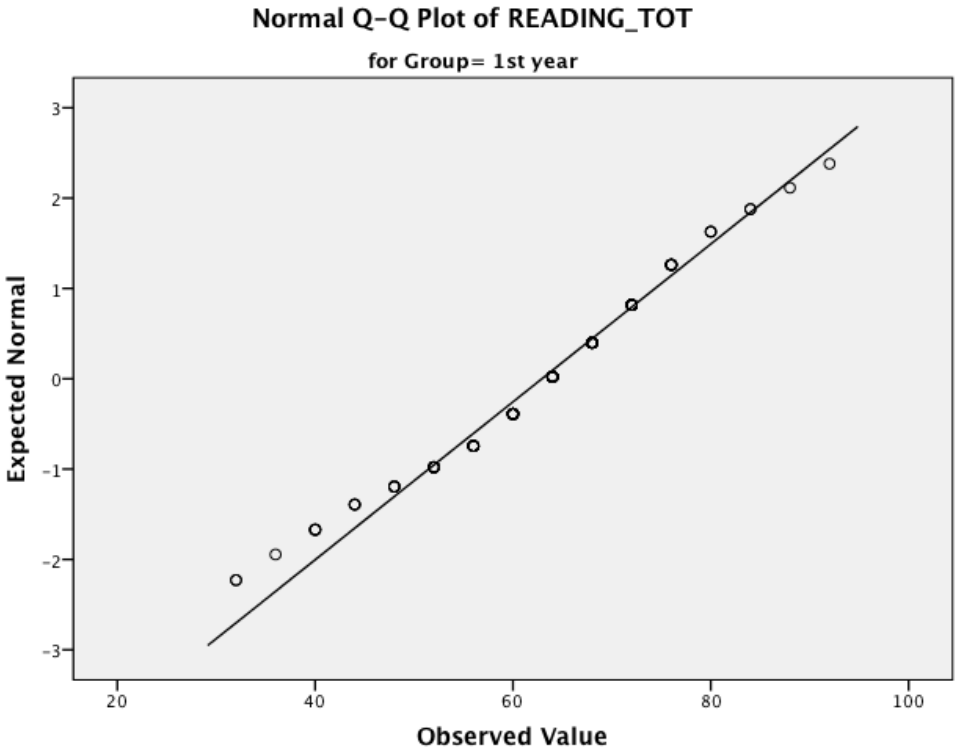


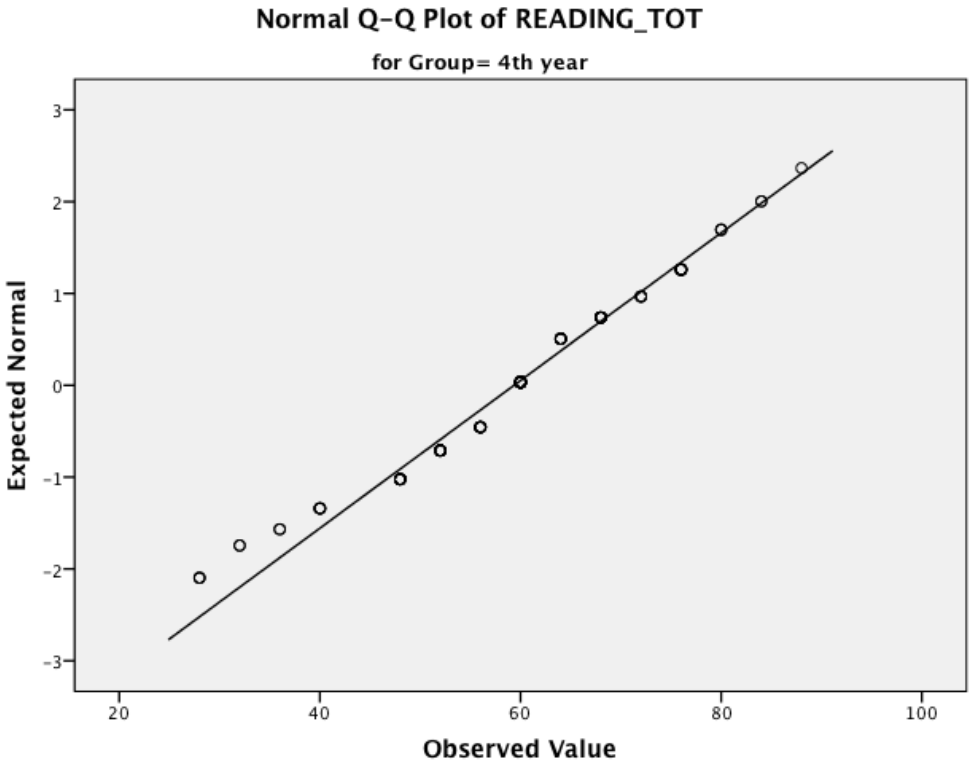


APPENDIX 13 (Cont.)_Q-Q Plots and Histogram

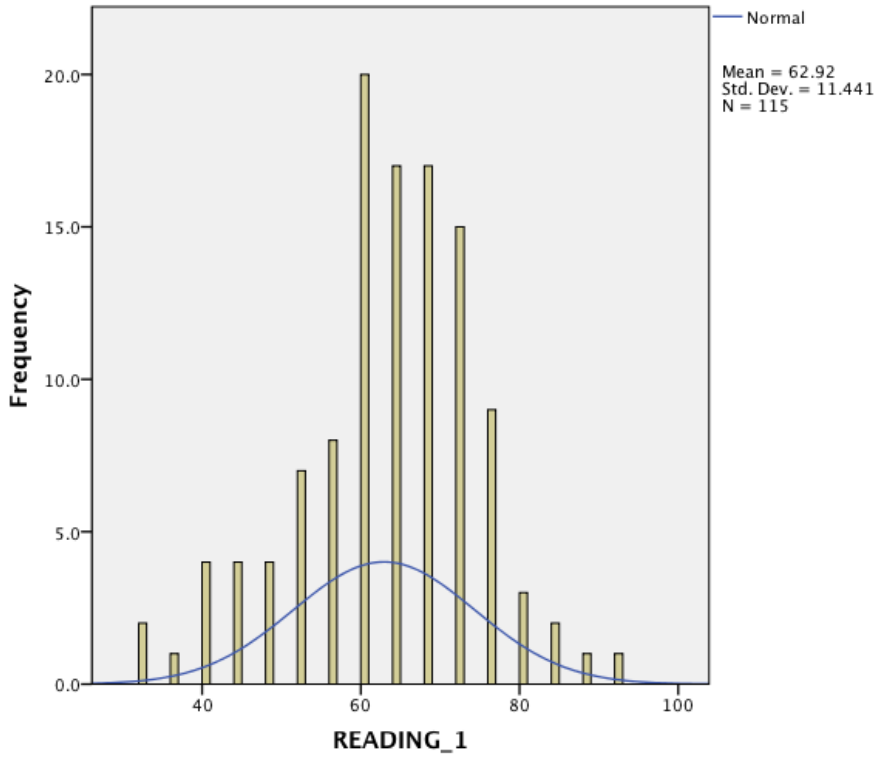


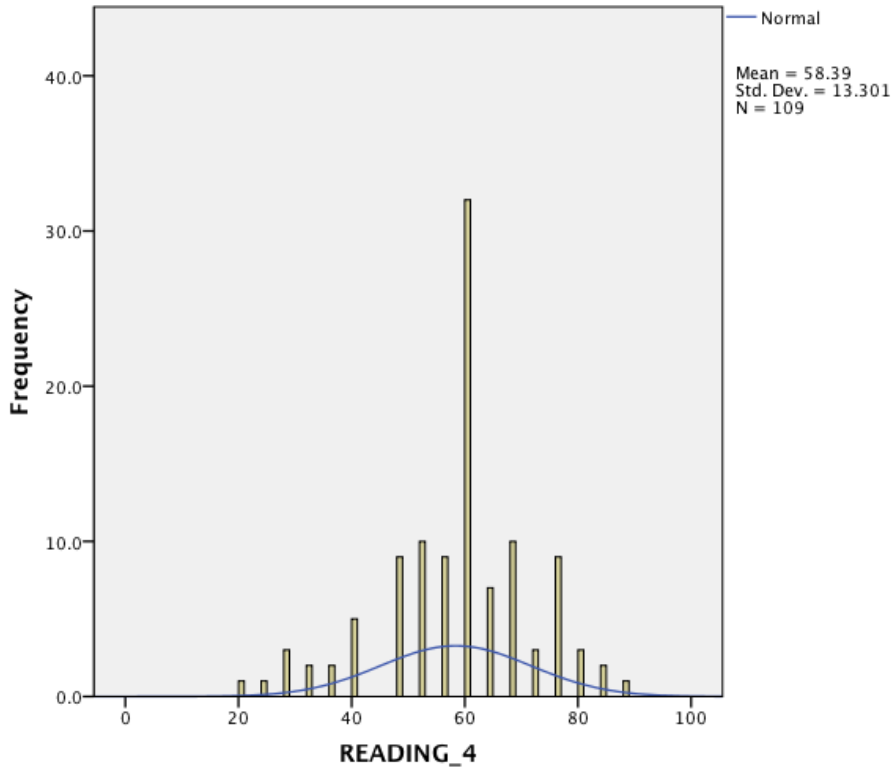
APPENDIX 13 (Cont.)_Q-Q Plots and Histogram



