

**DEVELOPING A STANDARD SCALE TO MEASURE  
TURKISH STUDENTS' FOREIGN LANGUAGE LEARNING  
EFFORT**

**TÜRK ÖĞRENCİLERİN YABANCI DİL ÖĞRENME  
ÇABALARINI ÖLÇMEK İÇİN STANDART BİR ÖLÇEK  
GELİŞTİRİLMESİ**

**Ceyhun KARABIYIK**

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This work named "Developing a Standard Scale to Measure Turkish Students' Foreign Language Learning Effort" by Ceyhun KAIRABIYIK has been approved as a Dissertation for Ph. D. Degree in the division of English Language Teaching by the below mentioned Examining Committee Members.

Head Prof. Dr. Mehmet DEMİREZEN

Member  
(Supervisor) Prof. Dr. İsmail Hakkı MIRICI

Member Assoc. Prof. Dr. İsmail Hakkı ERTEN

Member Assoc. Prof. Dr. Gonca YANGIN EKŞİ

Member Assoc. Prof. Dr. İskender Hakkı SARIĞÖZ

#### APPROVAL OF THE GRADUATE SCHOOL OF EDUCATIONAL SCIENCES

This is to certify that this dissertation was approved by the aforementioned examining committee members on 16 June 2016 in accordance with the relevant articles of the Rules and Regulations of Hacettepe University Graduate Education, and accepted as a dissertation for the Degree of Doctor of Philosophy in the Program of English Language Teaching by the Board of Directors of the Graduate School of Educational Sciences on ...../...../2016.

Prof. Dr. Berrin AKMAN

Director

The Graduate School of Educational Sciences

# DEVELOPING A STANDARD SCALE TO MEASURE TURKISH STUDENTS FOREIGN LANGUAGE LEARNING EFFORT

**Ceyhun KARABIYIK**

## **ABSTRACT**

Learning effort is considered to be an important factor in determining learning outcomes in foreign language education as it is the case for any other subject. Yet, the related line of research is starving for a measure on foreign language learning effort. This is because none of the scales deal with the pure effort component. Moreover, other current measures of learning effort also fail to address the true nature of the learning effort construct and as well as having validity problems. The current research composed of two studies, one dealing with the development of the scale and one concentrating on the validation of the measure. In doing so it addressed the gap in literature by developing a new measure of foreign language effort called Foreign Language Learning Effort Scale (FLLES), which is an instrument strongly grounded to the learning effort literature. Four dimensions of foreign language learning effort were found that are non-compliance, procedural, substantive, and focal. Moreover, a second study was undertaken to validate to measure by assessing the ability of the measure to discriminate between successful and unsuccessful foreign language learners and by determining its ability to yield theoretically justified relationships of effort with other constructs. Results indicated that the FLLES is both a reliable and valid measure in assessing the efforts tertiary level students expend in learning a foreign language.

**Keywords:** Foreign language learning effort, scale development, higher education

**Supervisor:** İsmail Hakkı MİRİCİ, Hacettepe University, Department of Foreign Language Teaching, Division of English Language Teaching

# TÜRK ÖĞRENCİLERİN YABANCI DİL ÖĞRENME ÇABALARINI ÖLÇMEK İÇİN STANDART BİR ÖLÇEK GELİŞTİRİLMESİ

**Ceyhun KARABIYIK**

## **ÖZ**

Her konuda olduğu gibi yabancı dil eğitimi alanında da öğrenme çabası öğrenme çıktılarını belirlemede önemli bir unsurdur. Fakat ilgili çalışmalar bir yabancı dil öğrenme çabası ölçeğinin eksikliğini duymaktadır çünkü alan yazındaki ölçeklerden hiçbiri salt yabancı dil öğrenme çabasını ölçmemektedir. Ayrıca diğer öğrenme çabası ölçekleri öğrenme çabası kavramının gerçek doğasını yansıtmamakla beraber geçerlilikleri konusunda soru işaretleri mevcuttur. Bu çalışma iki bölümden oluşmaktadır. İlk bölüm ölçek geliştirmeyi, ikinci bölüm ise ölçeği geçerliliğinin saptanmasını kapsamaktadır. Bu şekilde bu araştırma bir yabancı dil öğrenme çabası ölçeği (YDÖÇÖ) adında ilgili teorilere dayanan öğrencilerin yabancı dil öğrenme çabalarını ölçen bir ölçek geliştirerek alan yazındaki bu bağlamdaki boşluğu gidermiştir. Çalışma sonucunda yabancı dil öğrenme çabasının uymama, prosedürel, substantif ve odaksal olmak üzere dört boyutlu bir yapısı bulunmuştur. Ayrıca, ikinci bir çalışma ile ölçeğin geçerliliği sağlanmaya çalışılmıştır. Bu bağlamda ölçeğin yabancı dil öğrenme bağlamında başarılı ve başarısız öğrencileri ne denli ayırt edebildiğine ve ölçeğin alan yazında öğrenme çabası kavramının diğer kavramlarla olan kanıtlanmış ilişkilerini ne denli saptayabildiği araştırılmıştır. Sonuçlar YDÖÇÖ'nin yükseköğretim kurumlarında yabancı dil öğrenimi görmekte olan öğrencilerin yabancı dil öğrenme çabalarını ölçen hem geçerli hem de güvenilir bir ölçek olduğu sonucunu ortaya koymuştur.

**Anahtar sözcükler:** Yabancı dil öğrenme çabası, çaba, ölçek geliştirme, yüksek öğretim

**Danışman:** Prof. Dr. İsmail Hakkı MİRİCİ, Hacettepe Üniversitesi, Yabancı Diller Eğitimi Anabilim Dalı, İngiliz Dili Eğitimi Bilim Dalı

## ETHICS

In this thesis study, prepared in accordance with the spelling rules of Graduate School of Educational Sciences of Hacettepe University;

I declare that

- All the information and documents were obtained in the base of the academic rules
- All audio-visual and written information and results were presented according to the rules of scientific standards
- In case of using other works, related studies were cited in accordance with scientific standards
- All cited studies were fully referenced
- I did not do any distortion in the data set
- And any part of this thesis was not presented as any other thesis study at this or any other university

Ceyhun KARABIYIK

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## ABBREVIATIONS

**FLLES:** Foreign Language Learning Effort Scale

**EFA:** Exploratory Factor Analysis

**CFA:** Confirmatory Factor Analysis



## 1. INTRODUCTION

Competence in at least one foreign language is a necessity for 21st century world citizens. It provides a competitive edge in finding and maintaining employment, opens up and eases opportunities for travel and business, contributes to a greater global understanding, eases access to different people and cultures, in the same breath it is an achievement anyone can take pride in and be satisfied with. To this end, in the year 2011 the Turkish Government made foreign language courses compulsory starting from the second grade (MEB, 2012), which meant that students will study foreign languages, for 11 years till they start their undergraduate studies. The importance given to foreign language education in Turkey is no less in higher education either. According to the regulation dated 23.03.2016 of the Prime Ministry, which was issued in the official gazette numbered 29662, at least two semester's long foreign language courses are made compulsory for those undergraduate programs that are taught in a foreign language and for those programs the thirty percent of which includes courses taught in a foreign language. Besides, students who are not competent enough to further their studies in a foreign language necessitated by their department, which is determined via a foreign language achievement tests conducted at their institutions, are required to enroll to the foreign language preparatory schools of their institution at which they receive at least two semesters long foreign language education and are required to pass the foreign language proficiency exam to further their undergraduate studies.

Having said all these, one should note that all aforesaid are governmental efforts in promoting foreign language education and learning in Turkey. Yet, learning a foreign language is an individual process; in other words no one can do it for the learner. Once instruction is given, the learners are the sole party liable for the effort needed to get a sound grasp of the content or to learn. Regardless of the context, learning is a process requiring effort (Pace, 1982, Wolters, 1999); inherently, the same applies to foreign language learning as well. As posited by Horwitz, Horwitz and Cope (1986), it is a complex process necessitating personal endeavors. These endeavors that students are required to put forth to achieve



learning outcomes are classified under the concept of effort in the field of education, that is regarded as an important construct in learning.

The importance of effort as a variable in educational literature is due to several reasons. First of all, as posited by scholars, effort is a significant predictor of achievement and the two variables have causal and correlative relationship (Bishop, 1990; Pascarella & Terenzini, 1991; Tomlinson & Cross, 1991; Finn & Cox, 1992; Powell, 1996; Steinberg, Brown, & Sanford, 1996; Marks, 2000; Ping, 2009; Kuehn & Landeras, 2013; Bonneronning & Opstad, 2015). Secondly, as well as having short-term benefits, effort is also beneficial in the long run as continuous effort exertion can become habitual and form a strong work ethic that can assist learning (Turner & Patrick, 2004). Thirdly, effort benefits all learners. Carbonaro (2005) found that in terms of academic achievement, effort equally avails both low and high skilled learners. Fourthly, it was determined that effort acts as an agent in the way learner's attitudes and experiences affect achievement (Elliot, McGregor, & Gable, 1999; Dupeyrat & Mariné, 2005; Hughes, Luo, Kwok and Loyd, 2008). Fifthly, effort expenditure in mastering a subject is argued to have a positive effect on students' critical thinking skills. In this regard, it has been revealed that learning effort assists skills development, openness to diversity, and self-understanding (Pascarella, Pierson, Wolniak, & Terenzini, 2004). Sixthly, it has also been asserted effort expended on learning tasks is likely to lead to organized and efficient endeavors which in turn improve students' academic performance (Bauer & Liang, 2003). Lastly, greater effort has also been found to lead to greater retention (Buenz & Merrill, 1968; Barnett, et al, 2014). It has been asserted that those students who put effort and persist in their academic work achieve more permanent educational benefits.

Moreover, effort has also been studied as an outcome variable. There is an outgrowth in the number of studies that focus on effort as an outcome variable as evident in literature related to motivation (Dörnyei, 2005; Smith, 2009; Al Shaye et al., 2014), attitudes (Wood, 1998; Hemmings & Kay, 2010), self-efficacy (Weinberg, Gould & Jackson, 1979; Bandura & Cervone, 1983; Bandura, 1986; George, 1994; Gao, Lodewyk, & Zhang, 2009; Kitsantas & Zimmerman, 2009; Valle et al., 2009), and learning goals (Mac Iver, Stipek & Daniels, 1991; Meece & Holt, 1993; Miller, Greene, DeBacker, Ravindran, & Krows 1999; Greene,

Montalvo, Ravindran, & Nichols, 1996; Wentzel, 1996; Elliot et al., 1999; Miller et al., 1999; Xiang, Bruene, & McBride, 2004; Guan, Xiang, McBride & Bruene, 2006; Agbuga & Xiang, 2008;). Other predictors of effort in educational context included family background (Hewitt, 2007; Kuehn & Landeras, 2012; Aratibel, 2013), the degree a student values and enjoys school (Eccles & Wigfield, 1995; Marks, 2000; Singh, Granville, & Dika, 2002; Hardré et al., 2008), student-teacher relations (Midgley, Feldlaufer, & Eccles, 1989; Wentzel, 1998; Baker, 1999; den Brok, Brekelmans, & Wubbels, 2004; Hardré et al., 2008; Hughes et al., 2008), parents (Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987; Steinburg, Dornbusch, & Brown, 1992; George & Kaplan, 1998; Wentzel, 1998; Bronstein et al., 2005; Yan & Lin, 2010), peers (Natriello & McDill, 1986; Kindermann, 1993; Wentzel & Caldwell, 1997; Wentzel, 1998; Marks, 2000; Stewart, 2008), and the regulation of external commitments whether these be establishing social relationships (Bauer & Liang, 2003), part-time employment (Furr & Elling, 2000; Furr & Elling, 2002; Lundberg, 2004), time spent commuting (McGrath & Braunstein, 1997) or household duties (Kuh, 2003; HERI, 2004). Yet, the number of possible predictors of learning effort is so large and diverse that much research is needed to understand precisely what influences learners' effort towards a particular learning outcome, which is out of the scope of this study. The crucial point here is that effort plays an important role in determining success in learning either as a predictor or as a mediator, which highlights its significance in learning and achievement in any educational context, whether it is history, mathematics, science or foreign languages. To this end, Kamins and Dweck (1999) and Yeung and McInerney (2005) highlight effort expended in learning a foreign language as one of the most significant contributors.

Learning effort is the composition of physical and cognitive endeavors students engage in mastering a subject and the degree to which students expend effort in their academic work is believed to be an important element in determining their learning outcomes. In this regards, Ericsson et al. (2006) argues that the most significant determinant of final achievement is the amount effort invested in mastering a skill. To this end, research also suggests that successful individuals have several common characteristics. According to Staley (2011), achievers are fond of the learning experience, seek challenges, appreciate the importance of

effort, and resist difficulties; moreover, they exhibit both effort and ability, which are essentials of success in any given context. Yet, one might argue that even some unsuccessful individuals might possess some or all of these qualities. In this regards, it has been argued that the key factor that distinguishes successful and unsuccessful individuals is not a divine spark but deliberate effort towards achieving desirable outcomes (Sorenson & Hallinan, 1977; Pintrich & De Groot, 1990; Staley, 2011). Similarly, Betts (2012) asserted that in order to facilitate learning and success, students must invest a considerable amount of effort regularly to master the necessary knowledge and skills. This is because the effort a student puts forth in learning is likely to result in a goal-directed action (Barnett et al, 2014) and those who persist and expend effort are likely enough to learn and succeed than those students do not (Ağbuğa & Xiang, 2008). There is no exception in this regards in the context of foreign language education either. Whereas Gass (1997) hypothesizes that the best way to achieve success in foreign language learning is by making effort towards this end, Utami (2015) argues that differential progress in foreign language learning is the result of differential effort expended towards learning.

Two similar learning effort models proposed by Carbonaro (2005) and Bozick and Dempsey (2010) are evident in literature and are adopted as a theoretical framework of this study as they described and categorized the construct of learning effort similarly. Carbonaro (2005) distinguished between three types of effort that are rule-oriented effort, which necessitates students' observance with institutional and classroom rules; procedural effort, which entails correspondence to demands set forth by instructors; and intellectual effort, which encompasses behaviors dedicated to mastery of a subject. Similarly, Bozick and Dempsey (2010), also categorized three types of effort; namely, procedural, substantive, and non-compliance. Procedural effort connotes passive involvement in academic endeavors whereas substantive effort reflects active involvement in learning; and non-compliance refers to behaviors that inhibit learning. As evident from the multidimensional conceptualizations of effort there is no single way to exert effort and that some endeavors directed towards learning can be more efficient than others. The intellectual or substantive type of effort has been found to lead to better learning outcomes. It has been argued that such type of effort like practicing

or revising with the goal of grasping the material is more beneficial in learning (Karpicke & Blunt, 2011). Moreover, it has been suggested that high levels of procedural effort is likely to be an indication of a struggle to understand the course material and/or an indicator of poor teaching on behalf of the instructor (Barnett, Sonnert & Sadler, 2014).