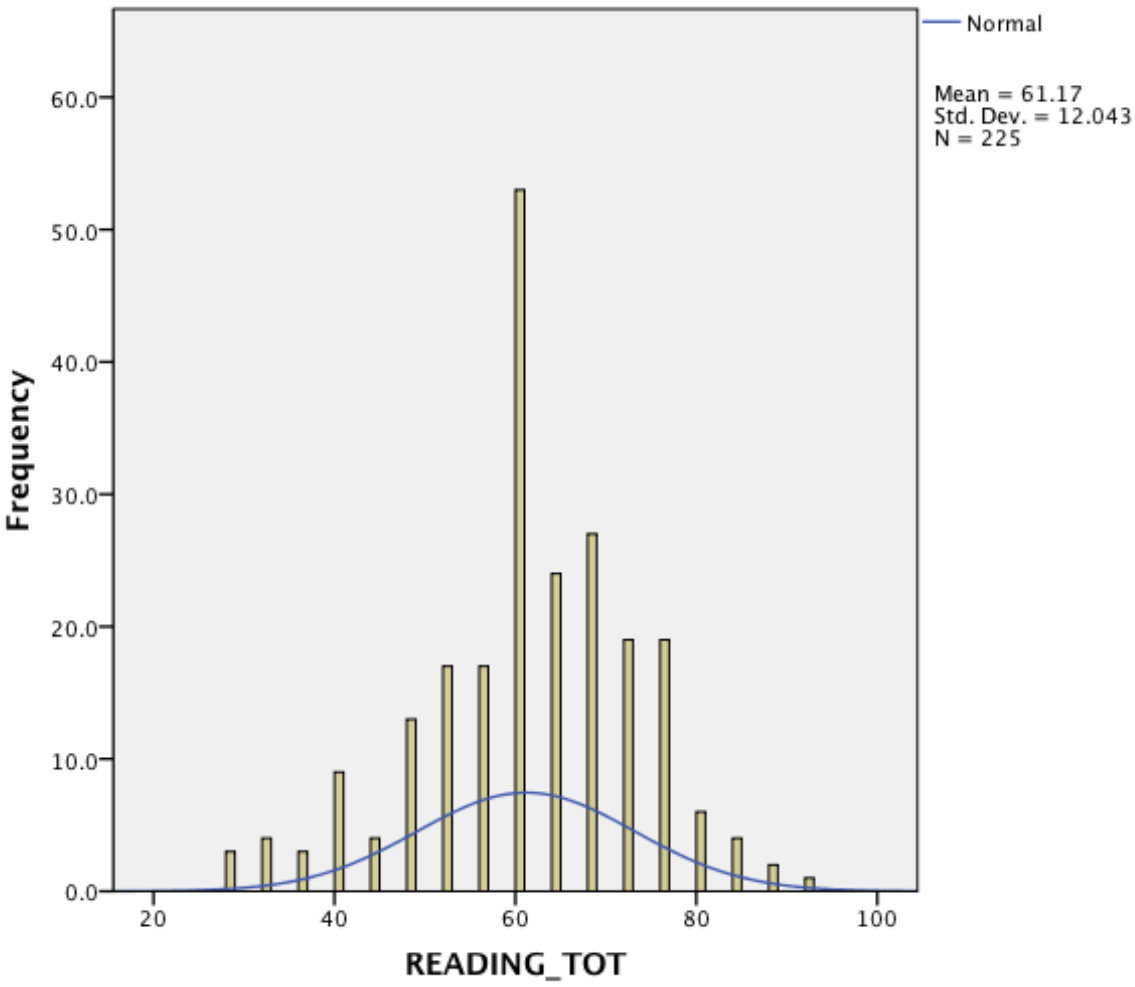


APPENDIX 13 (Cont.)_Q-Q Plots and Histogram

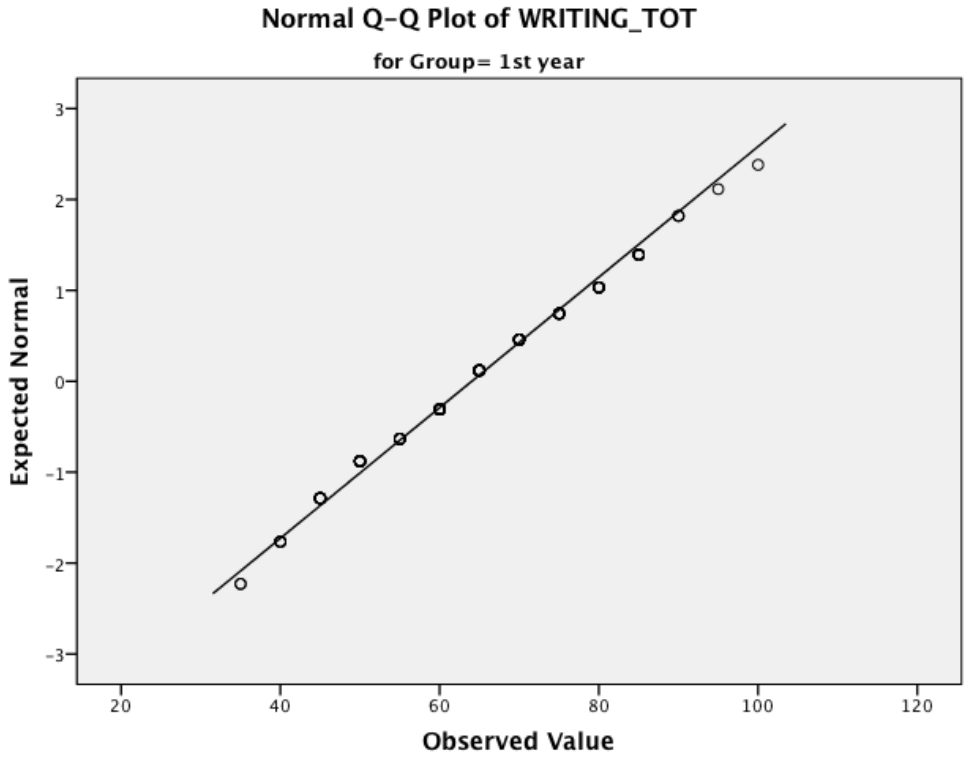


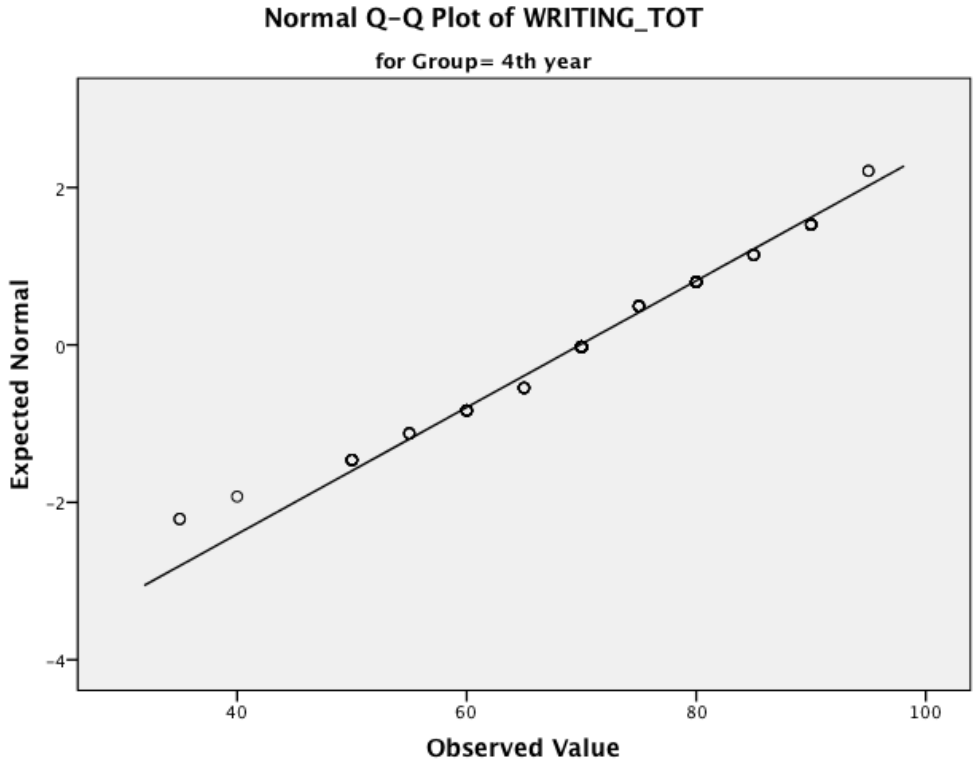


APPENDIX 13 (Cont.)_Q-Q Plots and Histogram

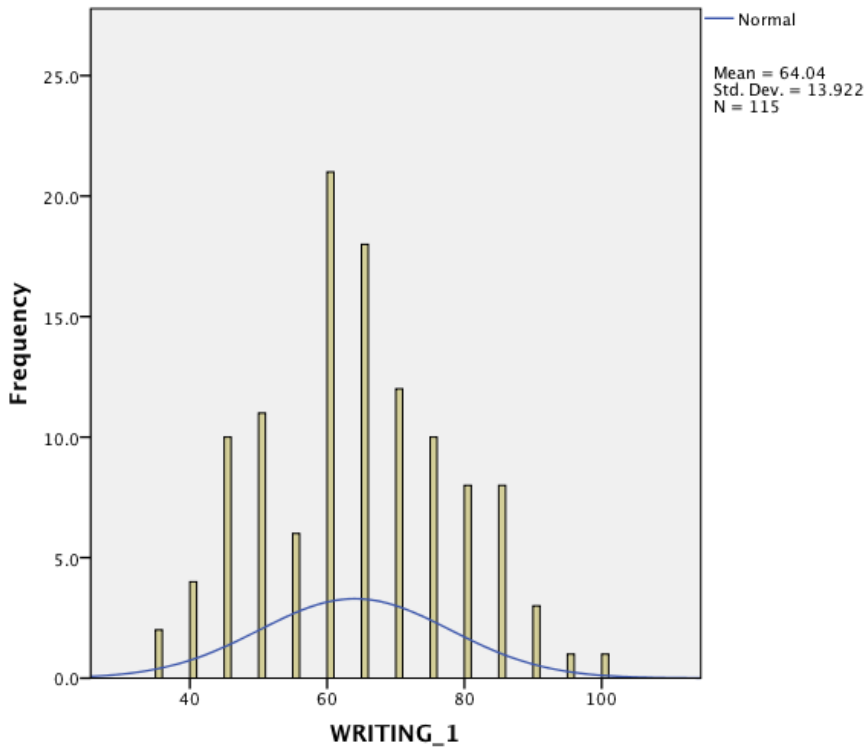


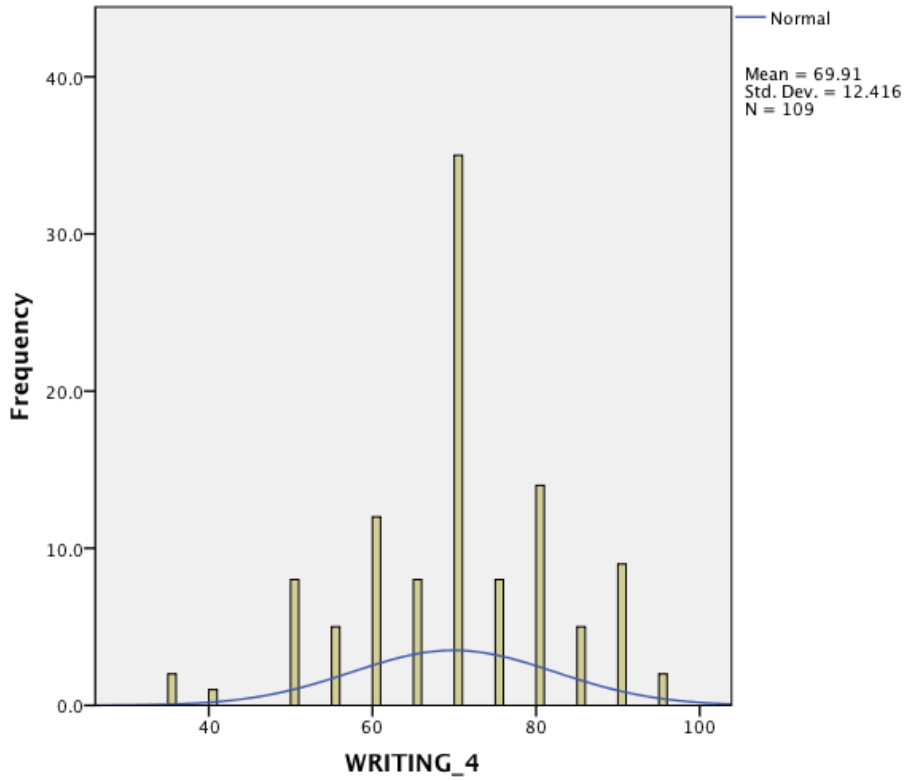
APPENDIX 13 (Cont.)_Q-Q Plots and Histogram



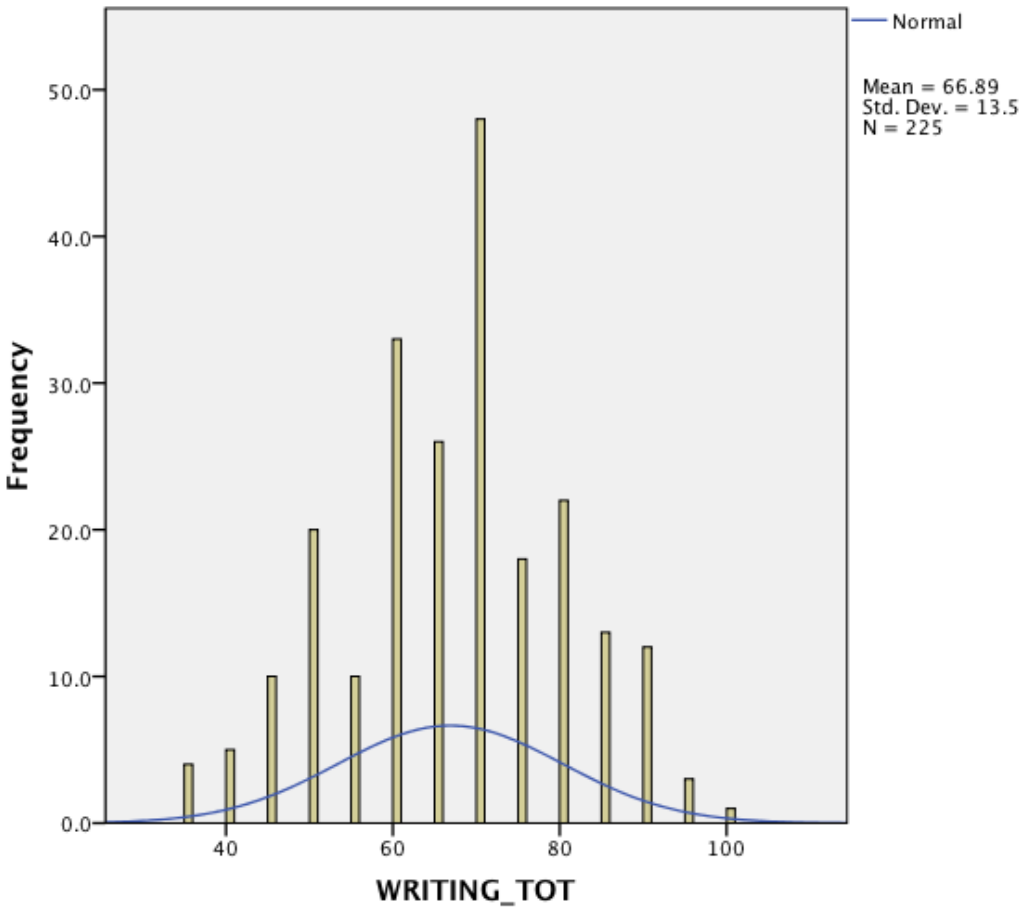


APPENDIX 13 (Cont.)_Q-Q Plots and Histogram





APPENDIX 13 (Cont.)_Q-Q Plots and Histogram



APPENDIX 14-Descriptives and Tests of Normality

Descriptives

	Group			Statistic	Std. Error
UGJT_TOT	1st year	Mean		69.69	1.357
		95% Confidence Interval for Mean	Lower Bound	67.00	
			Upper Bound	72.38	
		5% Trimmed Mean		70.15	
		Median		70.59	
		Variance		211.888	
		Std. Deviation		14.556	
		Minimum		32	
		Maximum		97	
		Range		65	
		Interquartile Range		21	
		Skewness		-.484	.226
		Kurtosis		-.482	.447
	4th year	Mean		75.59	1.095
		95% Confidence Interval for Mean	Lower Bound	73.42	
			Upper Bound	77.76	
		5% Trimmed Mean		75.68	
		Median		76.47	
		Variance		131.829	
		Std. Deviation		11.482	
		Minimum		50	
		Maximum		100	
		Range		50	
		Interquartile Range		18	
		Skewness		-.200	.230
		Kurtosis		-.561	.457

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Group	Statistic	df	Sig.	Statistic	df	Sig.
UGJT_TOT	1st year	.131	115	.000	.965	115	.004
	4th year	.112	110	.002	.979	110	.076

a. Lilliefors Significance Correction

Descriptives

	Group			Statistic	Std. Error
LAT_TOT	1st year	Mean		70.81	1.788
		95% Confidence Interval for Mean	Lower Bound	67.27	
			Upper Bound	74.35	
		5% Trimmed Mean		71.86	
		Median		71.43	
		Variance		367.495	
		Std. Deviation		19.170	
		Minimum		21	
		Maximum		100	
		Range		79	
		Interquartile Range		29	
		Skewness		-.670	.226
		Kurtosis		-.131	.447
	4th year	Mean		65.06	2.055
		95% Confidence Interval for Mean	Lower Bound	60.99	
			Upper Bound	69.14	
		5% Trimmed Mean		66.05	
		Median		71.43	
		Variance		464.656	
		Std. Deviation		21.556	
		Minimum		14	
		Maximum		100	
		Range		86	
		Interquartile Range		36	
		Skewness		-.594	.230
		Kurtosis		-.600	.457

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Group	Statistic	df	Sig.	Statistic	df	Sig.
LAT_TOT	1st year	.136	115	.000	.938	115	.000
	4th year	.144	110	.000	.933	110	.000

a. Lilliefors Significance Correction

Descriptives

	Group			Statistic	Std. Error
MKT1_TOT	1st year	Mean		34.07	1.696
		95% Confidence Interval for Mean	Lower Bound	30.71	
			Upper Bound	37.43	
		5% Trimmed Mean		33.24	
		Median		29.41	
		Variance		330.690	
		Std. Deviation		18.185	
		Minimum		0	
		Maximum		85	
		Range		85	
		Interquartile Range		24	
		Skewness		.750	.226
		Kurtosis		.075	.447
	4th year	Mean		39.60	1.904
		95% Confidence Interval for Mean	Lower Bound	35.83	
			Upper Bound	43.37	
		5% Trimmed Mean		39.59	
		Median		38.24	
		Variance		398.825	
		Std. Deviation		19.971	
		Minimum		0	
		Maximum		79	
		Range		79	
		Interquartile Range		27	
		Skewness		.074	.230
		Kurtosis		-.690	.457

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Group	Statistic	df	Sig.	Statistic	df	Sig.
MKT1_TOT	1st year	.143	115	.000	.949	115	.000
	4th year	.067	110	.200*	.980	110	.104

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Descriptives

	Group			Statistic	Std. Error
MKT2_TOT	1st year	Mean		50.09	1.618
		95% Confidence Interval for Mean	Lower Bound	46.89	
			Upper Bound	53.30	
		5% Trimmed Mean		50.34	
		Median		52.17	
		Variance		301.246	
		Std. Deviation		17.356	
		Minimum		9	
		Maximum		87	
		Range		78	
		Interquartile Range		26	
		Skewness		-.231	.226
		Kurtosis		-.444	.447
	4th year	Mean		63.87	1.757
		95% Confidence Interval for Mean	Lower Bound	60.39	
			Upper Bound	67.36	
		5% Trimmed Mean		64.43	
		Median		65.22	
		Variance		339.483	
		Std. Deviation		18.425	
		Minimum		17	
		Maximum		96	
		Range		78	
		Interquartile Range		26	
		Skewness		-.497	.230
		Kurtosis		-.604	.457