These two learning effort models form the theoretical framework for this study. Both models describe and categorize the effort construct similarly. Although the dimensions of these models have some minor differences the distinctions between them are not sharp and they provide a good basis for the understanding and study of learning effort as a distinct construct and the construction of a measure to determine foreign language learning effort. Therefore, the combination of these two models was taken as a framework for this study.

Taken all together, foreign language learning effort can be defined as the amount of individual resources students invest in the act of learning a foreign language and is characterized by in-class and out-of-class endeavors students engage in to fulfill the process of learning a foreign language. For this reason, the current measure was welded using such student behaviors and was called FLLES (Foreign Language Learning Effort Scale). The processes related to scale construction and assessment are described in the methodology section.

### **1.1. Aims of the Study**

This research is composed of two studies. The first study is aimed at constructing a reliable foreign language learning effort scale for determining Turkish tertiary-level students' foreign language learning effort levels. On the other hand, the second study is aimed at validating the instrument. In light of these aims, the research questions of both studies are as follows.

### **1.2. Research Questions**

In light of the aims of this study which were mentioned in the previous section, there are two sets of research questions that this study aims to address.

As to Study 1, which is aimed at developing an instrument to measure foreign language learning effort, the research questions are as follows:

1. What is the factor structure of Foreign Language Learning Effort (FLLE)?

2. Do FLLES items represent a singular dimension or separable dimensions of foreign language learning effort among Turkish tertiary level students?
3. Is FLLES reliable scale for determining Turkish tertiary level students' foreign language learning effort levels?

As to Study 2, which is aimed at validating the FLLES, the research questions and related hypotheses are as follows:

1. Is FLLES able to discriminate between successful and unsuccessful students with respect to their FLLEs?
2. Is foreign language learning effort analogous to the measures of other constructs?

### **1.3. Significance of the Study**

The Foreign language learning effort scale should contribute to the literature in several ways. First of all, considering the role of effort in assisting learning outcomes, a theory driven, educational level specific, reliable and valid measure should grant a greater understanding of the influences of effort in the English language learning context. Secondly, a review of effort literature reveals that the attempts to quantify learning effort ranged from multiple item questionnaires to one question surveys asking respondents the amount of work they invested in learning. Furthermore, whereas some studies relied on self-reported data from learners, some have used teacher ratings of learner effort or a combination of student and teacher ratings to gauge the amount of effort expended in learning. However, as argued by Lackaye and Margalit (2006), the measures constructed and used so far in learning effort research have failed to report any validity. Moreover, whereas some scholars have called for the need to construct better measures of learning effort (Rau & Durand, 2000; Huang, 2015), some pointed to the scarcity of theoretical and empirical research due to the hardship of measuring effort (Kuehn & Landaras, 2012). Moreover, to our knowledge there is no learning effort scale developed to date that accounts for the multi-dimensional nature of learning effort as also asserted by Carbonaro (2005) and Bozick and Dempsey (2010); in other words previously constructed measure of learning effort are single scales that mask the multifaceted nature of the construct. In the same vein, there is no scale designed to measure foreign language learning effort as a distinct construct to our

knowledge. While existing learning effort scales show adequate reliability, there is no information regards their validity, besides, the factor structure of these measures have not been examined, and, consequently, have potentially ignored important aspects of this construct. Thirdly, foreign language learning effort should be assessed in a consistent manner. The development and testing of a foreign language learning effort measure for tertiary level students can help build sound and consistent evaluations that are pragmatic in planning and assessment of school programs. A scientifically sound measure should strengthen the effective measurement of foreign language learning effort and serve researchers and instructors in determining the amount of effort students expend in learning English at a certain time or changes of effort over a time period via multiple administrations.

#### **1.4. Assumptions and Limitations**

First of all, it is assumed that students that volunteered in the current study gave their full and careful attention when reading the items in the FLLES and while filling them out. Secondly, it is also presumed that the participants reflected their true foreign language learning efforts. Another assumption of the study was that the sample selected via a convenient sampling methodology was representative of the tertiary level student population in Ankara and Turkey to a certain degree. Additionally, the FLLES is assumed to measure the foreign language learning effort levels of tertiary level students.

On the other hand, there are a number of limitations of this study. Firstly, there were several limitations regards the generalizability of the findings to all undergraduate English learners. FLLES was implemented at five universities in Ankara selected using a convenient sampling methodology rather than a random selection procedure. Data collected from four of these universities was used in the development study whereas data collected from one distinct university was used in the validation study. If the study was conducted at different universities in Ankara, Turkey or another country, the results may have been dissimilar. Along the same line, if the study was conducted with students from elementary, secondary, or postsecondary grades; the results may have also been different. Moreover, the study sample may not have fully reflected some students at the five undergraduate institutions including those absent on the day or time of data collection, those that

were not enrolled to the English preparatory school, those that did not volunteer in the study, and those that were not proficient in both English and Turkish as two of the questionnaires used in this study was in English whereas the rest were in Turkish. Lastly, all the participants that participated in this study were studying English therefore, it is wise to point out that the results should be carefully viewed when comparisons are made with learner of other foreign languages no matter in which educational context they are.



## **2. REVIEW OF LITERATURE**

### **2.1. Introduction**

Having provided a basic overview of what effort and learning effort is in the previous section, it is considered important to have a look at the conceptual definitions and characteristics of effort in more detail. Moreover, this chapter will also include a more detailed account of the frameworks provided for learning effort to enhance our understanding of the concept. Moreover, an examination of the typology of measurement approaches to assess learning effort is also considered of utmost importance as the current study focuses on developing an instrument to gauge foreign language learning effort. This chapter also includes a section allocated to determining the importance of effort in educational contexts. To this end this section will include descriptions of the concepts of effort and learning effort, the aforementioned frameworks for learning effort, the typology of the measurement approaches used to date to quantify learning effort in different educational contexts, and its relationship with constructs that are relevant to this study which are achievement, attitudes toward learning, and amotivation.

### **2.2. Effort**

In a general sense outside educational contexts, effort has been defined in a number of ways. Dewey (1897) defined effort as actions taken to reconstruct old habits or to adapt to new conditions. Meltzer, Katzir-Cohen, Miller and Roditi (2001), see it as a conscious and persistent initiative to accomplish a particular goal. On the other hand, Awang- Hashim, O'Neil and Hocevar (2002) posit that effort is a mental toil or will to persist in order to realize a task. In the same vein, broader definitions of effort as energy spent (Maehr & Braskamp, 1986; NEA, 2007; Jonas, 2011), actuated behavior (Furrer & Skinner, 2003), or focused attention (Crookes & Schmidt, 1991) are also present in literature.

A review of literature also shows that the construct has a number of characteristics. First of all, it is personal (Heider, 1958; Rosenbaum, 1972; Lewis & Weiner, 1985; 1992; 2005; Sullivan, 2005; Yeung, 2011; Kuehn and Landeras, 2013; Al shaye et al., 2014). This denotes that it is an individual decision variable. The choice of putting forth effort in any act is solely up to the person. Secondly, it



is controllable (Weiner, 1985; 1992; 2005; Yeung, 2011; Al shaye et al., 2014), which means that its intensity or amount can be altered by the person involved according to the existing circumstances. Thirdly, it is unstable (Weiner, 1979; 1985; 1992; 2005; Lewis & Sullivan, 2005) as it varies with place and time. As can be understood from the overview provided above, effort is a unique multifaceted construct. The following section will elaborate on effort in the educational context.

### **2.3. Learning Effort**

Effort is a widely used construct in educational research as a predictor or outcome variable. Yet, the concept of learner effort lacks a well-established, universally accepted, and clear-cut definition. Besides, it is common to come across various terminologies like scholastic effort (Prince, Kipps, Wilhelm & Wetzel, 1981), student effort (e.g. Tomlinson, 1991), work effort (Roderick and Engel, 2001), academic effort (e.g. Adamuti-Trache, 2013), or study effort (e.g. Non & Templaar, 2014) in educational literature that fundamentally correspond to a single phenomenon. This in turn leads to conceptual ambiguity and confusion since one would expect different labels to denote distinct concepts and in the same vein one may easily expect a unique definition and conceptualization for each. Therefore, in order to illuminate any terminological confusion, “learning effort” is hereby proposed as an umbrella term to refer to endeavors put forth in educational contexts.

Nevertheless, several definitions of the construct are prevalent in literature. Soper (1976) defined learning effort as the efficiency a student uses his or her human capital in a course. A wide set of definitions formulated over the years postulate learning effort as energy spent in the course of learning (Pintrich, Smith, Garcia & McKeachie, 1993); in the process of studying (Zimmerman and Risemberg, 1997); in fulfilling the formal academic demands of their teacher (Carbonaro, 2005); in responding to a learning situation (Buenz & Merrill, 1968); and/or in acquiring the knowledge and skills taught in the classroom, adhering to school norms and expectations, and completing academic tasks in quality fashion (Kormanik, 2011). Other sets of definitions operationalized learning effort as the amount of study or course related work carried out (Schuman, Walsh & Olson; 2001), the will to commit to onerous situations and openness to unfamiliar and unique challenges (Richter, Lehrl & Weinert, 2016), the amount of work carried out to learn (Schau,

Stevens, Dauphinee & Del Vecchio, 1995), the set of behaviors students engage in to master a skill or complete a task (Bozick and Dempsey, 2010), the action actions taken by students in improving their skill (Utami, 2015), sustained action to complete academic tasks (Kuh, 2001), students' reinvigorated, avid, emotionally positive, and focused interactions with learning activities (Kinderman, 2007), level of studying (Schuman et al, 1985), and as participation in learning/school matters (Johnson, Crosnoe & Elder Jr, 2001).

In light of the definitions evident in literature, Carbonaro (2005) has argued that the effort can be contrasted with other concepts that are often linked with it. First, he argued that the concept of resistance, which was popularized by Willis (1977), explicitly means the withdrawal of learning effort. However, Carbonaro (2005) touched upon the limitation of the concept as it fails to distinguish between the differences in effort expenditure by students who do not reject the school culture. He further argues that motivation and self-efficacy are pertinent to effort as they account for individual differences in effort exertion but not equivalent to it in that students may expend the same amounts of effort despite having varying motives and different levels of self-efficacy. Lastly, it was also considered to be of great importance to distinguish between effort and engagement. It has been argued that effort, which reflects behaviors like classroom attendance and time spent on homework (Smerdon, 1999; Johnson et al., 2001), is a key constituent of engagement. But it has been argued that the two constructs are clearly different (Bonham, 2007). It has been alleged that engagement encompasses an affective or in other words a psychological component which centers on the enthusiasm, interest, and attachment students have regards schooling (Newmann, 1992). In this regard, Carbonaro asserts that it is possible and beneficial to study effort independent of this affective component because effort can affect outcomes irrespective of students' enthusiasms, interests, and attachments to schooling.

#### **2.4. Frameworks of Learning Effort**

As mentioned before there are two conceptualizations of learning effort that promotes our understanding of the construct. One was provided by Carbonaro (2005) whereas the other conceptualization was introduced to the literature by Bozick and Dempsey (2010). Next, the details of these two conceptualizations will be explained.

#### **2.4.1. Carbonaro's Framework**

Carbonaro (2005) defined learning effort as “the amount of time and energy that students expend in meeting the formal academic requirements established by their teacher and/or school” (p. 28). He asserted that learning effort is a goal and demand specific endeavor. In this respect, he argued that students might expend similar levels of effort in fulfilling some goals or demands but different levels of effort in performing others because they are hierarchical in that some may require simple compliance whereas other may require extensive commitments.

Based on the hierarchical nature of goals and demands to be met in the learning context, Carbonaro distinguished between three types of effort that are rule-oriented, procedural and intellectual. Rule-oriented effort denotes compliance to classroom and school norms and rules. Examples of such commitments are attending classes and behaving appropriately. On the other hand, procedural effort expresses endeavors carried out by students to fulfil classroom specific demands. Examples of student behaviors include endeavors like in-class participation, assignment completion, and assignment submission. The last and most demanding type of effort in Carbonaro's framework is called intellectual effort. This type of effort involves devotion on part of the student to understand and master the course content. Intellectual effort involves more complex endeavors like studying or revising.

#### **2.4.2. Bozick and Dempsey's Framework**

Bozick and Dempsey (2010) defined the concept of learning effort as “student behaviors focused on mastering a skill or completing a task” (p. 39). They elaborated on learning effort in terms of procedural, substantive, and non-compliant behaviors as well as distinguishing between general achievement-oriented and task oriented behaviors. According to Bozick and Dempsey (2010), procedural effort consists of task completion, adherence to school and classroom rules, and exertion of the minimal amount of effort sufficient to function and to advance at school. Punctuality, homework completion, and attentiveness in the classroom are examples of such effort. Substantive effort, however, signifies an active involvement in learning. Learning behaviors like working hard at school or devoting extra time to prepare or study for exams are considered to be substantive types of effort. Non-compliance, on the other hand reflects behaviors that hinders

effort exertion like misbehaving or daydreaming in class, coming late to class, or not completing assigned homework. The second conceptual dimension identified by the scholars is the distinction between general achievement and task oriented behaviors that are related to task specificity. General achievement behaviors are related to effort put forth to do well in the classroom and school like attendance, paying attention, participation in classroom activities, and turning in homework. On the other side, task-oriented effort is aimed at specific assignments like seatwork and homework.

## 2.5. A Review of Learning Effort Measurement Approaches

As this study is aimed at developing a valid and reliable measure of foreign language learning effort, it was considered useful to review previous measurement approaches to quantifying learning effort. In this respect, a typology of the measurement approaches for learning effort was carried out to provide an overview of the literature. The terms “effort, learning effort, student effort, academic effort, school effort, language effort, language learning effort” were submitted to the database search engine and the studies that provided the full data regards their data collection technique, the measure used to quantify learning effort, and/or data source were accepted as suitable for each given criteria. A total of 126 studies were included in this typology. The measurement characteristics of the studies selected on learning effort are provided in Tables 2.1, 2.2, and 2.3.

Table 2.1 summarizes the distribution of studies relevant to their data collection technique to gauge learning effort, which are single-question surveys (SQS), multiple-question surveys (MQS), interviews (INT), experiment (EXP), school records (SR), and online records (OR) in the form of log data.