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Group	Statistic	df	Sig.	Statistic	df	Sig.
MKT2_TOT	1st year	.080	115	.064	.982	115	.130
	4th year	.146	110	.000	.953	110	.001

a. Lilliefors Significance Correction

Descriptives

	Group			Statistic	Std. Error
ANALYZED_TOT	1st year	Mean		70.25	1.220
		95% Confidence Interval for Mean	Lower Bound	67.83	
			Upper Bound	72.67	
		5% Trimmed Mean		70.79	
		Median		71.01	
		Variance		171.194	
		Std. Deviation		13.084	
		Minimum		37	
		Maximum		93	
		Range		55	
		Interquartile Range		19	
		Skewness		-.561	.226
		Kurtosis		-.246	.447
	4th year	Mean		70.33	1.296
		95% Confidence Interval for Mean	Lower Bound	67.76	
			Upper Bound	72.90	
		5% Trimmed Mean		70.50	
		Median		73.11	
		Variance		184.739	
		Std. Deviation		13.592	
		Minimum		37	
		Maximum		95	
		Range		58	
		Interquartile Range		21	
		Skewness		-.277	.230
		Kurtosis		-.808	.457

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Group	Statistic	df	Sig.	Statistic	df	Sig.
ANALYZED_TOT	1st year	.075	115	.154	.963	115	.003
	4th year	.095	110	.016	.970	110	.015

a. Lilliefors Significance Correction

Descriptives

	Group			Statistic	Std. Error
MKT_TOT	1st year	Mean		42.08	1.483
		95% Confidence Interval for Mean	Lower Bound	39.14	
			Upper Bound	45.02	
		5% Trimmed Mean		41.86	
		Median		40.03	
		Variance		252.941	
		Std. Deviation		15.904	
		Minimum		9	
		Maximum		76	
		Range		67	
		Interquartile Range		22	
		Skewness		.232	.226
		Kurtosis		-.662	.447
	4th year	Mean		51.74	1.615
		95% Confidence Interval for Mean	Lower Bound	48.54	
			Upper Bound	54.94	
		5% Trimmed Mean		51.86	
		Median		51.76	
		Variance		286.806	
		Std. Deviation		16.935	
		Minimum		13	
		Maximum		85	
		Range		72	
		Interquartile Range		25	
		Skewness		-.105	.230
		Kurtosis		-.558	.457

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Group	Statistic	df	Sig.	Statistic	df	Sig.
MKT_TOT	1st year	.067	115	.200*	.981	115	.098
	4th year	.057	110	.200*	.988	110	.423

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Descriptives

	Group			Statistic	Std. Error
READING_TOT	1st year	Mean		62.92	1.067
		95% Confidence Interval for Mean	Lower Bound	60.81	
			Upper Bound	65.04	
		5% Trimmed Mean		63.17	
		Median		64.00	
		Variance		130.897	
		Std. Deviation		11.441	
		Minimum		32	
		Maximum		92	
		Range		60	
		Interquartile Range		16	
		Skewness		-.428	.226
		Kurtosis		.387	.447
	4th year	Mean		59.35	1.185
		95% Confidence Interval for Mean	Lower Bound	57.00	
			Upper Bound	61.69	
		5% Trimmed Mean		59.66	
		Median		60.00	
		Variance		154.577	
		Std. Deviation		12.433	
		Minimum		28	
		Maximum		88	
		Range		60	
		Interquartile Range		16	
		Skewness		-.345	.230
		Kurtosis		.315	.457

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Group	Statistic	df	Sig.	Statistic	df	Sig.
READING_TOT	1st year	.138	115	.000	.971	115	.012
	4th year	.157	110	.000	.960	110	.002

a. Lilliefors Significance Correction

Descriptives

	Group			Statistic	Std. Error
WRITING_TOT	1st year	Mean		64.04	1.298
		95% Confidence Interval for Mean	Lower Bound	61.47	
			Upper Bound	66.62	
		5% Trimmed Mean		63.93	
		Median		65.00	
		Variance		193.814	
		Std. Deviation		13.922	
		Minimum		35	
		Maximum		100	
		Range		65	
		Interquartile Range		20	
		Skewness		.134	.226
		Kurtosis		-.442	.447
	4th year	Mean		69.86	1.185
		95% Confidence Interval for Mean	Lower Bound	67.52	
			Upper Bound	72.21	
		5% Trimmed Mean		70.15	
		Median		70.00	
		Variance		154.339	
		Std. Deviation		12.423	
		Minimum		35	
		Maximum		95	
		Range		60	
		Interquartile Range		20	
		Skewness		-.337	.230
		Kurtosis		.236	.457

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Group	Statistic	df	Sig.	Statistic	df	Sig.
WRITING_TOT	1st year	.099	115	.008	.979	115	.068
	4th year	.177	110	.000	.956	110	.001

a. Lilliefors Significance Correction

APPENDIX 15-Tests of Homogeneity

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
UGJT	Based on Mean	7.045	1	223	.009
	Based on Median	6.395	1	223	.012
	Based on Median and with adjusted df	6.395	1	212.778	.012
	Based on trimmed mean	6.609	1	223	.011

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
LAT	Based on Mean	2.161	1	223	.143
	Based on Median	1.632	1	223	.203
	Based on Median and with adjusted df	1.632	1	213.548	.203
	Based on trimmed mean	2.239	1	223	.136

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
MKT1	Based on Mean	1.748	1	223	.187
	Based on Median	1.982	1	223	.161
	Based on Median and with adjusted df	1.982	1	221.851	.161
	Based on trimmed mean	1.912	1	223	.168

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
MKT2	Based on Mean	.753	1	223	.387
	Based on Median	.710	1	223	.401
	Based on Median and with adjusted df	.710	1	222.990	.401
	Based on trimmed mean	.699	1	223	.404

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
AK	Based on Mean	.745	1	223	.389
	Based on Median	.744	1	223	.389
	Based on Median and with adjusted df	.744	1	220.802	.389
	Based on trimmed mean	.721	1	223	.397

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
MKT	Based on Mean	.381	1	223	.538
	Based on Median	.425	1	223	.515
	Based on Median and with adjusted df	.425	1	221.727	.515
	Based on trimmed mean	.414	1	223	.521

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
READING	Based on Mean	.056	1	223	.812
	Based on Median	.038	1	223	.845
	Based on Median and with adjusted df	.038	1	218.369	.845
	Based on trimmed mean	.035	1	223	.853

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
WRITING	Based on Mean	3.493	1	223	.063
	Based on Median	3.381	1	223	.067
	Based on Median and with adjusted df	3.381	1	222.968	.067
	Based on trimmed mean	3.519	1	223	.062

APPENDIX 16-*t* Tests

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
EK	Equal variances assumed	1.251	.264	-3.079	223	.002	-4.866
	Equal variances not assumed			-3.074	219.346	.002	-4.866

Independent Samples Test

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
EK	Equal variances assumed	1.580	-7.980	-1.752
	Equal variances not assumed	1.583	-7.986	-1.746

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
AK	Equal variances assumed	1.106	.294	-.043	223	.966	-.076
	Equal variances not assumed			-.043	221.486	.966	-.076

Independent Samples Test

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
AK	Equal variances assumed	1.778	-3.581	3.428
	Equal variances not assumed	1.780	-3.584	3.431

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
MK	Equal variances assumed	.266	.607	-4.410	223	.000	-9.656
	Equal variances not assumed			-4.404	220.462	.000	-9.656

Independent Samples Test

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
MK	Equal variances assumed	2.189	-13.970	-5.341
	Equal variances not assumed	2.192	-13.977	-5.335

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
UGJT	Equal variances assumed	7.045	.009	-3.363	223	.001	-5.895
	Equal variances not assumed			-3.381	215.276	.001	-5.895
LAT	Equal variances assumed	2.161	.143	2.114	223	.036	5.743
	Equal variances not assumed			2.108	217.360	.036	5.743
MKT1	Equal variances assumed	1.748	.187	-2.174	223	.031	-5.532
	Equal variances not assumed			-2.170	218.842	.031	-5.532
MKT2	Equal variances assumed	.753	.387	-5.776	223	.000	-13.779
	Equal variances not assumed			-5.768	220.603	.000	-13.779

Independent Samples Test

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
UGJT	Equal variances assumed	1.753	-9.350	-2.441
	Equal variances not assumed	1.744	-9.332	-2.458
LAT	Equal variances assumed	2.717	.389	11.096
	Equal variances not assumed	2.724	.374	11.111
MKT1	Equal variances assumed	2.544	-10.547	-.518
	Equal variances not assumed	2.550	-10.558	-.507
MKT2	Equal variances assumed	2.385	-18.480	-9.078
	Equal variances not assumed	2.389	-18.487	-9.071

Paired Samples Test

		Paired Differences					t	df
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
					Lower	Upper		
Pair 1	AK - MK	23.487	18.831	1.255	21.013	25.960	18.708	224

Paired Samples Test

		Sig. (2-tailed)
Pair 1	AK - MK	.000

Paired Samples Test

		Paired Differences					t	df
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
					Lower	Upper		
Pair 1	UGJT - LAT	4.575	22.274	1.485	1.649	7.501	3.081	224

Paired Samples Test

		Sig. (2-tailed)
Pair 1	UGJT - LAT	.002

Paired Samples Test

	Paired Differences					t
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
				Lower	Upper	
Pair 1 MKT1 - MKT2	-20.060	17.483	1.166	-22.356	-17.763	-17.211

Paired Samples Test

	df	Sig. (2-tailed)
Pair 1 MKT1 - MKT2	224	.000

APPENDIX 17-MANOVA

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.968	3373.964[b]	2.000	222.000	.000
	Wilks' Lambda	.032	3373.964[b]	2.000	222.000	.000
	Hotelling's Trace	30.396	3373.964[b]	2.000	222.000	.000
	Roy's Largest Root	30.396	3373.964[b]	2.000	222.000	.000
YEAR_OF_STUDY	Pillai's Trace	.085	10.337[b]	2.000	222.000	.000
	Wilks' Lambda	.915	10.337[b]	2.000	222.000	.000
	Hotelling's Trace	.093	10.337[b]	2.000	222.000	.000
	Roy's Largest Root	.093	10.337[b]	2.000	222.000	.000

a. Design: Intercept + YEAR_OF_STUDY
b. Exact statistic

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	AK	.327[a]	1	.327	.002	.966
	MK	5241.759[b]	1	5241.759	19.450	.000
Intercept	AK	1111055.310	1	1111055.310	6248.380	.000
	MK	494844.333	1	494844.333	1836.199	.000
YEAR_OF_STUDY	AK	.327	1	.327	.002	.966
	MK	5241.759	1	5241.759	19.450	.000
Error	AK	39652.733	223	177.815		
	MK	60097.143	223	269.494		
Total	AK	1151230.492	225			
	MK	558165.644	225			
Corrected Total	AK	39653.060	224			
	MK	65338.902	224			

a. R Squared = .000 (Adjusted R Squared = -.004)
b. R Squared = .080 (Adjusted R Squared = .076)

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.977	2376.769[b]	4.000	220.000	.000
	Wilks' Lambda	.023	2376.769[b]	4.000	220.000	.000
	Hotelling's Trace	43.214	2376.769[b]	4.000	220.000	.000
	Roy's Largest Root	43.214	2376.769[b]	4.000	220.000	.000
YEAR_OF_STUDY	Pillai's Trace	.203	13.968[b]	4.000	220.000	.000
	Wilks' Lambda	.797	13.968[b]	4.000	220.000	.000

	Hotelling's Trace	.254	13.968[b]	4.000	220.000	.000
	Roy's Largest Root	.254	13.968[b]	4.000	220.000	.000

a. Design: Intercept + YEAR_OF_STUDY
b. Exact statistic

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	UGJT	1953.873[a]	1	1953.873	11.310	.001
	LAT	1854.013[b]	1	1854.013	4.468	.036
	MKT1	1720.840[c]	1	1720.840	4.728	.031
	MKT2	10674.398[d]	1	10674.398	33.364	.000
Intercept	UGJT	1186663.600	1	1186663.600	6869.007	.000
	LAT	1037935.646	1	1037935.646	2501.133	.000
	MKT1	305095.235	1	305095.235	838.188	.000
	MKT2	730254.318	1	730254.318	2282.503	.000
YEAR_OF_STUDY	UGJT	1953.873	1	1953.873	11.310	.001
	LAT	1854.013	1	1854.013	4.468	.036
	MKT1	1720.840	1	1720.840	4.728	.031
	MKT2	10674.398	1	10674.398	33.364	.000
Error	UGJT	38524.635	223	172.756		
	LAT	92541.905	223	414.986		
	MKT1	81170.586	223	363.994		
	MKT2	71345.682	223	319.936		
Total	UGJT	1225588.235	225			
	LAT	1134795.918	225			
	MKT1	387119.377	225			
	MKT2	808714.556	225			
Corrected Total	UGJT	40478.508	224			
	LAT	94395.918	224			
	MKT1	82891.426	224			
	MKT2	82020.080	224			

a. R Squared = .048 (Adjusted R Squared = .044)
b. R Squared = .020 (Adjusted R Squared = .015)
c. R Squared = .021 (Adjusted R Squared = .016)
d. R Squared = .130 (Adjusted R Squared = .126)

APPENDIX 18-MANOVA 2

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.968	3373.964[b]	2.000	222.000	.000	.968
	Wilks' Lambda	.032	3373.964[b]	2.000	222.000	.000	.968
	Hotelling's Trace	30.396	3373.964[b]	2.000	222.000	.000	.968
	Roy's Largest Root	30.396	3373.964[b]	2.000	222.000	.000	.968
YEAR_OF_STUDY	Pillai's Trace	.085	10.337[b]	2.000	222.000	.000	.085
	Wilks' Lambda	.915	10.337[b]	2.000	222.000	.000	.085
	Hotelling's Trace	.093	10.337[b]	2.000	222.000	.000	.085
	Roy's Largest Root	.093	10.337[b]	2.000	222.000	.000	.085

Multivariate Tests[a]

Effect		Noncent. Parameter	Observed Power[c]
Intercept	Pillai's Trace	6747.928	1.000
	Wilks' Lambda	6747.928	1.000
	Hotelling's Trace	6747.928	1.000
	Roy's Largest Root	6747.928	1.000
YEAR_OF_STUDY	Pillai's Trace	20.675	.987
	Wilks' Lambda	20.675	.987
	Hotelling's Trace	20.675	.987
	Roy's Largest Root	20.675	.987

a. Design: Intercept + YEAR_OF_STUDY
b. Exact statistic
c. Computed using alpha =

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	AK	.327[a]	1	.327	.002	.966
	MK	5241.759[b]	1	5241.759	19.450	.000
Intercept	AK	1111055.310	1	1111055.310	6248.380	.000
	MK	494844.333	1	494844.333	1836.199	.000
YEAR_OF_STUDY	AK	.327	1	.327	.002	.966
	MK	5241.759	1	5241.759	19.450	.000
Error	AK	39652.733	223	177.815		
	MK	60097.143	223	269.494		
Total	AK	1151230.492	225			
	MK	558165.644	225			
Corrected Total	AK	39653.060	224			

MK	65338.902	224			

Tests of Between-Subjects Effects

Source	Dependent Variable	Partial Eta Squared	Noncent. Parameter	Observed Power[c]
Corrected Model	AK	.000	.002	.050
	MK	.080	19.450	.992
Intercept	AK	.966	6248.380	1.000
	MK	.892	1836.199	1.000
YEAR_OF_STUDY	AK	.000	.002	.050
	MK	.080	19.450	.992
Error	AK			
	MK			
Total	AK			
	MK			
Corrected Total	AK			
	MK			

a. R Squared = .000 (Adjusted R Squared = -.004)
b. R Squared = .080 (Adjusted R Squared = .076)
c. Computed using alpha =

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.911	1137.532[b]	2.000	222.000	.000	.911
	Wilks' Lambda	.089	1137.532[b]	2.000	222.000	.000	.911
	Hotelling's Trace	10.248	1137.532[b]	2.000	222.000	.000	.911
	Roy's Largest Root	10.248	1137.532[b]	2.000	222.000	.000	.911
YEAR_OF_STUDY	Pillai's Trace	.137	17.613[b]	2.000	222.000	.000	.137
	Wilks' Lambda	.863	17.613[b]	2.000	222.000	.000	.137
	Hotelling's Trace	.159	17.613[b]	2.000	222.000	.000	.137
	Roy's Largest Root	.159	17.613[b]	2.000	222.000	.000	.137

Multivariate Tests[a]

Effect		Noncent. Parameter	Observed Power[c]
Intercept	Pillai's Trace	2275.063	1.000
	Wilks' Lambda	2275.063	1.000
	Hotelling's Trace	2275.063	1.000
	Roy's Largest Root	2275.063	1.000
YEAR_OF_STUDY	Pillai's Trace	35.226	1.000
	Wilks' Lambda	35.226	1.000

	Hotelling's Trace	35.226	1.000
	Roy's Largest Root	35.226	1.000

a. Design: Intercept + YEAR_OF_STUDY
b. Exact statistic
c. Computed using alpha =

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	MKT1	1720.840[a]	1	1720.840	4.728	.031
	MKT2	10674.398[b]	1	10674.398	33.364	.000
Intercept	MKT1	305095.235	1	305095.235	838.188	.000
	MKT2	730254.318	1	730254.318	2282.503	.000
YEAR_OF_STUDY	MKT1	1720.840	1	1720.840	4.728	.031
	MKT2	10674.398	1	10674.398	33.364	.000
Error	MKT1	81170.586	223	363.994		
	MKT2	71345.682	223	319.936		
Total	MKT1	387119.377	225			
	MKT2	808714.556	225			
Corrected Total	MKT1	82891.426	224			
	MKT2	82020.080	224			

Tests of Between-Subjects Effects

Source	Dependent Variable	Partial Eta Squared	Noncent. Parameter	Observed Power[c]
Corrected Model	MKT1	.021	4.728	.581
	MKT2	.130	33.364	1.000
Intercept	MKT1	.790	838.188	1.000
	MKT2	.911	2282.503	1.000
YEAR_OF_STUDY	MKT1	.021	4.728	.581
	MKT2	.130	33.364	1.000
Error	MKT1			
	MKT2			
Total	MKT1			
	MKT2			
Corrected Total	MKT1			
	MKT2			

a. R Squared = .021 (Adjusted R Squared = .016)
b. R Squared = .130 (Adjusted R Squared = .126)
c. Computed using alpha =

APPENDIX 19-ANOVA with Repeated Measures

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.
TEST	Pillai's Trace	.779	259.964[b]	3.000	221.000	.000
	Wilks' Lambda	.221	259.964[b]	3.000	221.000	.000
	Hotelling's Trace	3.529	259.964[b]	3.000	221.000	.000
	Roy's Largest Root	3.529	259.964[b]	3.000	221.000	.000
TEST * YEAR_OF_STUDY	Pillai's Trace	.143	12.261[b]	3.000	221.000	.000
	Wilks' Lambda	.857	12.261[b]	3.000	221.000	.000
	Hotelling's Trace	.166	12.261[b]	3.000	221.000	.000
	Roy's Largest Root	.166	12.261[b]	3.000	221.000	.000

Multivariate Tests[a]

Effect		Partial Eta Squared
TEST	Pillai's Trace	.779
	Wilks' Lambda	.779
	Hotelling's Trace	.779
	Roy's Largest Root	.779
TEST * YEAR_OF_STUDY	Pillai's Trace	.143
	Wilks' Lambda	.143
	Hotelling's Trace	.143
	Roy's Largest Root	.143

a. Design: Intercept + YEAR_OF_STUDY
Within Subjects Design: TEST
b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
TEST	.798	50.136	5	.000	.865	.880	.333