**Table 2.1: Data collection techniques adopted by previous measures of learning effort**

| <i>Data collection techniques</i> | <i>Studies</i><br><i>N=95</i>  |
|-----------------------------------|--|
| <b>SQS</b><br><i>(n=13)</i>       | Ağbuğa (2014); Chase (2001); Cheo (2003); Kahn et al. (2013); Kariya (2000); Malmberg et al. (2013); Meltzer et al. (2001); Miller et al. (1996); Strage (2007); Strauser et al. (2012); Vand de Gear et al. (2009); Veal and Compagnone (1995); Volet (1997)  |
| <b>MQS</b><br><i>(n=68)</i>       | Ağbuğa and Xiang (2008); Allen (2003); Alshare et al. (2015); Al Shaye et al. (2014); Brookhart (1998); Busse and Walter (2013); Carbonaro (2005); Choinard et al. (2007); Domina et al. (2011); Earley et al. (1987); Elliot et al. (1999); Emmioğlu (2011); Farkas et al. (1990); Federici and Skaalvik (2014); Fenollar et al. (2007); Ferrer et al. (2000); Gest et al. (2008); Heckert et al. (2006); Hsu (2005); Inagaki (2014); Kim and Chao (2009); Knight |

|                            |  |
|----------------------------|--|
|                            | and Clementsen (1999); Kormanik (2011); Kuh et al. (1991); Lalonde and Gardner (1993); Lee (2014); Levi et al. (2014); Li (2012); Magi (2010); Ma and Yi (2009; 2010); Malmberg et al. (2013a; 2013b); Marsh et al. (2006); Matsuoka (2015); Meltzer et al. (2001); Meltzer et al. (2004); Morgan and Jinks (1999); Nasiriyani (2011); Needham (1978); OECD (2001); O'neil and Brown (1997); O'neil et al. (1995/1996); Pacharn et al. (2012); Pass and Abshire (2015); Pass and Neu (2014); Phan (2009a; 2009b), Ping (2009); Pintrich (2004); Pintrich and De Groot (1990); Richardson et al. (2012); Richter et al. (2016); Shah and Ng (2005); Stewart (2008); Strauser (2012); Tan and Yates (2007); Tempelaar et al. (2007); Trautwein et al. (2015); Utami (2015); Veal and Compagnone (1995); Wentzel (1998); Wirt (2002); Xiang et al. (2004); Yeung (2011); Zinn et al. (2011) |
| <b>INT</b><br><b>(n=1)</b> | Roderick and Engel (2001)  |
| <b>EXP</b><br><b>(n=1)</b> | Buenz and Merrill (1968); Earley et al. (1987)   |
| <b>SR</b><br><b>(n=8)</b>  | Cybinski and Forster (2009); Eskew and Faley (1988) ; Kelly (2008); Rich (2006); Shouse et al. (1992); Trejos and Barboza (2008); Xiang et al. (2004); Xie et al. (2013)   |
| <b>OR</b><br><b>(n=4)</b>  | Patron and Lopez (2011); Self (2013); von Kinsky et al. (2005), Douglas and Allemanne (2007)   |

As can be seen from Table 2.1, the most popular form of data collection technique regards learning effort has been multiple-question surveys ( $n=68$ ). As mentioned above, learning effort is a multidimensional construct that encompasses a wide range of student behaviors. In this respect multiple-question surveys can be considered as efficient tools to measure the wide range of behaviors that learning effort embraces.

Table 2.2 shows the breakdown of studies in accordance to the measure used to quantify learning effort , namely time spent (TS), in-class student behaviors (ICSB), out-of-class student behaviors (OCSB), in and out-of-class student behaviors (IOCSB), time spent and in-class student behaviors, and time spent and out-of-class student behaviors.

**Table 2.2: Effort measure used to elicit learning effort by previous studies**

| <b>Effort measure</b>                   | <b>Studies (N=103)</b>   |
|---|--|
| <b>TS</b><br><b>(n=4)</b>               | Bonneroning and Opstad (2015); Patron and Lopez (2011); Peng and Wright(1994); von Kinsky et al. (2005)  |
| <b>ICSB</b><br><b>(n=11)</b>            | Ađbuđa (2014); Carbonaro (2005); Ferrer et al. (2000); Johnson et al. (2002); Malmberg et al. (2013a; 2013b); Miller et al. (1996); Magi (2010); Richter et al. (2016); Veal and Compagnone (1995); Volet (1997); Xie et al. (2013)  |
| <b>OCSB</b><br><b>(n=19)</b>            | Allen (2003); Chase (2001); Elliot et al. (1999); Fenollar et al. (2007); Frederickson (2012); Inagaki (2014); Kahn et al. (2013); Kuh et al. (1991); Marsh et al. (2006); OECD (2001); O'neil et al. (1995/1996); Pass and Abshire (2015); Pass and Neu (2014); Phan (2009a; 2009b); Ping (2009); Self (2013); Tempelaar et al. (2007); Vand de Gear et al. (2009); Xiang et al. (2004)   |
| <b>ICSB &amp; OCSB</b><br><b>(n=40)</b> | Ainsworth-Darnell and Downey (1998); Agbuga and Xiang (2008); Alshare et al. (2015); Al Shaye (2014); Bonham (2007); Brookhart (1998); Busse and Walter (2013); Choinard et al. (2007); Domina et al. (2011); Emmiođlu (2011); Farkas et al.1990); Federici and Skaalvik (2014); Gest et al. (2008); Heckert et al. (2006); Hsu (2005); Kelly (2008); Knight and Clementsen (1999); Kormanik (2011); Lee (2014); Ma and Yi (2009); Levi et al. (2014); Li (2012); Ma and Yi (2010); Meltzer et al. (2004); Morgan and Jinks (1999); Pintrich (2004); Pintrich and De Groot (1990); Rich (2006); Richardson et al. (2012); Roderick and Engel (2001); Roscigno and Ainsworth-Darnell (1999); Shouse et al. (1992); Strauser, et al. (2012); Tan and Yates (2007); Trautwein et al. (2015); Utami (2015); Wentzel (1998); Wirt and |

|                                     |   |
|-------------------------------------|---|
|                                     | Livingston (2002); Yeung (2011); Zinn et al. (2011)   |
| <b>TS &amp; ICB</b><br>(n=1)        | Schmitz and Skinner (1993)  |
| <b>TS &amp; OCB</b><br>(n=23)       | Adamuti-Trache and Sweet (2013); Aratibel (2013); Barnett et al. (2014); Borg et al. (1989); DeLuca and Rosenbaum (2001); Dickey and Houston Jr (2013); Diseth (2010); Ghani et al. (2012); Kariya (2000); Khachikian et al. (2011); Kolari et al. (2008); Kuehn and Landeras (2013); Matsuoka (2015); Michaels and Miethe (1989); Ochanomizu University (2014); O'connor et al. (1980); Okpala et al. (2000); Opore and Dramanu (2002); Rau and Durand (2000); Salsman (2013); Schmidt et al. (1993); Schmitz and Skinner (1993); Schuman (1985; 2001) |
| <b>TS, ICSB &amp; OCSB</b><br>(n=5) | Huang (2015); Kim and Chao (2009); Krohn and O'connor (2005); Shingoya and Akayabashi (2012); Williams and Clark (2010)   |

As can be elicited from the table, the most widely used measure of learning effort has been a combination of in-class and out-of-class student behaviors. Given that learning effort can take place both in and out of the classroom this result does not come as a surprise.

Among these indicators of learning effort, it has been argued that study time is not a reliable measure (Natriello & McDill, 1986). One possible explanation for this was provided by Didia and Hasnat (1989), who asserted that as far as study time is concerned, the quality of the time spent is far more important than the quantity of time spent. In this respect, Kormanik (2011) also added that students with differing competence levels require differential amounts of time to undertake the same task and that some students may spend more time on a task due to inattentiveness. Moreover, Schuman (2001) touched on the fact that the reported study time is likely to involve some breaks and distractions. Lastly, Carbonaro (2005) highlighted the fact that higher track students receive more homework compared to their low track peers.

Moreover, an in-depth account of the variables used in measuring effort was provided by Bozick and Dempsey (2010). Their analysis revealed that most articles predominantly focused on procedural or substantive types of effort. Besides, noncompliance was also used in determining the degree of effort in a number of studies, but less frequently. According to them, studies that included noncompliance as a part of their measure used it as an indirect indicator of effort, that included items on absenteeism, inattentiveness, tardiness, lack of persistence or giving up on in-class tasks, and unpreparedness. On the other hand, studies that had items exploring the procedural dimension of effort used students' level of interest, participation, attention, on-time assignment submission, and assignment completion as indicators of learning effort. Lastly, it was found that intellectual or

substantive effort variables included ratings of hard work, persistence, re-attempts on failed tasks or unaccomplished tasks, time spent, and the extent to which students displayed task directed behavior.

Table 2.3, on the other hand, offers the division of studies with respect to the data source that are student-reports (SR), teacher-reports (TR), student and teacher reports (STR), and student, teacher and parent reports (STPR).

**Table 2.3: Data source used by previous studies**

| <i>Data source</i>          | <i>Studies<br/>N=99</i>  |
|-----------------------------|--|
| <b>SR</b><br><i>(n=87)</i>  | Adamuti-Trache and Sweet (2013); Ağbuga (2014); Ağbuga and Xiang 2008; Allen et al. (2003); Alshare et al. (2015); Al Shaye et al. (2014); Aratibel (2013); Barnett et al. (2014); Bonham (2007); Bonneroning and Opstad (2015); Borg et al. (1989); Brookhart (1998); Busse and Walter (2013); Chase (2001); Cheo (2003); Choinard et al. (2007); DeLuca and Rosenbaum (2001); Dickey and Houston Jr (2012); Diseth et al. (2010); Domina et al. (2011); Earley et al. (1987); Elliot et al. (1999); Emmioğlu (2011); Federici and Skaalvik (2014); Fenollar et al. (2007); Frederickson (2012); Ghani et al. (2012); Heckert et al. (2006); Hsu (2005); Huang (2015); Inagaki (2014); Kahn et al. (2013); Kariya (2000); Kolari et al. (2008); Khachikian et al. (2011); Kim and Chao (2009); Knight and Clementsen (1999); Krohn and O'connor (2005); Kuehn and Landeras (2013); Kuh et al. (1991); Lalonde and Gardner (1993); Lee (2014); Levi et al. (2014); Li (2012); Malmberg et al. (2013a; 2013b); Marsh et al. (2006); Matsuoka (2015); Meltzer et al. (2001); Michaels and Miethe (1989); Miller et al. (1996); Morgan and Jinks (1999); Nasiriyani (2011); Ochanomizu University (2014); O'connor et al. (1980); OECD (2001); Okpala et al. (2000); O'neil et al. (1995/1996); Opare and Dramanu (2002); Pass and Abshire (2015); Pass and Neu (2014); Peng and Wright(1994); Phan (2009a; 2009b); Ping (2009); Pintrich (2004); Pintrich and De Groot (1990); Rau and Durand (2000); Richardson et al. (2012); Richter et al. (2016); Roderick and Engel (2001); Salsman et al. (2013); Schmidt et al. (1993); Schmitz and Skinner (1993); Schuman et al. (1985); Schuman (2001); Shah and Ng (2005); Shingoya and Akayabashi (2012); Stewart (2008); Strage (2007); Strauser et al. (2012); Tan and Yates (2007); Tempelaar et al. (2007); Trautwein et al. (2015); Utami (2015); Van de Gear et al. (2009); Veal and Compagnone (1995); Williams and Clark (2010); Wirt and Livingston (2002); Yeung (2011) |
| <b>TR</b><br><i>(n=7)</i>   | Ainsworth-Darnell and Downey (1998); Carbonaro (2005); Farkas et al. (1990); Ferrer et al. (2000); Gest et al. (2008); Magi et al. (2010); Roscigno and Ainsworth-Darnell (1999)   |
| <b>STR</b><br><i>(n=3)</i>  | Meltzer et al. (2004); Kormanik (2011); Wentzel (1998)   |
| <b>STPR</b><br><i>(n=2)</i> | Ma and Yi (2009; 2010)   |

As can be seen from the above provided table, the most widely used means of gathering data in researching effort has been student reports. Yet no matter the perspective with which effort is measured, there are some problems associated with it. In the case of student reports, it has been argued that students may either overstate their effort as a method of legitimization or understate it to compensate for their lack of ability (Covington & Omelich, 1985). On the other hand, teacher reports were also considered as lacking reliability. It has been asserted that teachers' reports of student effort can be biased by past student effort or because they are solely based on teacher observations of in-class student behaviors, they can discard student efforts outside of the classroom (Kormanik, 2011). Another point to consider here might be those students who fake their in-class efforts by

pretending to carry out tasks or by acting involved in the activities. On the other hand, as can be seen from the table above, some studies used combined measures of effort. Even though this approach may sound plausible, research revealed a low correlation between teacher and student reported efforts (Kindermann, 1993), raising questions regards the feasibility of this approach as well. Yet, in order to broaden our knowledge regards the concept, one approach has to be preferred in expense of the other, which will be determined by aimed insights to be achieved.

In short, as can be understood from the typology of the measurement approaches for learning effort, most researchers opted for student self-reports of the effort they expended in the course of learning. Moreover, it is also evident that predominantly a single scale multiple question surveys were employed in researches related to learning effort. Lastly, it was seen that most measures concentrated on a combination of both in and out of class endeavors engaged by students in mastering a subject.

## **2.6. Significance of Effort**

Upon examining what effort and learning effort constitutes and exploring the ways in which researchers measured effort, it was considered appropriate to assess the importance of learning effort. In order to do this the related line of literature was examined and meaningful associations were attempted to be made between theories and how they denote that effort is a significant area of study. Additionally, the link between effort and achievement was revealed based on the studies conducted in this respect.

### **2.6.1. Ability vs Effort**

Over the last century there was a wide spread belief that ability was the predominant factor and that there were limits up to which people can learn. However, this notion has started to change. Effort expended in the course of learning has also been highlighted as an important factor in determining learning outcomes. In this respect, Weiner (1992) acknowledges that both effort and ability as factors determining academic achievement. He considers ability as a fixed entity whereas effort as a changeable one. Similarly, Sorenson and Hallinan (1977) assert that both effort and ability have an undeniable effect on learning.



Resnick and Hall (2005) went a step further and argued that the idea of the dominant role of ability in determining learning outcomes is fading. The authors claim that there is a wide spread belief that greater effort expenditure by students can compensate for their lack of ability in any field of study, which derives from the notion that human capability is open-ended, which denotes that individuals can get more intelligence through a persistent and targeted exertion effort.

Moreover, the importance of effort in educational contexts is evident in Confucian teachings as well. While Confucian teaching alleges that ability is a determinant of the rate of attainment, effort is recognized as the key factor in achieving ultimate level of success. The importance of effort in relation to ability in the context of language learning is no less paramount. In this respect, Dörnyei (2001) also noted that as far as success in foreign language learning is concerned overemphasizing language aptitude can be misleading since all students in a foreign language classroom have an equal chance to be successful given that they put forth the necessary effort to be so.