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.[a]
a. Design: Intercept + YEAR_OF_STUDY
Within Subjects Design: TEST
b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
TEST	Sphericity Assumed	171079.939	3	57026.646	240.920	.000
	Greenhouse-Geisser	171079.939	2.595	65914.437	240.920	.000
	Huynh-Feldt	171079.939	2.641	64790.065	240.920	.000
	Lower-bound	171079.939	1.000	171079.939	240.920	.000
TEST * YEAR_OF_STUDY	Sphericity Assumed	10878.184	3	3626.061	15.319	.000
	Greenhouse-Geisser	10878.184	2.595	4191.195	15.319	.000
	Huynh-Feldt	10878.184	2.641	4119.701	15.319	.000
	Lower-bound	10878.184	1.000	10878.184	15.319	.000
Error(TEST)	Sphericity Assumed	158354.792	669	236.704		
	Greenhouse-Geisser	158354.792	578.793	273.595		
	Huynh-Feldt	158354.792	588.838	268.928		
	Lower-bound	158354.792	223.000	710.111		

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Partial Eta Squared
TEST	Sphericity Assumed	.519
	Greenhouse-Geisser	.519
	Huynh-Feldt	.519
	Lower-bound	.519
TEST * YEAR_OF_STUDY	Sphericity Assumed	.064
	Greenhouse-Geisser	.064
	Huynh-Feldt	.064
	Lower-bound	.064
Error(TEST)	Sphericity Assumed	
	Greenhouse-Geisser	
	Huynh-Feldt	
	Lower-bound	

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	TEST	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared

TEST	Linear	68540.053	1	68540.053	249.203	.000	.528
	Quadratic	34734.627	1	34734.627	178.942	.000	.445
	Cubic	67805.259	1	67805.259	281.393	.000	.558
TEST * YEAR_OF_STUDY	Linear	3429.169	1	3429.169	12.468	.001	.053
	Quadratic	5557.319	1	5557.319	28.630	.000	.114
	Cubic	1891.696	1	1891.696	7.851	.006	.034
Error(TEST)	Linear	61333.282	223	275.037			
	Quadratic	43286.888	223	194.112			
	Cubic	53734.621	223	240.962			

Tests of Between-Subjects Effects

Measure: MEASURE_1

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	3088868.860	1	3088868.860	5500.508	.000	.961
YEAR_OF_STUDY	5324.940	1	5324.940	9.482	.002	.041
Error	125228.016	223	561.561			

APPENDIX 20-Correlation and Regression Analyses

Correlations

		UGJT_1	LAT_1	MKT1_1	MKT2_1	AK_1	MK_1	EK_1
UGJT_1	Pearson Correlation	1	.189*	.242**	.125	.695**	.207*	.545**
	Sig. (2-tailed)		.043	.009	.184	.000	.027	.000
	N	115	115	115	115	115	115	115
LAT_1	Pearson Correlation	.189*	1	.160	.091	.838**	.141	.582**
	Sig. (2-tailed)	.043		.087	.333	.000	.132	.000
	N	115	115	115	115	115	115	115
MKT1_1	Pearson Correlation	.242**	.160	1	.602**	.252**	.900**	.776**
	Sig. (2-tailed)	.009	.087		.000	.007	.000	.000
	N	115	115	115	115	115	115	115
MKT2_1	Pearson Correlation	.125	.091	.602**	1	.136	.890**	.702**
	Sig. (2-tailed)	.184	.333	.000		.147	.000	.000
	N	115	115	115	115	115	115	115
AK_1	Pearson Correlation	.695**	.838**	.252**	.136	1	.218*	.730**
	Sig. (2-tailed)	.000	.000	.007	.147		.019	.000
	N	115	115	115	115	115	115	115
MK_1	Pearson Correlation	.207*	.141	.900**	.890**	.218*	1	.827**
	Sig. (2-tailed)	.027	.132	.000	.000	.019		.000
	N	115	115	115	115	115	115	115
EK_1	Pearson Correlation	.545**	.582**	.776**	.702**	.730**	.827**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	115	115	115	115	115	115	115
READING_1	Pearson Correlation	.091	.264**	-.095	-.058	.244**	-.086	.081
	Sig. (2-tailed)	.334	.004	.314	.536	.009	.361	.392
	N	115	115	115	115	115	115	115
WRITING_1	Pearson Correlation	.521**	.041	.063	.027	.320**	.051	.220*
	Sig. (2-tailed)	.000	.662	.503	.773	.000	.589	.018
	N	115	115	115	115	115	115	115

Correlations

		READING_1	WRITING_1
UGJT_1	Pearson Correlation	.091	.521**
	Sig. (2-tailed)	.334	.000
	N	115	115
LAT_1	Pearson Correlation	.264**	.041

	Sig. (2-tailed)	.004	.662
	N	115	115
MKT1_1	Pearson Correlation	-.095	.063
	Sig. (2-tailed)	.314	.503
	N	115	115
MKT2_1	Pearson Correlation	-.058	.027
	Sig. (2-tailed)	.536	.773
	N	115	115
AK_1	Pearson Correlation	.244**	.320**
	Sig. (2-tailed)	.009	.000
	N	115	115
MK_1	Pearson Correlation	-.086	.051
	Sig. (2-tailed)	.361	.589
	N	115	115
EK_1	Pearson Correlation	.081	.220*
	Sig. (2-tailed)	.392	.018
	N	115	115
READING_1	Pearson Correlation	1	.087
	Sig. (2-tailed)		.355
	N	115	115
WRITING_1	Pearson Correlation	.087	1
	Sig. (2-tailed)	.355	
	N	115	115

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		UGJT_4	LAT_4	MKT1_4	MKT2_4	AK_4	MK_4	EK_4
UGJT_4	Pearson Correlation	1	.288**	.237*	.070	.651**	.178	.480**
	Sig. (2-tailed)		.002	.013	.469	.000	.063	.000
	N	110	110	110	110	110	110	110
LAT_4	Pearson Correlation	.288**	1	.323**	.174	.915**	.285**	.699**
	Sig. (2-tailed)	.002		.001	.069	.000	.003	.000
	N	110	110	110	110	110	110	110
MKT1_4	Pearson Correlation	.237*	.323**	1	.556**	.356**	.892**	.807**
	Sig. (2-tailed)	.013	.001		.000	.000	.000	.000
	N	110	110	110	110	110	110	110
MKT2_4	Pearson Correlation	.070	.174	.556**	1	.168	.872**	.690**
	Sig. (2-tailed)	.469	.069	.000		.080	.000	.000

	N	110	110	110	110	110	110	110
AK_4	Pearson Correlation	.651**	.915**	.356**	.168	1	.301**	.757**
	Sig. (2-tailed)	.000	.000	.000	.080		.001	.000
	N	110	110	110	110	110	110	110
MK_4	Pearson Correlation	.178	.285**	.892**	.872**	.301**	1	.851**
	Sig. (2-tailed)	.063	.003	.000	.000	.001		.000
	N	110	110	110	110	110	110	110
EK_4	Pearson Correlation	.480**	.699**	.807**	.690**	.757**	.851**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	110	110	110	110	110	110	110
READING_4	Pearson Correlation	.192*	.175	.030	-.022	.220*	.006	.125
	Sig. (2-tailed)	.045	.067	.758	.820	.021	.954	.194
	N	110	110	110	110	110	110	110
WRITING_4	Pearson Correlation	.307**	.239*	.121	.108	.319**	.130	.265**
	Sig. (2-tailed)	.001	.012	.208	.261	.001	.175	.005
	N	110	110	110	110	110	110	110

Correlations

		READING_4	WRITING_4
UGJT_4	Pearson Correlation	.192*	.307**
	Sig. (2-tailed)	.045	.001
	N	110	110
LAT_4	Pearson Correlation	.175	.239*
	Sig. (2-tailed)	.067	.012
	N	110	110
MKT1_4	Pearson Correlation	.030	.121
	Sig. (2-tailed)	.758	.208
	N	110	110
MKT2_4	Pearson Correlation	-.022	.108
	Sig. (2-tailed)	.820	.261
	N	110	110
AK_4	Pearson Correlation	.220*	.319**
	Sig. (2-tailed)	.021	.001
	N	110	110
MK_4	Pearson Correlation	.006	.130
	Sig. (2-tailed)	.954	.175
	N	110	110
EK_4	Pearson Correlation	.125	.265**
	Sig. (2-tailed)	.194	.005
	N	110	110
READING_4	Pearson Correlation	1	.467**

	Sig. (2-tailed)		.000
	N	110	110
WRITING_4	Pearson Correlation	.467**	1
	Sig. (2-tailed)	.000	
	N	110	110

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		UGJT	LAT	MKT1	MKT2	AK	MK	EK	READING
UGJT	Pearson Correlation	1	.192**	.260**	.170*	.653**	.242**	.531**	.097
	Sig. (2-tailed)		.004	.000	.011	.000	.000	.000	.146
	N	225	225	225	225	225	225	225	225
LAT	Pearson Correlation	.192**	1	.223**	.074	.868**	.167*	.597**	.233**
	Sig. (2-tailed)	.004		.001	.267	.000	.012	.000	.000
	N	225	225	225	225	225	225	225	225
MKT1	Pearson Correlation	.260**	.223**	1	.585**	.304**	.891**	.797**	-.049
	Sig. (2-tailed)	.000	.001		.000	.000	.000	.000	.462
	N	225	225	225	225	225	225	225	225
MKT2	Pearson Correlation	.170*	.074	.585**	1	.143*	.890**	.708**	-.090
	Sig. (2-tailed)	.011	.267	.000		.032	.000	.000	.179
	N	225	225	225	225	225	225	225	225
AK	Pearson Correlation	.653**	.868**	.304**	.143*	1	.251**	.729**	.228**
	Sig. (2-tailed)	.000	.000	.000	.032		.000	.000	.001
	N	225	225	225	225	225	225	225	225
MK	Pearson Correlation	.242**	.167*	.891**	.890**	.251**	1	.846**	-.078
	Sig. (2-tailed)	.000	.012	.000	.000	.000		.000	.244
	N	225	225	225	225	225	225	225	225
EK	Pearson Correlation	.531**	.597**	.797**	.708**	.729**	.846**	1	.071
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.291
	N	225	225	225	225	225	225	225	225
READING	Pearson Correlation	.097	.233**	-.049	-.090	.228**	-.078	.071	1
	Sig. (2-tailed)	.146	.000	.462	.179	.001	.244	.291	
	N	225	225	225	225	225	225	225	225

WRITING	Pearson Correlation	.461**	.102	.119	.137*	.312**	.144*	.274**	.227**
	Sig. (2-tailed)	.000	.126	.076	.039	.000	.031	.000	.001
	N	225	225	225	225	225	225	225	225

Correlations

		WRITING
UGJT	Pearson Correlation	.461**
	Sig. (2-tailed)	.000
	N	225
LAT	Pearson Correlation	.102
	Sig. (2-tailed)	.126
	N	225
MKT1	Pearson Correlation	.119
	Sig. (2-tailed)	.076
	N	225
MKT2	Pearson Correlation	.137*
	Sig. (2-tailed)	.039
	N	225
AK	Pearson Correlation	.312**
	Sig. (2-tailed)	.000
	N	225
MK	Pearson Correlation	.144*
	Sig. (2-tailed)	.031
	N	225
EK	Pearson Correlation	.274**
	Sig. (2-tailed)	.000
	N	225
READING	Pearson Correlation	.227**
	Sig. (2-tailed)	.001
	N	225
WRITING	Pearson Correlation	1
	Sig. (2-tailed)	
	N	225

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	AK_1[b]	.	Enter
2	MK_1[b]	.	Enter

a. Dependent Variable: READING_1
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.244[a]	.060	.051	11.144	.060	7.163	1	113
2	.283[b]	.080	.064	11.072	.020	2.479	1	112

Model Summary

Model	Change Statistics
	Sig. F Change
1	.009
2	.118

a. Predictors: (Constant), AK_1
b. Predictors: (Constant), AK_1, MK_1

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	889.503	1	889.503	7.163	.009[b]
	Residual	14032.792	113	124.184		
	Total	14922.296	114			
2	Regression	1193.390	2	596.695	4.868	.009[c]
	Residual	13728.906	112	122.580		
	Total	14922.296	114			

a. Dependent Variable: READING_1
b. Predictors: (Constant), AK_1
c. Predictors: (Constant), AK_1, MK_1

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	47.924	5.699		8.409	.000
	AK_1	.213	.080	.244	2.676	.009
2	(Constant)	50.389	5.875		8.577	.000
	AK_1	.241	.081	.276	2.973	.004
	MK_1	-.105	.067	-.146	-1.575	.118

a. Dependent Variable: READING_1

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	AK_1[b]	.	Enter
2	MK_1[b]	.	Enter

a. Dependent Variable: WRITING_1
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.320[a]	.102	.094	13.248	.102	12.885	1	113
2	.321[b]	.103	.087	13.304	.000	.047	1	112

Model Summary

Model	Change Statistics
	Sig. F Change
1	.000
2	.829

a. Predictors: (Constant), AK_1
b. Predictors: (Constant), AK_1, MK_1

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2261.513	1	2261.513	12.885	.000[b]
	Residual	19833.270	113	175.516		
	Total	22094.783	114			
2	Regression	2269.855	2	1134.927	6.412	.002[c]
	Residual	19824.928	112	177.008		
	Total	22094.783	114			

a. Dependent Variable: WRITING_1
b. Predictors: (Constant), AK_1
c. Predictors: (Constant), AK_1, MK_1

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	40.130	6.776		5.923	.000
	AK_1	.340	.095	.320	3.590	.000
2	(Constant)	40.538	7.060		5.742	.000
	AK_1	.345	.098	.324	3.536	.001
	MK_1	-.017	.080	-.020	-.217	.829

a. Dependent Variable: WRITING_1

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	AK_4[b]	.	Enter
2	MK_4[b]	.	Enter

a. Dependent Variable: READING_4
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.220[a]	.048	.039	12.185	.048	5.482	1	108
2	.229[b]	.052	.035	12.216	.004	.457	1	107

Model Summary

Model	Change Statistics
	Sig. F Change
1	.021
2	.501

a. Predictors: (Constant), AK_4
b. Predictors: (Constant), AK_4, MK_4

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	813.914	1	813.914	5.482	.021[b]
	Residual	16034.958	108	148.472		
	Total	16848.873	109			
2	Regression	882.069	2	441.035	2.956	.056[c]
	Residual	15966.803	107	149.222		
	Total	16848.873	109			

a. Dependent Variable: READING_4
b. Predictors: (Constant), AK_4
c. Predictors: (Constant), AK_4, MK_4

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	45.207	6.150		7.351	.000
	AK_4	.201	.086	.220	2.341	.021
2	(Constant)	46.447	6.433		7.221	.000
	AK_4	.219	.090	.240	2.431	.017
	MK_4	-.049	.072	-.067	-.676	.501

a. Dependent Variable: READING_4

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	AK_4[b]	.	Enter
2	MK_4[b]	.	Enter

a. Dependent Variable: WRITING_4
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.319[a]	.102	.093	11.829	.102	12.234	1	108
2	.321[b]	.103	.086	11.875	.001	.152	1	107

Model Summary

Model	Change Statistics
	Sig. F Change
1	.001
2	.698

a. Predictors: (Constant), AK_4
b. Predictors: (Constant), AK_4, MK_4

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1711.787	1	1711.787	12.234	.001[b]
	Residual	15111.167	108	139.918		
	Total	16822.955	109			
2	Regression	1733.208	2	866.604	6.145	.003[c]
	Residual	15089.747	107	141.026		
	Total	16822.955	109			

a. Dependent Variable: WRITING_4
b. Predictors: (Constant), AK_4
c. Predictors: (Constant), AK_4, MK_4

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	49.359	5.970		8.268	.000
	AK_4	.292	.083	.319	3.498	.001

2	(Constant)	48.663	6.253		7.782	.000
	AK_4	.281	.088	.308	3.205	.002
	MK_4	.027	.070	.037	.390	.698

a. Dependent Variable: WRITING_4

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	AK[b]	.	Enter
2	MK[b]	.	Enter

a. Dependent Variable: READING
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.228[a]	.052	.048	11.751	.052	12.278	1	223
2	.268[b]	.072	.063	11.656	.020	4.681	1	222

Model Summary

Model	Change Statistics
	Sig. F Change
1	.001
2	.032

a. Predictors: (Constant), AK
b. Predictors: (Constant), AK, MK

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1695.518	1	1695.518	12.278	.001[b]
	Residual	30794.722	223	138.093		
	Total	32490.240	224			
2	Regression	2331.382	2	1165.691	8.581	.000[c]
	Residual	30158.858	222	135.851		
	Total	32490.240	224			

a. Dependent Variable: READING
b. Predictors: (Constant), AK

c. Predictors: (Constant), AK, MK

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	46.639	4.221		11.049	.000
	AK	.207	.059	.228	3.504	.001
2	(Constant)	49.100	4.339		11.317	.000
	AK	.240	.060	.265	3.963	.000
	MK	-.102	.047	-.145	-2.163	.032

a. Dependent Variable: READING

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	AK[b]	.	Enter
2	MK[b]	.	Enter

a. Dependent Variable: WRITING
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.312[a]	.097	.093	12.856	.097	23.992	1	223
2	.319[b]	.102	.094	12.852	.005	1.134	1	222

Model Summary

Model	Change Statistics
	Sig. F Change
1	.000
2	.288

a. Predictors: (Constant), AK
b. Predictors: (Constant), AK, MK

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3965.397	1	3965.397	23.992	.000[b]

	Residual	36856.825	223	165.277		
	Total	40822.222	224			
2	Regression	4152.784	2	2076.392	12.571	.000[c]
	Residual	36669.438	222	165.178		
	Total	40822.222	224			

a. Dependent Variable: WRITING
b. Predictors: (Constant), AK
c. Predictors: (Constant), AK, MK

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	44.662	4.618		9.671	.000
	AK	.316	.065	.312	4.898	.000
2	(Constant)	43.326	4.784		9.056	.000
	AK	.298	.067	.294	4.475	.000
	MK	.055	.052	.070	1.065	.288

a. Dependent Variable: WRITING

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	MK[b]	.	Enter
2	AK[b]	.	Enter
3	WRITING[b]	.	Enter
4	YEAR_OF_STUDY[b]	.	Enter

a. Dependent Variable: READING
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.078[a]	.006	.002	12.034	.006	1.367	1	223
2	.268[b]	.072	.063	11.656	.066	15.704	1	222
3	.320[c]	.102	.090	11.488	.031	7.522	1	221
4	.355[d]	.126	.110	11.359	.024	6.037	1	220

Model Summary

Model	Change Statistics
	Sig. F Change
1	.244
2	.000
3	.007
4	.015

a. Predictors: (Constant), MK
b. Predictors: (Constant), MK, AK
c. Predictors: (Constant), MK, AK, WRITING
d. Predictors: (Constant), MK, AK, WRITING, YEAR_OF_STUDY

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	197.955	1	197.955	1.367	.244[b]
	Residual	32292.285	223	144.808		
	Total	32490.240	224			
2	Regression	2331.382	2	1165.691	8.581	.000[c]
	Residual	30158.858	222	135.851		
	Total	32490.240	224			
3	Regression	3324.142	3	1108.047	8.396	.000[d]
	Residual	29166.098	221	131.973		
	Total	32490.240	224			
4	Regression	4103.097	4	1025.774	7.950	.000[e]
	Residual	28387.143	220	129.032		
	Total	32490.240	224			

a. Dependent Variable: READING
b. Predictors: (Constant), MK
c. Predictors: (Constant), MK, AK
d. Predictors: (Constant), MK, AK, WRITING
e. Predictors: (Constant), MK, AK, WRITING, YEAR_OF_STUDY