### **2.6.2. Motivation Theory**

According to Pintrich and Schunk (1996) the term motivation originated from the Latin verb *movere*, meaning to move and is associated with effort and actions. The framework of Deci (1971; 1972) provided an account of motivation that is composed of two types of motivation that are intrinsic and extrinsic motivation. The former refers to undertaking an activity for personal pleasure whereas the latter indicates the fulfillment of an act to get a reward from an external source. Moving forward from these definitions, researchers investigated the effects of each type of motivation in educational settings. As a result of these studies, it was revealed that intrinsic and extrinsic motivation had different effects on learning. It was asserted that intrinsic motivation brought about student endeavors that result in positive academic outcomes like sustained interest, risk taking, and search for new challenges (Amabile & Gitomer, 1984; Adelman & Taylor, 1990; Spaulding, 1992). On the other, extrinsic motivation was found to have an injurious effect on learning because it did not yield desirable student behaviors (Festinger & Carlsmith, 1959; Deci, 1971; 1972; Lepper, Greene & Nisbett, 1973) and the main reason behind this was found to be the rewards which are the driving force of extrinsic motivation (Masters & Mokros, 1973). Moreover, Maehr and Stallings (1972) found that

students with extrinsic motivation attempted easier problems in the classroom especially when they were graded. To this end, it can be argued intrinsic and extrinsic motives determine the type and amount of effort a student will expend in a learning task, yet in either case the motives are actualized via effort executed by students.

In Gardner's framework of motivation (1985), motivation is composed of three elements that are the desire to achieve a goal, attitude, and effort. In his simple yet expressive description of motivation he pointed out that while many people desire to be successful and claim related rewards, it is not possible to achieve such goals without expending effort towards the desired end. That is to say, desire, interest and positive attitudes in attaining an outcome is not sufficient enough to realize a goal, effort expenditure towards achieving the desired outcome is a must. In this respect, one might as well argue that intense mental activities like thinking and wishing are also forms of motivation evident in individuals and such types of actions also involve effort expenditure. However, these are not enough to achieve desired outcomes since these are not concrete actions taken towards goal achievement; this is because true effort exertion is composed of both cognitive and physical endeavors (Kanfer, 1992).

Later Dörnyei and Otto (1998) provided an account of how desires are transformed into goals, goals converted into intentions, intentions lead to actions and how these actions are evaluated for future practices in their process model of L2 motivation. The model is composed of three stages that are preactional, actional and postactional. In the preactional stage students generate motivation by considering their wishes and desires, set goals for themselves and evaluate these in light of their desirability and their chances of accomplishing them. After goals are set, action related intentions are formed and then an action plan is developed. Intentions that are operationalized as such are immediate precursors of action (Dörnyei & Otto, 1998). Next phase is called the actional stage in which action towards the targeted end is launched and in which there is need to maintain and conserve the generated motivation while the action is executed. At this phase, subtasks are generated, implemented and constantly evaluated. A number of action control strategies are also implemented to preserve concentration and sustain effort in the face of disturbances (Dörnyei & Otto, 1998). The post-actional

phase starts after goals are attained, which also denotes the termination of action. At this stage, individuals evaluate the processes they pursued towards their goals and identify the types of activities they will be motivated to undertake in the future (Dörnyei & Otto, 1998). In this framework action equates to effort which comes into reality with after motivation is intensified. So it can be argued that, through the process model, Dörnyei and Otto (1998) demonstrate that even though people have many wishes, desires, and hopes that they want to realize, unless they take the necessary actions in the form of effort expended towards their goal these cannot be realized.

In short, while motivational theories provide extensive accounts of how effort in schooling and achievement comes to being, they also acknowledge that effort exertion on behalf of the student is a necessary condition to convert motives into accomplishments, which signifies the importance of learning effort in attainment.

### **2.6.3. Expectancy-Value Theory**

According to this theory, the amount of effort expenditure by a student on a given task depends on their expectations of success and reward in accomplishing a task and the value they tie to the reward that they will receive upon successfully fulfilling the task (Feather, 1969). It is assumed that the expectation of success and value attached to the reward is the drive behind effort expenditure. Effort exertion will not take place if the reward of task completion bears little or no value to the student. In the same way, if a student does not expect to achieve the task successfully, effort investment towards this task will not take place. In sum, the expectancy value theory elaborates on the determinants of effort expenditure in educational settings as these motives influence student accomplishments and achievements. In this way it also indirectly emphasizes the importance effort in accomplishing desired and valued outcomes in schooling, which helps to classify effort as an area worthy of study.

### **2.6.4. Self-Efficacy Theory**

The social learning theory of Bandura (1977, 1988) also offers interpretations for the diverse levels of effort exerted by students on learning tasks. There are two premises to this theory. One asserts that students evaluate their past success and failures and set goals in light of their personal ratings. In other words, they tend to

avoid tasks that they believe are off their limit whereas they undertake those that they consider themselves as able. The second premise on the other hand, comments that students set personal goals which become their norm of assessing their performance. The reward is self-satisfaction, and the means by which this can be achieved is effort towards accomplishing the goal.

Self-efficacy beliefs are related to individual's beliefs in their abilities. According to Bandura (1977), they are significant mediators of effort expenditure and persistence. Individuals with a high sense of self-efficacy do attempt tasks and persist in accomplishing them regardless of their difficulty. On the other hand, people with low self-efficacy levels exert minimal effort and usually give up easily. Bandura (1977) also distinguishes between outcome and efficacy expectations. Whereas the former refers to beliefs that a certain course of action leads to certain outcomes, the latter are beliefs that the individual is capable of undertaking the actions that result in achievement. According to the theory, students with higher efficacy and expectancy beliefs approach the learning tasks with more confidence and persist on them for longer periods regardless of their difficulty as they believe that they can succeed and that they have what it takes to accomplish them successfully, resulting in effortful behavior. The reverse case results in discouragement and lower effort expenditure on behalf of the student, especially on difficult tasks. As can be seen, either scenario involves a level of self-efficacy and conceptions of task difficulty and a varying degree of effort invested in each scenario. As this theory elaborates on the reasons behind differential effort exertion towards educational tasks, it can be argued that in doing so it also emphasized the value of effort in educational settings, which in turn asserts that research on effort is justifiable.

#### **2.6.5. Achievement Goal Theory**

Achievement goals can be defined as individual beliefs over the reasons why they attempt or engage in a task. Dweck (1986) distinguished between two orientations of achievement goals that are performance goals and learning goals. Performance goals reflect concerns regards personal ability, comparisons with others, concerns over external perceptions, desire to be recognized for achievement, and a want to avoid appearing incompetent. On the other hand, learning goals are related with the problem solving, task completion, learning, mastery, and development. It has

been proposed that students' goal orientations affect their self-efficacy beliefs and cast an influence on the amount of effort they put forth on academic tasks. It has been theorized that while students with performance goals are more likely to see failure as an indication of low ability and quit, resulting in a withdrawal of effort, students with learning goals are most likely to see failure as an indicator of a need to change their strategy and increase their effort in order to complete the task. In explaining why students make an effort rather than what they strive to achieve, and by forming a link between goal orientations and effort indirectly via self-efficacy, this theory too implies that effort is a noteworthy field of study.

#### **2.6.6. Attribution Theory**

Weiner (1979, 1986) asserts that differences in the amount of effort expended by students can be explained via the causes they attribute their successes or failures to. Whereas successful students attribute their accomplishments to their ability and effort, they tie their failures to lack of effort and unpredictable external factors (Weiner & Kukla, 1970; Weiner et al, 1972). Even though both ability and effort are internal factors, the former is stable and uncontrollable whereas the latter is an unstable and controllable factor. Attributing achievements to ability and effort brings along feelings of pride and ongoing expectations regard positive learning outcomes. On the other hand, explaining failures via a lack of effort enables students to preserve their opinions of themselves as capable students as effort is a factor under their control. Moreover, students who attach their failures to the limited amount of time they had also maintain their self-perception as proficient because they could have been successful if they had the time to expend the necessary amount of effort.

Even though, the attribution theory assumes a pivotal role of effort in determining achievement outcomes, according to Covington and Omelich (1979), they claim that attributing success and failure to the amount of effort expended is a double-edged sword. Whereas putting forth effort and gaining favorable academic outcomes bring with a sense of achievement and pride, the fact of the need to exert enormous amounts of effort in order to succeed denoted a low ability compared to those who can successfully carry out a task with minimal effort. Moreover, students who believe that they do not possess the ability to accomplish a task successfully may not even exert effort as failure would be an indication of

inability. To this end, Covington and Omelich (1979) assert that failure without putting forth effort is not failing in a real sense as true failure takes place only when a sufficient amount of effort does not yield a successful outcome. They also argue that tying failure to a lack of effort expenditure is an attempt to conserve a sense of self-worth.

By denoting that successful learners attribute their achievements in part to their effort and failures solely on effort, this theory also provides evidence for the importance of effort in achieving desired academic outcomes, which in turn promotes it as a rational field of study.

### **2.6.7. Investment Theory**

The investment theory put forth by Cattell (1943; 1978) identified two types of intelligence that are fluid intelligence and crystallized intelligence. The former refers to the overall capability to discriminate, apprehend, and reason. Application of critical thinking skills to get over unfamiliar situations or problems is an example of fluid intelligence in action. On the other hand, the latter mentioned type of intelligence comprises tacit knowledge related to a particular discipline. This type of intelligence eventuates in the course of time via the application of fluid intelligence. Once crystallized intelligence is formed, the application of fluid intelligence continues to promote the expansion of crystallized knowledge. Personality traits like Typical Intellectual Engagement (TIE), hard work, and absorption in tasks were found to be positively correlated with crystallized intelligence (Goff & Ackerman, 1992). Moreover, these results were justified in a meta-analysis involving twenty eight investment traits characterized as ones reflecting disposition to seek out, be involved in, enjoy, and constantly pursue effortful cognitive activities (von Stumm, Chamorro-Premuzic, & Ackerman, 2011). In this respect, Pass and Abshire, (2015) argued that the aforementioned personality traits are proxies of effort as effort is an important facet of them. In this connection, they further argued that because personality traits are linked with crystallized intelligence and that they involve a level of effort, effort assists the development of crystallized intelligence, which represents academic development, which again contends that effort is a decent construct to study.

### **2.6.8. Learning Effort and Achievement**

Learning effort has been a popular field of study in all educational levels including primary, secondary, post-secondary and tertiary level education and a considerable number of researches have been dedicated to assess the construct in educational contexts to determine its significance in learning and achievement. Cole, Bergin, and Whittaker (2008), studied US students from public institutions and found that the variance effort predicted was as much as that of ACT scores in English, mathematics, and social studies. A study on 3rd, 4th and 5th grade US students by Gest, Rulison, Davidson, Welsh (2008) revealed moderate correlation between effort and GPA. Moreover, Xiang, Bruene, and Mc Bride (2004) found positive correlations between effort and performance for 4th grade PE students. Similarly, Meltzer, Catzir-Cohen, Miller, and Roditi (2001), asserted that effort was the most significant contributor to academic achievement in reading, writing, spelling, and mathematics for 4th to 9th grade US students studying at urban and suburban schools. Focusing on 6th grade mathematics performance, Xie, Huang, Hua, Wang, Tang, Craig, Graesser, Lin, and Hu (2013) submitted that effort expansion increased students' math performance, especially for the high ability ones. In another study, Meltzer, Reddy, Pollica, Roditi, Sayer, and Theokas (2004) concluded that student rated effort moderately whereas teacher rated effort highly correlated with teacher rated academic performance for 6th to 8th graders. Likewise, Roderick and Engel (2001) found that effort contributed to more than mediocre learning outcomes for 6th and 8th grade US students. In two studies concentrating on 15 years old US students, Lee (2014) found that effort significantly predicted reading performance whereas Huang (2015) stated that effort was associated with increased achievement in mathematics, reading and science. In studies concentrating on 8th graders, Shouse, Schneider, and Plank (1992) and Peng and Wright (1994) found positive correlations between effort and academic achievement while Roscigno and Ainsworth-Darnell (1999) submitted that effort had a significant effect on grades. In another study, that included 7th-12th grade US adolescents, Johnson, Crosnoe, and Elder (2001) asserted that effort invested in school related activities affected their educational outcomes. On the other hand, Marks (2000) who included US students from primary, secondary and high schools in his study, also contended that effort had a significant impact on academic success.

On the other hand, studying the effect of effort on grades for high school sophomores in the US, Farkas, Grobe, Shehan, Shuan (1990), Ainsworth-Darnell and Downey (1998) concluded that effort had a positive effect on grades. Similarly, studying the effect of effort on academic success for public high school students Natriello, and McDill (1986) and Smerdon (1999) affirmed that effort expended in schooling affected the academic outcomes achieved by students. Miller, Greene, Montalvo, Ravindran, and Nichols (1996) on the other hand, also found a significant positive moderate correlation between achievement in mathematics and effort for US high school students. Along the same line, DeLuca and Rosenbaum (2001) revealed that effort had a strong and significant relationship with later educational attainment for high school sophomores. In another study, Carbonaro (2005) ascertained that effort had a significant positive effect on mathematics, English, history and science achievement for 8th and 10th grade US students. Moreover, Stewart (2008) submitted a positive correlation between effort and academic performance for 10th grade students whereas O'neil, Sugrue and Baker (1995/1996) concluded that there was a weak and significant relationship between the performance of 8th and 12th in mathematics and their effort.

Studies conducted in other country contexts have also revealed valuable results regards the interplay between learning effort and achievement in primary, secondary and post-secondary grades. In a study carried out in Canada, Adamuti-Trache and Sweet (2013) found a positive relationship between 13 and 16 year old Canadian students' effort in their science course and their grades. Vand de Gear, Pustjens, Van Damme, and De Munter (2009), who studied the link between effort and Dutch language achievement of 7th-12th grader in Belgium, found a positive correlation between effort and language achievement. In a study with 10 grade high school Israeli students Levi, Einav, Raskind, and Margalit (2014) found that effort was indirectly related to grades and predicted the average expected grade that explained actual achievement. In a study in the Iranian high school mathematics context, Nasiriyani (2011) submitted a direct, positive and significant effect of effort on achievement. Studying the relationship between effort and mathematics achievement in the Norwegian context for 8th and 10th graders, Federici and Skaalvik (2014) found significant and moderate associations between the two variables. In another study carried out by Magi et al. (2010) in Estonia, it



was determined that teacher rated effort and primary school mathematics grades were significantly and positively correlated.

In a study carried out in Germany, Schmitz and Skinner (1993) set forth that effort positively predicted mathematics and German test performance in a moderate fashion for 4th and 6th graders. In the Ghanaian context on the other hand, Opare and Dramanu (2002) reported a significant, weak, and positive relationship between effort in mathematics and educational performance for junior secondary school students. On the other hand, Ma and Yi (2009) declared a significant effect of effort on test scores for 1st and 3rd grade Taiwanese junior high students. In three studies carried out in Japan, Kariya (2000) concluded that effort independently affected academic performance for Japanese 11th graders; Shingoya and Akayabashi (2012) found effort to be related with academic performance for elementary 4th, 5th, and 6th grader and for junior high 1st and 2nd graders; and likewise in the study carried out by Ochanomizu University (2014), it was determined that higher effort lead to higher academic performance for Japanese 6th graders. In studies carried out by Ampofo and Osei-Owusu (2015a; 2015b) with public senior high school students in the same country context, it was found that there were significant moderate correlations between effort in mathematics and academic performance.