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	63.749	2.345		27.188	.000
	MK	-.055	.047	-.078	-1.169	.244
2	(Constant)	49.100	4.339		11.317	.000
	MK	-.102	.047	-.145	-2.163	.032
	AK	.240	.060	.265	3.963	.000
3	(Constant)	41.971	5.004		8.387	.000
	MK	-.111	.047	-.157	-2.385	.018

	AK	.191	.062	.210	3.062	.002
	WRITING	.165	.060	.184	2.743	.007
4	(Constant)	41.645	4.950		8.413	.000
	MK	-.078	.048	-.110	-1.616	.108
	AK	.170	.062	.188	2.738	.007
	WRITING	.197	.061	.220	3.238	.001
	YEAR_OF_STUDY	-3.985	1.622	-.166	-2.457	.015

a. Dependent Variable: READING

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	MK_1[b]	.	Enter
2	AK_1[b]	.	Enter

a. Dependent Variable: READING_1
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.086[a]	.007	-.001	11.449	.007	.841	1	113
2	.283[b]	.080	.064	11.072	.073	8.837	1	112

Model Summary

Model	Change Statistics
	Sig. F Change
1	.361
2	.004

a. Predictors: (Constant), MK_1
b. Predictors: (Constant), MK_1, AK_1

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	110.192	1	110.192	.841	.361[b]
	Residual	14812.104	113	131.081		
	Total	14922.296	114			
2	Regression	1193.390	2	596.695	4.868	.009[c]

	Residual	13728.906	112	122.580		
	Total	14922.296	114			

a. Dependent Variable: READING_1
b. Predictors: (Constant), MK_1
c. Predictors: (Constant), MK_1, AK_1

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	65.523	3.031		21.615	.000
	MK_1	-.062	.067	-.086	-.917	.361
2	(Constant)	50.389	5.875		8.577	.000
	MK_1	-.105	.067	-.146	-1.575	.118
	AK_1	.241	.081	.276	2.973	.004

a. Dependent Variable: READING_1

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	MK_1[b]	.	Enter
2	AK_1[b]	.	Enter

a. Dependent Variable: WRITING_1
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.051[a]	.003	-.006	13.965	.003	.294	1	113
2	.321[b]	.103	.087	13.304	.100	12.500	1	112

Model Summary

Model	Change Statistics
	Sig. F Change
1	.589
2	.001

a. Predictors: (Constant), MK_1
b. Predictors: (Constant), MK_1, AK_1

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	57.281	1	57.281	.294	.589[b]
	Residual	22037.502	113	195.022		
	Total	22094.783	114			
2	Regression	2269.855	2	1134.927	6.412	.002[c]
	Residual	19824.928	112	177.008		
	Total	22094.783	114			

a. Dependent Variable: WRITING_1
b. Predictors: (Constant), MK_1
c. Predictors: (Constant), MK_1, AK_1

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	62.168	3.698		16.813	.000
	MK_1	.045	.082	.051	.542	.589
2	(Constant)	40.538	7.060		5.742	.000
	MK_1	-.017	.080	-.020	-.217	.829
	AK_1	.345	.098	.324	3.536	.001

a. Dependent Variable: WRITING_1

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	MK_4[b]	.	Enter
2	AK_4[b]	.	Enter

a. Dependent Variable: READING_4
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.006[a]	.000	-.009	12.490	.000	.003	1	108

2	.229[b]	.052	.035	12.216	.052	5.908	1	107

Model Summary

Model	Change Statistics
	Sig. F Change
1	.954
2	.017

a. Predictors: (Constant), MK_4
b. Predictors: (Constant), MK_4, AK_4

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.521	1	.521	.003	.954[b]
	Residual	16848.352	108	156.003		
	Total	16848.873	109			
2	Regression	882.069	2	441.035	2.956	.056[c]
	Residual	15966.803	107	149.222		
	Total	16848.873	109			

a. Dependent Variable: READING_4
b. Predictors: (Constant), MK_4
c. Predictors: (Constant), MK_4, AK_4

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	59.134	3.844		15.384	.000
	MK_4	.004	.071	.006	.058	.954
2	(Constant)	46.447	6.433		7.221	.000
	MK_4	-.049	.072	-.067	-.676	.501
	AK_4	.219	.090	.240	2.431	.017

a. Dependent Variable: READING_4

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	MK_4[b]	.	Enter
2	AK_4[b]	.	Enter

a. Dependent Variable: WRITING_4
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.130[a]	.017	.008	12.375	.017	1.860	1	108
2	.321[b]	.103	.086	11.875	.086	10.271	1	107

Model Summary

Model	Change Statistics
	Sig. F Change
1	.175
2	.002

a. Predictors: (Constant), MK_4
b. Predictors: (Constant), MK_4, AK_4

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	284.798	1	284.798	1.860	.175[b]
	Residual	16538.156	108	153.131		
	Total	16822.955	109			
2	Regression	1733.208	2	866.604	6.145	.003[c]
	Residual	15089.747	107	141.026		
	Total	16822.955	109			

a. Dependent Variable: WRITING_4
b. Predictors: (Constant), MK_4
c. Predictors: (Constant), MK_4, AK_4

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	64.926	3.808		17.048	.000
	MK_4	.095	.070	.130	1.364	.175

2	(Constant)	48.663	6.253		7.782	.000
	MK_4	.027	.070	.037	.390	.698
	AK_4	.281	.088	.308	3.205	.002

a. Dependent Variable: WRITING_4

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	MK[b]	.	Enter
2	AK[b]	.	Enter

a. Dependent Variable: READING
b. All requested variables entered.

Model Summary

					Change Statistics			
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2
1	.078[a]	.006	.002	12.034	.006	1.367	1	223
2	.268[b]	.072	.063	11.656	.066	15.704	1	222

Model Summary

	Change Statistics
Model	Sig. F Change
1	.244
2	.000

a. Predictors: (Constant), MK
b. Predictors: (Constant), MK, AK

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	197.955	1	197.955	1.367	.244[b]
	Residual	32292.285	223	144.808		
	Total	32490.240	224			
2	Regression	2331.382	2	1165.691	8.581	.000[c]
	Residual	30158.858	222	135.851		
	Total	32490.240	224			

a. Dependent Variable: READING
b. Predictors: (Constant), MK

c. Predictors: (Constant), MK, AK

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	63.749	2.345		27.188	.000
	MK	-.055	.047	-.078	-1.169	.244
2	(Constant)	49.100	4.339		11.317	.000
	MK	-.102	.047	-.145	-2.163	.032
	AK	.240	.060	.265	3.963	.000

a. Dependent Variable: READING

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	MK[b]	.	Enter
2	AK[b]	.	Enter

a. Dependent Variable: WRITING
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.144[a]	.021	.016	13.389	.021	4.711	1	223
2	.319[b]	.102	.094	12.852	.081	20.028	1	222

Model Summary

Model	Change Statistics
	Sig. F Change
1	.031
2	.000

a. Predictors: (Constant), MK
b. Predictors: (Constant), MK, AK

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	844.581	1	844.581	4.711	.031[b]

	Residual	39977.641	223	179.272		
	Total	40822.222	224			
2	Regression	4152.784	2	2076.392	12.571	.000[c]
	Residual	36669.438	222	165.178		
	Total	40822.222	224			

a. Dependent Variable: WRITING
b. Predictors: (Constant), MK
c. Predictors: (Constant), MK, AK

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	61.568	2.609		23.599	.000
	MK	.114	.052	.144	2.171	.031
2	(Constant)	43.326	4.784		9.056	.000
	MK	.055	.052	.070	1.065	.288
	AK	.298	.067	.294	4.475	.000

a. Dependent Variable: WRITING

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	EK[b]	.	Enter

a. Dependent Variable: READING
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.071[a]	.005	.001	12.040	.005	1.120	1	223

Model Summary

Model	Change Statistics
	Sig. F Change
1	.291

a. Predictors: (Constant), EK

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	162.301	1	162.301	1.120	.291[b]
	Residual	32327.939	223	144.968		
	Total	32490.240	224			

a. Dependent Variable: READING
b. Predictors: (Constant), EK

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	57.045	3.983		14.320	.000
	EK	.071	.067	.071	1.058	.291

a. Dependent Variable: READING

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	EK[b]	.	Enter

a. Dependent Variable: WRITING
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.274[a]	.075	.071	13.014	.075	18.033	1	223

Model Summary

Model	Change Statistics
	Sig. F Change
1	.000

a. Predictors: (Constant), EK

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3054.136	1	3054.136	18.033	.000[b]
	Residual	37768.086	223	169.364		
	Total	40822.222	224			

a. Dependent Variable: WRITING
b. Predictors: (Constant), EK

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	48.980	4.306		11.376	.000
	EK	.306	.072	.274	4.247	.000

a. Dependent Variable: WRITING

APPENDIX 21-*t* Tests_Reading and Writing

Group Statistics

	YEAR_OF_STUDY	N	Mean	Std. Deviation	Std. Error Mean
READING	1st year	115	62.92	11.441	1.067
	4th year	110	59.35	12.433	1.185
WRITING	1st year	115	64.04	13.922	1.298
	4th year	110	69.86	12.423	1.185

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
READING	Equal variances assumed	.056	.812	2.247	223	.026
	Equal variances not assumed			2.242	219.437	.026
WRITING	Equal variances assumed	3.493	.063	-3.303	223	.001
	Equal variances not assumed			-3.312	221.944	.001

Independent Samples Test

		t-test for Equality of Means			
		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
				Lower	Upper
READING	Equal variances assumed	3.576	1.592	.439	6.713
	Equal variances not assumed	3.576	1.595	.433	6.719
WRITING	Equal variances assumed	-5.820	1.762	-9.292	-2.348
	Equal variances not assumed	-5.820	1.757	-9.283	-2.357