As mentioned before, there is also an important amount of research devoted to effort in higher education as well. Whereas Kuh, Arnold, and Vesper (1991), Knight and Clementsen (1999) and Strage (2007) found positive correlations between effort and academic gains, Pintrich (2004) concluded that effort was the only predictor that directly influenced learning outcomes for US undergraduate students. In a study of US undergraduate students engaged in undergraduate research a mid-western US university, Salsman et al. (2013) revealed a positive relationship between effort and profits in the areas of communication, data acquisition, professional development, self-help, professional growth, information literacy, sense of responsibility, and knowledge. In a study with undergraduate female nursing students Buenz and Merrill (1968) ascertained that greater effort resulted in greater retention. In studies centering on US economics classes, Prince et al. (1981) and Rich (2006) ascertained that effort significantly affected achievement. In the same vein, Trejos and Barboza (2008) concluded that effort

was the most relevant and significant factor in determining performance for US undergraduates in macro-economics, economics and business statistics classes, whereas Johnson, Joyce, and Sen (2002), in their study, submitted that effort was a significant positive determinant of performance for tertiary level students enrolled in an introductory financial management course. Krohn and O'Connor (2005) also found effort and achievement in macroeconomics classes to be positively related. Likewise, Barnett, Sonnert and Sadler (2014) found a positive relationship between US college students' efforts and their performance in calculus and Williams and Clark (2010) concluded that there was a weak positive relationship between effort expended and exam scores of US college students enrolled into a human development course. In a study that included undergraduates enrolled to an e-learning library and information science course in a US university, Douglas and Allemanne (2007) discovered a significant weak correlation between effort and exam scores.

There are also several studies concentrating on tertiary level students staged in other countries as well. In studies carried out in Canadian universities, Lalonde and Gardner (1993) found that effort significantly affected the achievements of undergraduate psychology students in their statistics course, whereas Pacharn, Bay, and Felton (2012) concluded that effort predicted the grades of students enrolled into an accounting course. In a study carried out at a Scandinavian business school, Bonneroning and Opstad (2015) reported a significant weak correlation between effort and exam scores in macroeconomics. In a study conducted in Singapore on undergraduate economics students, on the other hand, Cheo (2003) concluded that effort was positively associated with academic performance. In the Spanish tertiary level context, both Fenollar, Roman and Cuestas (2007) and Kuehn and Landeras (2013) asserted that effort significantly determined achievement. A study carried out in the Netherlands, Tempelaar, van der Loeff, Gijsselaers (2007) found that effort had a significant effect on statistics achievement for Dutch undergraduate students. In a study carried out with students enrolled into an undergraduate introductory psychology course in Norway, Diseth, Pallesen, Brunborg, and Larsen (2010) determined that effort predicted exam performance. Ghani, Said, and Muhammad (2012), on the other hand, found effort to be linked with achievement in an advanced financial

accounting course in Malaysia. In the Australian undergraduate context, both Volet (1997) and Cybinski and Forster (2009) found that effort had a significant effect on achievement in a first year foundation course and a business course respectively. On the other hand, in a study carried out in Turkey by Emmioğlu (2011), it was concluded that effort had a significant effect on Turkish undergraduate students' statistics achievement.

The relationship between effort and academic outcomes is not black and white and there are also studies that concluded negative and insignificant results. In a study of 7th and 10th graders by Brookhart (1998), it was found that effort did not predict a large amount of variance in achievement. Similarly, Levi et al. (2014) concluded that the effect of effort on academic achievement was insignificant for 10th grade US high school students.

A similar picture is also evident in studies that employed undergraduate participants in their studies. In this respect, O'Connor, Chassie, and Walther (1980) revealed a significant negative relationship between effort and academic achievement for US undergraduates studying psychology. Similarly, Schuman, Walsh, and Olson (1985), Michaels and Miethe (1989), Rau and Durand (2000), Schuman (2001) and Krohn and O'Connor (2005) concluded that there was a poor correlation between effort measured by study time and achievement for US college students. In a study carried out by Borg, Mason, and Saphiro (1989) on the other hand, revealed that effort was an insignificant predictor in determining the grades of US college students studying economics in their overall model, yet the result was positive and significant in the above average model whereas negative and almost significant in the below average model. In another US study by Patron and Lopez (2011) in an online macroeconomics course, effort was also found to be not a significant variable in determining grades. In studies carried out in the tertiary level Australian context, Phan (2009a; 2009b) and von Kinsky, Ivins, and Robey (2005) reported insignificant correlations between effort and academic outcomes for students enrolled into psychology and for students who study software engineering, computer science, and information technology respectively. In another study carried out in Hong Kong, undergraduate students' effort in their research methods and statistics course did not predict their achievement. Lastly, in the study carried out by Kolari, Sevender-Ranne, Viskari (2008) in the Finnish

context, first year engineering students' effort in their studies was found to be uncorrelated to their grades.

Research on effort has also concentrated on its relationship with and effect on achievement in the foreign language learning context. In a study carried out in Ghana, Opare and Dramanu (2002) concluded that effort in English had a significant, weak and positive relationship with educational outcomes for junior secondary school students. In another study, Aratibel (2013) found significant weak correlations between effort and English achievement for Spanish high school students. On the other hand, the study carried out by Inagaki (2014) with Japanese undergraduate students studying English revealed that high amounts of effort expended for a long time lead to higher academic outcomes. Moreover, in studies carried out by Ampofo and Osei-Owusu (2015a; 2015b) with public senior high school students in Ghana, it was uncovered that there were significant moderate correlations between effort in learning English and academic performance. On the other hand, there are also some negative results evident in literature. Hsu (2005), studying the relationship between the effort of Taiwanese junior college students in English, found that even though there was a weak positive relationship between effort and proficiency, the result was insignificant. Similarly, whereas Shah and Ng (2005) concluded that effort and achievement was poorly correlated for Malaysian and international students studying in a Malaysian University, Ping (2009) revealed that there was no correlation between effort and the English communication performance of Chinese college students learning English. In short, it can be concluded that studies investigating the connection between foreign language learning effort and achievement in general concluded either a significant weak to moderate relationship or an insignificant result.

In short, it can be argued that learning effort has received a considerable amount of interest in studies conducted in different educational levels and fields of education. Moreover, as covered above, the majority of the findings point that effort is an important correlate and predictor of student achievement. For this reason and for all abovementioned reasons and connections regards the logic behind and importance of studying effort it can be concluded that learning effort is an important construct that regulates success in learning and studying effort in the

foreign language learning context and contributing to the field of learning effort can be considered as an important contribution to educational literature.

## **2.7. Learning Effort and Other Variables**

In this section, studies related to the relationship between two other constructs are examined. The purpose behind this review is that the existing relationships between effort and these constructs, which are attitudes towards learning a foreign language and amotivation, is important in the undertaking of this study. This is because the validity analysis in the second study of this research is conducted in relation to these variables.

### **2.7.1. Learning Effort and Learning Attitudes**

Learning attitudes is defined as learners' beliefs regard their abilities, feelings and performances in learning (Wenden, 1991). It has been asserted that as learners have more positive learning attitudes towards a subject the more effort they will make to master it (Dulay & Burt, 1977). To this end, some studies have explored the link between learning effort and attitudes. In a study carried out by Hemmings and Kay (2010) in the US, it was found that 10<sup>th</sup> grade students' mathematics attitude was significantly correlated with their effort expenditure ( $r = .55$ ). A similar result was ascertained in another US based study by Wood (1998), who concluded that students' science-related attitudes of high school female students studying biology was significantly associated with the amount of effort they put forth ( $r = .58$ ). In studies carried out by Ghenghesh (2010a; 2010b) in the Libyan context, it was revealed that attitudes towards English and Arabic were significantly correlated ( $r = .52$ ,  $r = .41$ ) with learning effort for 7 to 10<sup>th</sup> grade students and 6 to 10<sup>th</sup> grade students respectively. Moreover, in a study carried out with a first year college sample in Pakistan, Shahbaz and Liu (2012) also discovered a significant positive relationship between attitudes towards learning English and learning effort ( $r = .76$ ). A lower but still positive and significant association ( $r = .34$ ) between the two variables were found by Hsu (2005) for second year college students studying business English in Taiwan. In sum, it can be argued that there exists a moderate positive to high positive correlation between attitudes and learning effort according to the correlation size interpretations provided by Hinkle, Wiersma, and Jurs (2003).

### 2.7.2. Learning Effort and Amotivation

According to Deci and Ryan (2002) amotivation is a form of motivation that denotes a lack of desire to seek a reward, escape a punishment or behave in one's own interest. Simply put, it means being without motivation (Legault, Green-Demers, & Pelletier, 2006). It takes place when students do not value the activity that they are carrying out, feel incompetent in performing the activity, and do not think that they will benefit from executing the act in the form of a desired outcome (Deci & Ryan, 2000). It also includes a condition in which students are reluctant or have no self-justification in engaging with the endeavor (Gagne & Deci, 2005). Studies that explored the link between learning effort and amotivation mainly yielded a negative or an insignificant relationship between the two variables. A study undertaken by Atalay, Can, Erdem, and Mderrisođlu (2016) with Turkish tertiary level medical students revealed that amotivation and learning effort was negatively correlated ( $r=-.38$ ). A similar but weaker correlation ( $r=-.09$ ) was found between study effort and amotivation by Kusrkar, Ten Cate, Vos, Westers, and Croiset (2012) in their study that involved students from a medical college in the Netherlands. In a study by Gao, Prodlock and Harrison (2012) the effort put forth by US college students in their physical activity classes was found to be negatively linked to their amotivation levels as well ( $r=-.10$ ). A similar conclusion was reached by Pelletier, Fortier, Vallerand, Tuson, Brikre, and Blais (1995) for university athletes ( $r=-.26$ ). In a study carried out in PE classes of ten state schools in Northwest England, Ntoumanis (2002) also reported negative correlations between effort put forth by students and their amotivation ( $r=-.52$ ). In another study, Barkoukis and colleagues (2008) concluded that the relationship between student effort and amotivation was not significant. On the other hand, there are also a few studies that explored the link between the two variables outside educational contexts. Benczenleitner et al. (2013) found a low and negative correlation between effort and amotivation ( $r=-.06$ ) in the context of elite hammer throwers in Hungary whereas Gagne et al. (2015) reported a negative and low correlation ( $r=-.34$ ) between job effort and amotivation for a sample of Norwegian employees. In light of the evidence provided above it can be argued that there exists little to low negative correlation between amotivation and learning effort according to Hinkle et al.'s assertions regards correlation sizes (2003).

## **3. SCALE DEVELOPMENT**

### **3.1. Introduction**

The first part of the study named “study 1” is concerned with scale development. As it was mentioned before in the introduction section the research questions relevant to this part of the study are as follows:

1. What is the factor structure of Foreign Language Learning Effort (FLLE)?
2. Do FLLES items represent a singular dimension or separable dimensions of foreign language learning effort among Turkish tertiary level students?
3. Is FLLES reliable scale for determining Turkish tertiary level students’ foreign language learning effort levels?

In light of these research questions, this section will include all the processes, analyses, and discussions with regards the scale development process and results.

### **3.2. Methodology**

This study aimed at developing a reliable and valid instrument to quantify foreign language learning effort for tertiary level Turkish students. The course of scale development is a systematic process and the related literature has a substantial body of evidence as to how this can be achieved (Dörnyei and Taguchi, 2010). Hinkin (1998, 2005) is one of the scholars who put forth a framework for scale development. According to him, the process of scale construction involves five steps that are the development of items, administration of the questionnaire, reduction of items, evaluation of the scale, and replication with an independent sample. This model was adapted as a framework for scale construction in this study.

The design of the study consisted of both qualitative and quantitative methods. The qualitative set of data was acquired via an expert panel and focus group interview and used to generate items and revise the scale. Before the item generation phase a student survey was conducted to gain knowledge regards behaviors they engaged in that they considered to be effort expended in learning a

foreign language to assist the item generation process. In the pilot and the final scale administration phase, quantitative data were collected and were utilized to answer the research questions. The first phase in this respect consisted of the clarification of the concept, the portrayal of the intended population, and initial item generation followed by the revision of initial items based on the expert reviews and focus group interviews. Phases from two to five were comprised of pilot testing of the preliminary scale, evaluation of the scale in light of the results of the pilot testing and the final psychometric testing of the instrument with an independent sample. Each step and its results are described next.

### **3.3. Item Development**

#### **3.3.1. Concept Clarification**

Item development processes began with concept clarification in light of the relevant literature in order to attain background knowledge on effort and learning effort and to identify instruments designed to measure effort in educational settings. The relevant line of literature was established via a quest of key terms and various combinations of these terms (e.g. effort, effort and learning, learning effort, student effort, school effort, academic effort, language effort, foreign language effort, English effort) by means of online databases. Published articles and other reports were regarded as relevant as long as they described effort and related constructs in educational settings. The preliminary literature set was examined and it was used to determine more search terms and relevant line of researches. After that a student survey was conducted to seize behaviors that Turkish undergraduate students regarded as English language learning effort. A description of the FLLES and a preliminary list of items were generated in line with definitions of effort, learning effort, student effort, academic effort, and school effort found in literature as well as scales that existed which were used to measure related constructs. A description of foreign language learning effort and the initial items were developed in light of the definitions of effort in educational contexts. Learning effort, in general, refers to “the amount of time and energy that students expend in meeting the formal academic requirements established by their teacher and/or school” (Carbonaro, 2005, p. 28) and this definition was used as a ground for the characterization of foreign language learning effort. Hereby, the construct of foreign language learning effort was defined as the individual resources tertiary



level students invest in learning foreign languages in and out of their language classes. A list of items was developed in line with the two multi-dimensional models of effort introduced to the literature by Carbonaro (2005) and Bozick and Dempsey (2010). The items were designed such that they provided the components regards students' foreign language learning effort behaviors in and out of the school setting.

### **3.3.2. Qualitative and Quantitative Methods**

Phase one to five included research with study participants. Phase one, which is the item generation phase, involved a student survey ( $n=219$ ) based on convenience sampling, an expert panel ( $n=10$ ) and a focus group interview ( $n=10$ ). In the piloting phase (phase two), a convenience sample of tertiary level students from four universities ( $n=891$ ) voluntarily participated in the pilot study of the initial foreign language learning effort instrument. In phase five, which is the replication phase, a distinct set of undergraduate students from four universities ( $n=992$ ) voluntarily participated in the final scale administration phase.

### **3.3.3. Study Population**

The population of the study included tertiary level students in Ankara. As the population was large, reaching all tertiary level students in Ankara necessitated time and finance. For that reasons, the reachable population was determined as the undergraduate students at four higher education institutions in Ankara.

The higher education institution selection was based on the convenience with which a contact person could be reached at their English preparatory schools. Institutions which were favorable to contact were selected by taking into account of their representativeness of the whole undergraduate student population in Ankara. The universities that participated in this study were Hacettepe University, Gazi University, Atılım University, and Ufuk University.

In the initial item generation phase, 10 scholars (expert panel), 219 students (student survey), and another 10 students (focus group) participated in the study. On the other hand, a total of 1329 tertiary level students studying English at the foreign language preparatory schools of their respective universities participated in the study; whereas 628 of them participated in the pilot study, a unique 701 participants were involved in the main study. Since sample size was large and

collected from different higher education institutions, the sample could be considered as representative of all undergraduate students studying foreign languages at the preparatory schools of their universities in Ankara, yet the adaptation of the convenient sampling methodology was a limitation regards the generalizability of this study.

All 1329 participants were enrolled to the English language preparatory school programs of their respective universities. The percentages of participants from each university were different as FLLES could not be administered to all students in each university. Only the students that volunteered and were available during the scale administration hours formed the population of the study. In tables 3.1 and 3.2 below, the distribution of the pilot ( $n=628$ ) and replication study ( $n=701$ ) participants regards their university, gender and average age are presented.

**Table 3.1: Demographic characteristics for the preliminary sample**

|                  | <i>N</i> | <i>Female</i> | <i>Male</i> | <i>Average Age</i> |
|------------------|----------|---------------|-------------|--------------------|
| <i>Atilim</i>    | 106      | 51            | 55          | 19.22              |
| <i>Gazi</i>      | 201      | 108           | 93          | 19.00              |
| <i>Hacettepe</i> | 206      | 123           | 83          | 19.06              |
| <i>Ufuk</i>      | 115      | 74            | 41          | 19.19              |
| <i>Total</i>     | 628      | 356           | 272         | 19.12              |

As can be seen in Table 3.1, the pilot study was carried out with 628 participants. Out of the 628 participants, 356 of them were female (56.7%) and 272 were male (43.3%). For all the universities except that of Atilim University, the number of female participants was greater than that of male participants. The ages of the participants ranged between 17 and 26 ( $M=19.12$ ).

**Table 3.2: Demographic characteristics of the replication study sample**

|                  | <i>N</i> | <i>Female</i> | <i>Male</i> | <i>Average Age</i> |
|------------------|----------|---------------|-------------|--------------------|
| <i>Hacettepe</i> | 235      | 139           | 96          | 19.07              |
| <i>Atilim</i>    | 113      | 56            | 57          | 19.20              |
| <i>Gazi</i>      | 221      | 120           | 101         | 19.00              |
| <i>Ufuk</i>      | 132      | 81            | 51          | 19.23              |
| <i>Total</i>     | 701      | 396           | 305         | 19.13              |

As can be seen in Table 3.2, the replication study was carried out with 701 participants. Out of the 701 participants, 396 of them were female (56.5%) and 305 were male (43.5%). For all the universities except that of Atilim University, the number of female participants was upwards of male participants. The ages of the participants ranged between 17 and 26 ( $M=19.13$ ).

#### **3.3.4. Expert Panel**

Upon developing the initial item pool (Appendix 2), a panel of experts was asked to review the items and rate their contextual correctitude as well as their appropriateness with respect to their wording, format of response, and directions for the participants. The selection of the experts was based on their convenience. First of all, scholars in specific areas of expertise were identified in light of the suggestions by the thesis supervisor and the dissertation committee members. A total of 10 scholars were selected that had expertise in foreign language teaching, English language teaching, linguistics, psychology, psychological counseling and guidance, sociology, and program development in education. The experts were contacted in person and invited to participate in the expert review. The materials were given to the experts in hard copy format and all of them returned the materials in full.

#### **3.3.5. Student Population**

Tertiary level students studying in the foreign language preparatory schools of their respective universities were selected using convenience sampling. The survey sample included 219 students from Atılım University and the focus group was comprised of 10 students from Ufuk University. Moreover, the pilot sample consisted of 628 students from four universities in Ankara, and the replication sample consisted of 701 students studying at four different universities in Ankara as mentioned above. The students were selected based on their voluntariness. The coordinators of the foreign language preparatory schools were contacted in person or via the phone and suitable dates and hours were determined for the scale administrations. The researcher then went to each institution and administered the test to the participants that volunteered to participate in the study. Participants were asked to read and sign a voluntary participation form before the data collection procedures; only those students who signed the voluntary participation form were regarded as eligible to participate in the study. In order to procure students self-reports with utmost validity, the anonymity and confidentiality of their replies were assured to the participants.

#### **3.3.6. Data collection for Item Generation**

As a first step, a review of relevant literature was conducted. The purpose of this was to gather background information regards effort in educational contexts and to

identify existing measurement approaches to learning effort. After that a student survey was carried out. The students were selected using convenience sampling methodology and voluntariness and were they were students enrolled at the foreign language preparatory school of Atılım University in Ankara. With the directions provided by the researcher to their instructors, they were given a piece of empty paper on which they were asked to write what types of behaviors they engaged in that they recognized and considered as foreign language learning effort in and out of their school. No identifying information like age or gender was asked from the students as it was not considered to be important for this analysis.

A content analysis was carried out for the data as student responses necessitated grouping. For example, student responses like I watch Game of Thrones in English or I watch CNBC-E were classified as “watching foreign language broadcast and/or productions”. Responses such as listening to English songs or listening to radio were organized under “listening to foreign language broadcasts and/or productions”. Responses like I study at home or at the library or I read grammar books were gathered under “studying foreign languages”. Responses like I speak with the Russian lady at the beauty shop or I speak with English with my sibling were classified under “speaking with natives and/or nonnatives”. Responses to revision that included revision were written as such by students so they were organized under “revision”. Responses such as I read English books or I read magazines were qualified as “reading in the foreign language studied”. Responses to doing homework whether it be online, from the workbook or hand-outs were quite straightforward and were grouped under “doing homework”. Responses like I use Voscreen or Duolingo were classified as “using cellphone apps to practice a foreign language”. Attending classes was another straightforward category and was named as such. Responses like I volunteer when my instructor asks a question or I participate in in-class activities were organized under “participating in class activities”. Responses like I play Erepublic or I play computer games in English were termed “playing games in a foreign language”. Responses like I do extra exercises or I solve problems from different sources were merged under “doing extra exercises”. Responses that included the verbs chat or text were combined and named “chatting and texting with people”. Responses related to studying online or via package programs were all

straightforward and were combined under “studying with online or package programs”. Student responses like I use my mobile phone or computer with English settings were categorized under “using electronic devices with foreign language settings”. Responses to studying for foreign language exams, taking notes, and listening to the teacher were straightforward and did not necessitate any grouping and were left as such. Responses like I write a diary in English or I write poems in English were classified under “writing in a foreign language”. Responses like I talk to myself in English were classified as “engaging in foreign language self-talk”. Responses like I use newly learned vocabulary when I speak with my father in English or I try to use new structures and vocabulary when I chat were grouped under “using newly learned material in real life discourse”. Responses classified under taking private lessons included I go to a private institution or I take private tuition. Studying for the next class was a straightforward category as well and was specified as such. Lastly, responses like I sing English songs at home or I go to karaoke were named “singing songs”. A synoptic of student responses given to the survey question is summarized in Table 3.3 below.

**Table 3.3: Student Survey Results**

| <i>Description of student behavior</i>                      | <i>Frequency</i> |
|---|------------------|
| Watching foreign language broadcasts and/or productions     | 160              |
| Listening to foreign language broadcasts and/or productions | 110              |
| Studying foreign languages                                  | 88               |
| Speaking with natives and/or nonnatives                     | 63               |
| Revision  | 61               |
| Reading in the foreign language studied                     | 57               |
| Doing homework  | 41               |
| Using cellphone apps to practice a foreign language         | 22               |
| Attending classes   | 20               |
| Participating in class activities                           | 20               |
| Playing games in a foreign language                         | 19               |
| Doing extra exercises                                       | 19               |
| Chatting and texting with people                            | 18               |
| Studying with online or package programs                    | 17               |
| Using electronic devices with foreign language settings     | 14               |
| Studying for foreign language exams                         | 13               |
| Taking notes  | 9                |
| Listening to the teacher                                    | 8                |
| Writing in a foreign language                               | 6                |
| Engaging in foreign language self-talk                      | 6                |
| Using newly learned material in real life discourse         | 5                |
| Taking private instruction                                  | 3                |

|                         |   |
|-------------------------|---|
| Studying for next class | 2 |
| Singing songs           | 2 |

---

As can be seen from Table 3.3, top ten perceived student behaviors associated with foreign language learning effort based on the frequency of the responses were watching foreign broadcasts or productions ( $n=160$ ), listening to foreign broadcasts or productions ( $n=110$ ), studying foreign languages ( $n=88$ ), speak with natives or nonnatives ( $n=63$ ), revision ( $n=61$ ), reading in the foreign language studied ( $n=57$ ), doing homework ( $n=41$ ), using cellphone apps to practice a foreign language ( $n=22$ ), attending classes ( $n=20$ ), and participating in class activities ( $n=20$ ). The data gathered via the survey instrument was contrasted to studies in literature and was used as an aid during the item generation process.

### 3.3.7. Item Generation

Having surveyed the literature and received valuable insights as to what type of behaviors Turkish tertiary level students acknowledged and engaged in as English language effort, the item generation process was conducted. An initial item list was produced grounded on themes that were evident throughout the literature, the student responses to the survey instrument and via the examination of other scales. Some aspects like wording and content of measures adopted by other researcher specialists were employed to the new instrument.

Next, a description of the FLLE and a preliminary list of items were generated in line with definitions of effort, learning effort, student effort, academic effort, and school effort found in literature, the student survey results, and items that existed which were used to survey related constructs. Learning effort refers to “the amount of time and energy that students expend in meeting the formal academic requirements established by their teacher and/or school” (Carbonaro, 2005, p. 28) and it was used as a ground for the specification of FLLE as discussed in the introduction section. Hereby, FLLE was defined as the individual resources tertiary level students invest in learning foreign languages in and out of the language class. As suggested by (Hinkin, 1998), a list of items was developed in line with the definition of foreign language learning effort and two multi-dimensional models of effort introduced to the literature by Carbonaro (2005) and Bozick and Dempsey (2010). The items were designed such that they provided the components regards students’ English learning effort behaviors in and out of the English language

classroom. A total of 27 items were developed that assessed different dimensions of foreign language learning effort. Moreover, in order to ensure face validity and establish perspective and tone across all items in the pool, the items were reworded or rewritten where needed.

### **3.3.8. Item Scaling**

The next step in item generation was deciding on item scaling. As it is prevalent in literature, the most common used response format is Likert type scaling (Foddy, 1994). It was argued that when developing items to assess a construct, it has been heavily proposed that the end point words of the response scales should be ones that signify bi-polar extremes, and that all anchoring points should be fittingly distributed along the semantic continuum that link the end points (Jones & Thurstone, 1955). Moreover, Jones and Thurstone (1955) assert the need to analyze the semantic properties of widely used scale point descriptors to ensure that they have the abovementioned features and also bear meaning that is as explicit as possible to the targeted population. Furthermore, they emphasize that it is important to know the precise scale value of each descriptor scale point when developing measures that are classified as successive-interval scales.

Moreover, it has been suggested that regards the internal consistency of scales, the 5-point format is the optimal one as the internal consistency of scales was found to decrease after that point (Lissitz & Green, 1975). In light of all these suggestions, a 5-point Likert scale was used, ranging from 1 = “never” to 5 = “always.” A neutral midpoint (3 = “sometimes”) was included in line with Hinkin (2005), who asserts that a midpoint should be included to give respondents the choice of neutrality towards an item and retain the information regards the item in the data.

### **3.3.9. Item Revision**

Item revision was undertaken to see to what extent the generated items display the content validity (Hinkin, 1998). Content validity refers to the degree to which items of a scale appropriately represent the content domain (Salkind, 2007) and is generally carried out by seven or more experts (Polit & Hungler 1999; DeVon et al. 2007). This process was undertaken via the methodology developed by Schreisheim, Powers, Scandura, Gardiner and Lankau (1993). During this

process, the items are administered to respondents with definitions of the constructs and are asked to assess the degree to which each single item corresponded to each given definition. After that, the rate each item was assigned to a given dimension (i.e. non-compliant/rule-oriented, procedural, intellectual/substantive) is assessed (Anderson & Gerbing, 1991). The acceptable limit for agreement was determined as 75% before the administration.

### 3.3.9.1. Expert Panel

Ten experts were handed out the list of initial items and definitions of effort types provided in literature. They were asked to analyze the initial FLLES in terms of their relevance to the conceptual definition of FLLE and to categorize them under the effort dimension provided in light of the relevant literature (i.e. non-compliant/rule-oriented, procedural, intellectual/substantive). The results in the form of frequencies are presented in Table 3.4 below.

**Table 3.4: Frequencies of expert opinions**

| <i>No</i> | <i>Items</i>  | <i>1</i> | <i>2</i> | <i>3</i> | <i>1 &amp; 2</i> | <i>2 &amp; 3</i> |
|-----------|---|----------|----------|----------|------------------|------------------|
| 1         | I skip my foreign language classes  | 10       |          |          |                  |                  |
| 2         | I engage in disruptive behaviors in my foreign language classes                                 | 10       |          |          |                  |                  |
| 3         | I cheat on my foreign language exams  | 10       |          |          |                  |                  |
| 4         | I plagiarize my foreign language home assignments   | 10       |          |          |                  |                  |
| 5         | I do my foreign language home assignments   |          | 3        |          | 7                |                  |
| 6         | I submit my foreign language home assignment on time  | 1        | 8        |          | 1                |                  |
| 7         | I carry out the assigned in-class tasks in my foreign language classes                          |          | 10       |          |                  |                  |
| 8         | I carefully follow my foreign language lessons  |          |          | 9        |                  | 1                |
| 9         | I attentively listen to my instructor during foreign language classes                           |          |          | 10       |                  |                  |
| 10        | I attentively listen to the contributions made by my peers in my foreign language classes       |          |          | 10       |                  |                  |
| 11        | I carry out the assigned in-class tasks in my foreign language classes in the best possible way |          | 2        |          |                  | 8                |
| 12        | I try my best even if a difficult in-class task is given in my foreign language classes         |          | 2        | 8        |                  |                  |
| 13        | I do my foreign language home assignments in the best possible way                              |          | 1        | 1        |                  | 8                |
| 14        | I try my best even if a difficult home assignment is given in my foreign language classes       |          | 1        | 1        |                  | 8                |
| 15        | I prepare well for my foreign language exams  |          |          | 8        |                  | 2                |
| 16        | I revise the covered topics in my foreign language classes                                      |          |          | 10       |                  |                  |
| 17        | I actively participate in the in-class activities in my foreign language classes                |          |          | 10       |                  |                  |



|    |   |   |    |
|----|---|---|----|
| 18 | I take additional private tuition from an instructor or institution to improve my foreign language  |   | 10 |
| 19 | I review the topics to be covered in my next foreign language class                                 |   | 10 |
| 20 | I practice my foreign language from various sources even if I am not given a home assignment        |   | 10 |
| 21 | I use different sources when I study foreign languages  |   | 10 |
| 22 | I engage in foreign language medium out-of-class activities   |   | 10 |
| 23 | I revise my foreign language assignments if I receive any correction or feedback                    | 1 | 9  |
| 24 | I ask my foreign language instructor or other instructors for advice and help to improve my English |   | 10 |
| 25 | I concentrate solely on the lesson in my foreign language classes                                   |   | 10 |
| 26 | I think about how I can use what I have learnt in my foreign language classes in my daily life      |   | 10 |
| 27 | I volunteer for extra foreign language home assignments   |   | 10 |

1=non-compliant/rule-oriented, 2=procedural, 3=intellectual/substantive

All ten of the experts approved that the pool items were related to the definition of the construct provided to them. Items 1, 2, 3, 4 were classified by all experts as non-compliance/rule-oriented behaviors. Item 5 was classified as procedural effort by three experts whereas seven experts categorized it under both non-compliance/rule-oriented and procedural. Item 6 was classified as non-compliance/rule-oriented by one expert whereas it was categorized as procedural by eight experts and non-compliance/rule-oriented and procedural by one expert. Item 7 was classified as procedural by all experts. Item 8 was categorized as intellectual/substantive by nine experts whereas one expert classified it under both procedural and intellectual/substantive. Items 9 and 10 were categorized as intellectual/substantive by all ten experts. Item 11 was classified by two experts as procedural whereas it was categorized as both procedural and intellectual/substantive by eight experts. Item 12 was categorized as procedural by two and as intellectual/substantive by eight experts. Eight experts classified item 13 and 14 as both procedural and intellectual/substantial whereas two other experts classified the item under procedural and intellectual/substantive respectively. As to item 15, eight experts named this item under intellectual/substantive and two experts classified it as denoting both procedural and intellectual/substantive effort. All remaining items except item 23 were classified as intellectual/substantive effort whereas item 23 was classified by one expert as procedural and as intellectual/substantive by nine experts.

After the categorization of the items under effort domains, experts made comments on the items in the initial item pool. It was suggested by experts that even though there were minor nuances some items were denoting the same or similar student behaviors. It was suggested that such item couples should be re-examined and one of them should be chosen for the next step. For that reason 8 items were eliminated. The eliminated items were items numbered 8, 11, 12, 13, 14, 17, 18, 21, and 26.

#### **3.3.9.2. Student Focus Groups**

A focus group was conducted with tertiary level English learners (N=10). The Focus group approach was employed to get feedback from a sample of undergraduate students enrolled at the preparatory English language course program regards the scale items and their fit with the scaling format. For this purpose, the initial items were read out loud and discussed in the group and the discussion revealed that there were no ambiguous items that the students had difficulty in understanding.

#### **3.4. Questionnaire Administration**

After the item generation process, the next step was the administration phase. First of all, a sample was selected using convenience sampling. As the current measure is intended for tertiary level students studying foreign languages, students were selected from universities in Ankara. As the population was large, reaching all tertiary level students in Ankara necessitated time and finance. For that reasons, the reachable population was determined as the undergraduate students at four higher education institutions in Ankara. The higher education institution selection was based on the convenience with which a contact person could be reached at their English preparatory schools. Institutions which were favorable to contact were selected by taking into account of their representativeness of the whole undergraduate student population in Ankara. The universities that participated in this study were Hacettepe University, Gazi University, Atılım University, and Ufuk University.

It was argued that the sample size chosen had effects on the statistical techniques used and that exploratory (EFA ) and confirmatory (CFA) factor analyses were sensitive to sample size effects (Schwab, 1980). Using large sample sized

facilitates the attainment of steady standard error estimates. This ascertains that factor loadings reflect the true population values in an accurate way. An item to response ratio of 1:10 is considered in this regard, (Schwab, 1980; Hinkin, 2005). Since there were 18 items retained, a sample of 180 was the minimal requirement in order to undertake the necessary analyses.

The participants were students enrolled at the foreign language preparatory school programs of their respective universities. The percentages of participants from each university were different as FLLES could not be administered to all students in each university. A total of one thousand two hundred and twenty seven students were asked to fill out the effort survey as a part of their class in February 2016 and the response rate was 72.6%. The final sample size was 891. Yet after the data was analyzed and cleansed from outliers and missing data, the final sample for the preliminary analysis consisted of 628 cases. Table 3.5 shows students' demographic information broken down by institution.

**Table 3.5: Demographic characteristics for the preliminary sample**

|                  | <i>N</i> | <i>Female</i> | <i>Male</i> | <i>Average Age</i> |
|------------------|----------|---------------|-------------|--------------------|
| <i>Atilim</i>    | 106      | 51            | 55          | 19.22              |
| <i>Gazi</i>      | 201      | 108           | 93          | 19.00              |
| <i>Hacettepe</i> | 206      | 123           | 83          | 19.06              |
| <i>Ufuk</i>      | 115      | 74            | 41          | 19.19              |
| <i>Total</i>     | 628      | 356           | 272         | 19.12              |

As can be seen from table 3.5, the preliminary study sample consisted of 356 (56.69%) females and 272 (43.31%) males, and the average age of the participants was 19.12. The scale administration process was carried out based on student availability during the scale administration time and voluntary participation. Students were free to opt out of the survey or to leave any question unanswered and the confidentiality of their responses was maintained. At each institution, paper copies of the pilot survey were given to students with the help of the instructors at the beginning of a class session. The instructions that were readily written on each pilot survey were read out by instructions in all classes in every university as can be seen in Appendix 3.

### **3.5. Item Reduction**

After the data collection procedure an exploratory factor analysis was carried out using SPSS 20. Exploratory factor analysis is a method used to determine the

underlying latent structure of scales (De Winter, Dodou, Wieringa; 2009). This procedure was implemented to further refine the scale (Hinkin, 2005).

Exploratory Factor Analysis a method of analysis used to investigate the links between variables without designating a specific hypothetical model (Bryman & Cramer 2005). It assists researchers in defining constructs founded on the theoretical framework that points out the direction of the measure (DeVon et al. 2007) and specifies the largest variance in scores with the smallest number of factors (Delaney 2005; Munro 2005). In conducting EFA, it is crucial to have a large enough sample size so that the analyses are reliable (Bryman & Cramer 2005). Even though this is a much debated topic, a minimum of five participants per item is generally advised (Munro 2005). In ensuring an a proper sample size to conduct an exploratory analysis, the Kaiser-Meyer-Olkin (KMO) sampling adequacy test is also a commonly used. According to Kaiser (1974), values greater than 0.5 are acceptable, values between 0.5 and 0.7 are decent; 0.7 and 0.8 are good, 0.8 and 0.9 are great, and above 0.9 are superb. Moreover, there are several forms of extraction techniques in factor analysis, the most common of which are Principal Component Analysis (PCA) and Principal Axis Factoring (PAF) (Bryman & Cramer 2005). In PCA, the total variance of the variables is analyzed; on the other hand in PAF only the common variance is analyzed (Bryman & Cramer 2005). It has been argued as total variance includes both specific and common variance, PCA is a more reliable technique (Bryman & Cramer, 2005). Varimax is the most commonly used rotation technique as is maximizes the loading on each variable and minimizes the loading on other factors (Bryman & Cramer 2005; Field, 2005). Moreover, when rotation is used an item loading threshold of .40 is recommended Kim and Mueller (1978) and Stevens (2002), which will leave out loadings that have correlations with given factor items smaller than .40.

Item loadings on latent factors, Eigen values over one, the scree plot (Conway & Huffcutt, 2003) and the Monte Carlo PA statistics (Scott, Gibson, Robertson, Pohlmann & Fralish, 1995) were used to determine factor distinctions. As mentioned above, Kim and Mueller (1978) and Stevens (2002) asserted that factor loadings of over .40 should be used as a criterion to retain items and that inappropriately loaded items should be deleted and the analysis procedure should

be repeated till a clear factor solution is received. This procedure is discussed in more detail in the results section.

### **3.6. Scale Evaluation**

A confirmatory factor analysis was undertaken for this step using AMOS 22 through which models were compared to reveal whether the model generated by the exploratory factor analysis was the model with the best fit. CFA is a robust statistical tool that is commonly used in examining the nature of and relations among latent constructs and in developing and refining scales (Brown, 2006). Contrary to EFA, CFA explicitly tests a priori hypothesis regards the relationship between observed variables and latent variables or factors (Jackson, Gillaspay & Purc-Stephenson, 2009). CFA is the analytic tool of choice for developing and refining measurement instruments (Brown, 2006).

In this step the comparison of a single common factor model and a multiple factor model is recommended (Joreskog & Sorbom, 1980). This comparison takes place in the form of model fit assessment as recommended by Brown (2006). The model chi-square, Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Non-Formed Fit Index values (NNFI) values are common consideration in this respect. Tabachnick and Fidell (2007) suggested that chi-square value is a test susceptible to the sample size and that the test may only give significant results when the sample size is large. In such instances, Byrne (2001) suggests RMSEA, NNFI, and CFI be used to atone for such limitations. With respect to RMSEA, Arbuckle (2003) argued that the value 0 indicated exact/good fit,  $<.05$  indicated close fit,  $>.08$  indicated reasonable error of approximation, and  $>.10$  indicated poor fit. On the other hand, with respect to the NNFI value, Byrne (2001) remarked that values  $>.95$  indicated good fit. Lastly, regards the CFI value, whereas Arbuckle (2003) asserted that values close to 1 are good fit, Byrne (2001) suggested that values  $>.95$  can be considered as good fit.

Another crucial facet on scale evaluation is the assessment of internal consistency. This step should be undertaken after the scale dimensions are established. In this regards, the Cronbach's Alpha is the most commonly held measure and shows both the inter-item correlations of a measure and how well the

items fit (Nunnally & Bernstein, 1994; DeVon, et al., 2007). Therefore, Cronbach's Alpha was calculated for the overall scale as well as for each dimension that derived from the exploratory and confirmatory factor analyses. Following the guidelines developed by Gliem and Gliem (2003), Cronbach's Alpha values greater than .7 is accepted as acceptable in this study.

### 3.7. Replication

The replication procedure is the final step of scale development. In this phase, the scale was replicated to an independent sample of 701 tertiary level students studying at the foreign language preparatory schools of their respective universities. The demographics of the participants are presented in Table 3.6.

**Table 3.6: Demographic characteristics of the replication study sample**

|                  | <i>N</i> | <i>Female</i> | <i>Male</i> | <i>Average Age</i> |
|------------------|----------|---------------|-------------|--------------------|
| <i>Atilim</i>    | 113      | 56            | 57          | 19.20              |
| <i>Gazi</i>      | 221      | 120           | 101         | 19.00              |
| <i>Hacettepe</i> | 235      | 139           | 96          | 19.07              |
| <i>Ufuk</i>      | 132      | 81            | 51          | 19.23              |
| <i>Total</i>     | 701      | 396           | 305         | 19.13              |

As can be seen in Table Y, the replication study was carried out with 701 participants. Out of the 701 participants, 396 of them were female (56.5%) and 305 were male (43.5%). For all the universities except that of Atilim University, the number of female participants was more than that of male participants. The ages of the participants ranged between 17 and 26 ( $M=19.13$ ).

Data was collected without any identifying information. The instructions for the scale were same as in Step 2 (see Appendix 4). The replication phase involved a confirmatory factor analysis to assess model fit on a distinct sample. Moreover, the reliability of the instrument was also estimated via internal consistency reliability and test-re-test reliability. The test-retest reliability is calculated by administering the same tool to the same sample twice assuming there will be no significant change in the studied construct between the two points in time at which scale administrations take place (Trochim, 2001; DeVon et al. 2007), where a high correlation between the two scores indicates the instrument is consistent over time (Haladyna, 1999; DeVon et al. 2007). The test-retest-reliability composed of 64 participants studying at the Foreign Language Preparatory School of Atilim

University. The results regards these processes are explained in the results section.

### 3.8. Findings of the Pilot Study

#### 3.8.1. Cleansing and Normalization of Data

As a first step before the analysis, the negatively worded items were reversed scored. After that, data entry errors and means of the variables were investigated. Upon correcting the data entry errors, the data was examined to check missing data and 234 cases with missing data were deleted. Next, the data was analyzed for multivariate outliers by finding the Mahalanobis Distance for all variables concerned. The Mahalanobis distance is a common measure in multivariate statistics which is used to identify outliers in a set of data (Brereton, 2015, p.1). The analysis proved that there were 29 outliers in the dataset, so they were deleted to free the data of outlying cases. As a result the data was reduced to 628.

#### 3.8.2. Assumption Checks for the Analyses

##### 3.8.2.1. Sample Size

The sample size was evaluated in order to determine whether the sample is adequate or not to conduct EFA and CFA. The KMO value was .86 indicating a good sample size for the analysis to be conducted.

##### 3.8.2.2. Normality

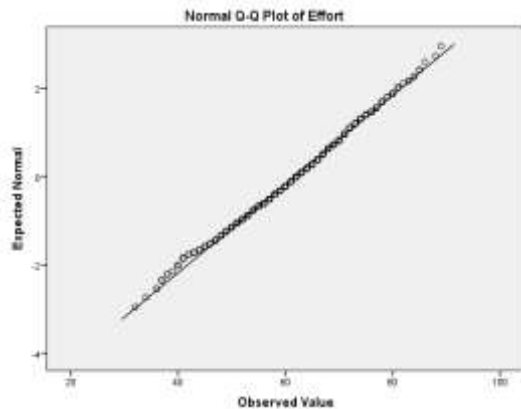
Using SPSS 20 skewness, kurtosis, Kolmogorov-Smirnov, and Shapiro-Wilk statistics were calculated and histograms and normal q-q plots were generated. The relevant statistics for Kolmogorov-Smirnov, and Shapiro-Wilk tests and the skewness and kurtosis values are provided in Table 3.7.

**Table 3.7: Statistics for tests of normality**

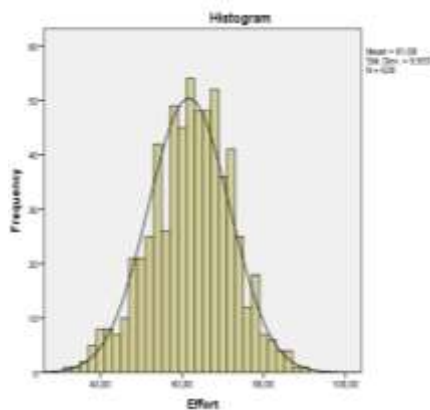
| <i>Kolmogorov-Smirnov</i> |           |             | <i>Shapiro-Wilk</i> |           |             | <i>Skewness</i> | <i>Kurtosis</i> |
|---------------------------|-----------|-------------|---------------------|-----------|-------------|-----------------|-----------------|
| <i>Statistic</i>          | <i>Df</i> | <i>Sig.</i> | <i>Statistic</i>    | <i>Df</i> | <i>Sig.</i> |                 |                 |
| ,04                       | 628       | ,01         | ,99                 | 628       | ,05         | -.18            | -.07            |

As can be seen from the above table, the Kolmogorov-Smirnov statistic is significant. Although the Kolmogorov-Smirnov test value is significant, the Shapiro-Wilk, skewness and kurtosis vales present non-significant results, which are indicators of normality. As the sample size is large, the examination of the normal

q-q plot (Figure 3.1) and histogram (Figure 3.2) can further provide for normality and linearity (Green & Salkind, 2008).



**Figure 3.1: Q-Q Plot for the distribution of effort scores**



**Figure 3.2: Histogram for the distribution of effort scores**

The histogram and q-q plot related to the effort scores were visually checked in order to assume that the data is normally distributed. The q-q plot (Figure 3.1) reflected a normal distribution of the data. Moreover, it can also be visually checked from the histogram that there is a bell-shaped figure (Figure 3.2). So it can be said that the normality is not violated substantially and it can be assumed that the data is normally distributed.

### **3.8.2.3. Multicollinearity**

Multicollinearity is existent when there is a strong correlation between the items in the model. In order to conduct the EFA there should not be perfect multicollinearity. According to Field's (2009) suggestions, the multicollinearity of the data was checked by a procedure involving the scanning of the correlation matrix. Providing that there is no strong correlation ( $r > .90$ ) between the items, it is possible to validate the assumption of multicollinearity. The means, standard deviations, variances and inter-item correlations are shown in Table 3.8. In the



pilot study, the item with the highest mean was “I engage in disruptive behaviors in my foreign language classes” ( $M=4.24$ ). The mean values for other items ranged between 2.00 and 4.24. Moreover, correlations between the items ranged between  $r= .00$  and  $r= .79$ , and the correlations between most items were low and moderate as evident in the table above. Therefore, as none of the inter-item correlations were over .90, it can be said that the data set satisfied the multicollinearity assumption.

**Table 3.8: Means(M), Standard Deviations(SD), and Correlations for the Initial 18 Items**

|           | <i>M</i> | <i>SD</i> | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18 |
|-----------|----------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| <b>1</b>  | 4,12     | 1,06      | -   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |
| <b>2</b>  | 4,24     | 1,12      | .14 | -   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |
| <b>3</b>  | 4,00     | 1,09      | .59 | .06 | -   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |
| <b>4</b>  | 3,77     | 1,02      | .38 | .13 | .35 | -   |     |     |     |     |     |     |     |     |     |     |     |     |     |    |
| <b>5</b>  | 3,99     | 0,99      | .38 | .08 | .50 | .32 | -   |     |     |     |     |     |     |     |     |     |     |     |     |    |
| <b>6</b>  | 4,01     | 0,91      | .36 | .19 | .33 | .31 | .25 | -   |     |     |     |     |     |     |     |     |     |     |     |    |
| <b>7</b>  | 4,03     | 0,74      | .37 | .05 | .43 | .30 | .53 | .27 | -   |     |     |     |     |     |     |     |     |     |     |    |
| <b>8</b>  | 3,64     | 0,89      | .11 | .69 | .00 | .04 | .04 | .12 | .05 | -   |     |     |     |     |     |     |     |     |     |    |
| <b>9</b>  | 3,33     | 0,95      | .20 | .01 | .16 | .14 | .21 | .16 | .35 | .01 | -   |     |     |     |     |     |     |     |     |    |
| <b>10</b> | 3,50     | 0,99      | .30 | .12 | .31 | .79 | .27 | .25 | .25 | .05 | .10 | -   |     |     |     |     |     |     |     |    |
| <b>11</b> | 2,91     | 1,08      | .34 | .04 | .33 | .44 | .31 | .35 | .32 | .03 | .29 | .37 | -   |     |     |     |     |     |     |    |
| <b>12</b> | 2,00     | 0,98      | .24 | .18 | .23 | .29 | .28 | .56 | .21 | .14 | .18 | .24 | .38 | -   |     |     |     |     |     |    |
| <b>13</b> | 2,56     | 1,15      | .30 | .03 | .34 | .35 | .37 | .29 | .37 | .02 | .31 | .26 | .43 | .24 | -   |     |     |     |     |    |
| <b>14</b> | 3,74     | 1,03      | .10 | .59 | .09 | .14 | .11 | .16 | .19 | .67 | .06 | .10 | .12 | .17 | .10 | -   |     |     |     |    |
| <b>15</b> | 3,58     | 1,03      | .30 | .06 | .33 | .39 | .40 | .22 | .40 | .03 | .25 | .32 | .38 | .24 | .41 | .13 | -   |     |     |    |
| <b>16</b> | 2,95     | 1,16      | .28 | .12 | .34 | .61 | .32 | .38 | .28 | .09 | .20 | .58 | .40 | .32 | .30 | .17 | .29 | -   |     |    |
| <b>17</b> | 2,16     | 1,14      | .33 | .23 | .33 | .34 | .29 | .52 | .27 | .15 | .14 | .28 | .35 | .46 | .30 | .21 | .31 | .40 | -   |    |
| <b>18</b> | 3,16     | 0,83      | .29 | .19 | .25 | .32 | .24 | .26 | .26 | .12 | .11 | .34 | .21 | .23 | .19 | .16 | .22 | .26 | .34 | -  |

### 3.8.3. Exploratory Factor Analysis

An exploratory factor analysis with the application of a varimax type of rotation was carried out using SPSS 20. As mentioned before Varimax is the most commonly used rotation technique as it maximizes the loading of a variable on one unique factor while minimizing loadings on other factors (Bryman & Cramer 2005; Field 2005). Moreover, Varimax is also preferred when not all dimensions are expected to be correlated as in our case. In the reverse case in which dimensions are expected to be correlated, an oblique rotation is more preferable.

The exploratory factor analysis helped refine the item pool as well as allowing for the testing of dimensionality (Churchill, 1979). An analysis of the scree plot, Eigen values and the results of the Monte Carlo PCA for the pilot sample assisted in the preliminary assignation of the number of underlying dimensions for FLLE; and in line with the suggestion of Kim and Mueller (1978) and Stevens (2002) item loadings threshold for factors was determined as .40. The initial factor analysis and the scree plot indicated a 5 factor solution, whereas the Monto Carlo Parallel Analysis revealed a 4 factor solution.

The analysis was run several times using three, four and five factor models until a clear factor solution was achieved. After each run, items that closely cross loaded, not loaded or not loaded above the generally accepted cutoff of .40 were eliminated. The analysis, which yielded a clear factor solution, was that of a four factor model. However, in this analysis 1 item “I skip classes” did not load in any of the factors; therefore it was eliminated from further analysis.

#### 3.8.4. Analysis of Items in Each Factor

When the items in each factor were examined, it was found that factor one was comprised of items denoting non-compliance whereas factor two, three and four focused on procedural, substantive and focal types of effort. The item means, standard deviations, and the factor loadings for all items from the final EFA are provided in Table 3.9.

**Table 3.9: Exploratory Factor Analysis: means, standard deviations and factor loadings**

| <i>Item</i>   | <i>M</i> | <i>SD</i> | <i>Factor 1<br/>NC</i> | <i>Factor 2<br/>PE</i> | <i>Factor 3<br/>SE</i> | <i>Factor4<br/>FE</i> |
|---|----------|-----------|------------------------|------------------------|------------------------|-----------------------|
| Q2. I engage in disruptive behaviors in my foreign language classes.        | 4.12     | 1.06      | .85                    |                        |                        |                       |
| Q8. I cheat on my foreign language exams                                    | 4.24     | 1.12      | .90                    |                        |                        |                       |
| Q14. I plagiarize my foreign language home assignments                      | 4.00     | 1.09      | .84                    |                        |                        |                       |
| Q4. I do my foreign language home assignments                               | 3.77     | 1.02      |                        | .87                    |                        |                       |
| Q10. I submit my foreign language assignments on time                       | 3.99     | .99       |                        | .89                    |                        |                       |
| Q16. I carry out the assigned in-class tasks in my foreign language classes | 4.01     | .91       |                        | .70                    |                        |                       |
| Q1. I prepare well for my foreign language exams                            | 3.50     | .99       |                        |                        | .56                    |                       |
| Q3. I revise the covered topics in my foreign language classes              | 2.91     | 1.08      |                        |                        | .64                    |                       |
| Q5. I review the topics to be covered in                                    | 2.00     | .98       |                        |                        | .72                    |                       |

|   |      |      |       |       |      |
|---|------|------|-------|-------|------|
| my next foreign language class.   |      |      |       |       |      |
| Q7. I practice foreign language from various sources even if I am not given a home assignment             | 2.56 | 1.15 |       | .77   |      |
| Q9. I engage in foreign language medium out-of-class activities   | 3.74 | 1.03 |       | .55   |      |
| Q11. I re-do my foreign language assignments if I receive any correction or feedback.                     | 3.58 | 1.03 |       | .43   |      |
| Q13. I ask my foreign language instructor or other instructors for advice and help to improve my English. | 2.95 | 1.16 |       | .60   |      |
| Q15. I volunteer for extra foreign language assignments   | 2.16 | 1.14 |       | .56   |      |
| Q6. I attentively listen to my instructor in foreign language classes.                                    | 4.03 | .74  |       |       | .81  |
| Q12. I attentively listen to the contributions made by my peers in my foreign language classes.           | 3.64 | .89  |       |       | .80  |
| Q17. I concentrate solely on the lesson in my foreign language classes                                    | 3.33 | .95  |       |       | .69  |
| <b>Eigenvalues</b>  |      | 1.39 | 2.25  | 5.49  | 1.21 |
| <b>Variance Accounted for</b>   |      | 8.16 | 13.21 | 32.27 | 7.13 |
| <b>Random Eigenvalues by Mahalanobis PA</b>   |      | 1.19 | 1.24  | .129  | 1.15 |

N= 628

The factor loads of all items were greater than .40. The first dimension labeled non-compliance contains three items and explained % 8.16 of the total variance. The second dimension labeled procedural effort had three items and explained % 13.21 of the total variance. The third dimension labeled substantive effort contained eight items and explained % 32.27 of the total variance. The fourth dimension labeled focal effort had three items and explained % 7.13 of the total variance.

### 3.8.5. Confirmatory Factor Analysis

After the exploratory factor analysis, two separate sets of confirmatory factor analyses were carried out using AMOS 22 to compare the fit of a one factor model and the four factor model was conducted. The results of the first CFA revealed that neither the 4 factor model ( $\chi^2= 447.141$ ,  $df= 113$ ,  $RMSEA= .07$ ,  $NNFI= .90$ ,  $CFI= .92$ ,  $p=.00$ ) nor the single factor model ( $\chi^2= 1877.10$ ,  $df= 119$ ,  $RMSEA= .15$ ,  $NNFI= .51$ ,  $CFI= .57$ ,  $p=.00$ ) provided satisfactory results (Arbuckle, 2003; Byrne, 2001).

As the results were not satisfactory, the modification index errors were checked and those with the highest values were identified in light of the suggestions of

Arbuckle and Wothke (1999). The identified pairs with high error covariance were Q1 – Q3, Q3 – Q5, Q3 – Q9, Q3 – Q11, Q3 – Q15, Q5 – Q7, Q5 – Q11, Q7 – Q9, Q11 – Q12, Q11 – Q13, Q7 – Q14. These items were checked to decide whether they pertained to the same factor of the scale. Except for the Q11 – Q12 and Q7 – Q14 pairs, which belonged to factors named substantive and focal and substantive and non-complaint, all pairs pertained to the factor named substantive. An analysis of the items permitted to conclude that they were measures of the same scale. Therefore, the above listed item pairs that had high modification index errors were co-varied and the CFA procedure was repeated.

A similar procedure was undertaken for the one factor model as well. The identified pairs with high error covariance were Q1 – Q14, Q5 – Q7, Q11 – Q12. These items were checked to decide whether they pertained to the same factor of the scale. After the examination of the pairs, it was determined that all pairs pertained to the single factor English language learning effort. Therefore it was concluded that they were measures of the same scale. Therefore, the above listed item pairs that had high modification index errors were co-varied and the CFA procedure was repeated for the single factor model as well. The results of both models are presented in Table 3.10.

**Table 3.10: Confirmatory factor analysis results**

| <i>Model</i>               | $\chi^2$ | <i>Df</i> | <i>RMSEA</i> | <i>NNFI</i> | <i>CFI</i> |
|----------------------------|----------|-----------|--------------|-------------|------------|
| <b>Single Factor Model</b> | 1799.14  | 116       | .152         | .522        | .592       |
| <b>4 Factor Model</b>      | 247.81   | 102       | .048         | .953        | .965       |

*N*= 628, \*\**p*<.01

The results of the revised models shown in Table 3.10 revealed that the single factor model ( $\chi^2= 1799.14$ , *df*= 116, *RMSEA*= .15, *NNFI*= .52, *CFI*= .59, *p*=.00) had a poor fit (Figure 3.3) whereas the 4 factor model ( $\chi^2= 247.81$ , *df*= 102, *RMSEA*= .048, *NNFI*= .95, *CFI*= .97, *p*=.00) was a good fit (Figure 3.4) in light of the aforementioned criteria suggested by Arbuckle (2003) and Byrne (2001).

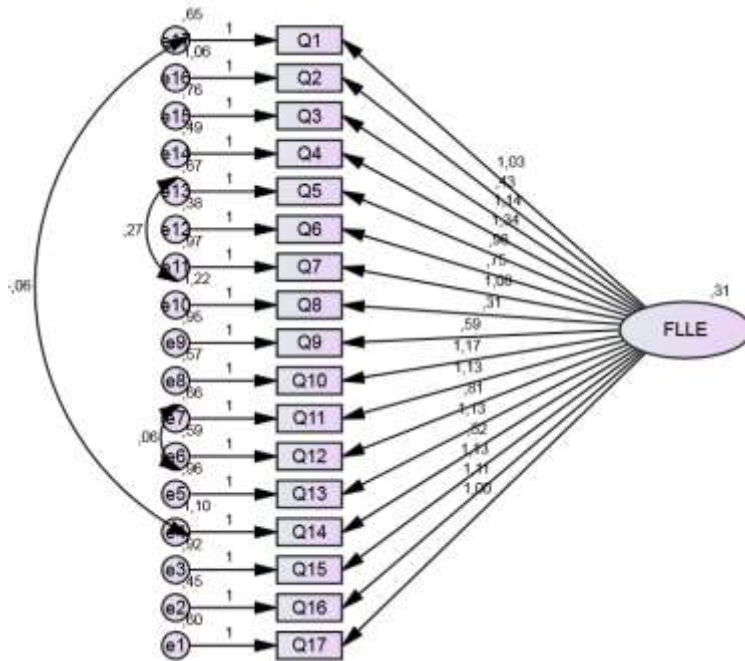


Figure 3.3: One Factor model of FLLES with standardized estimates

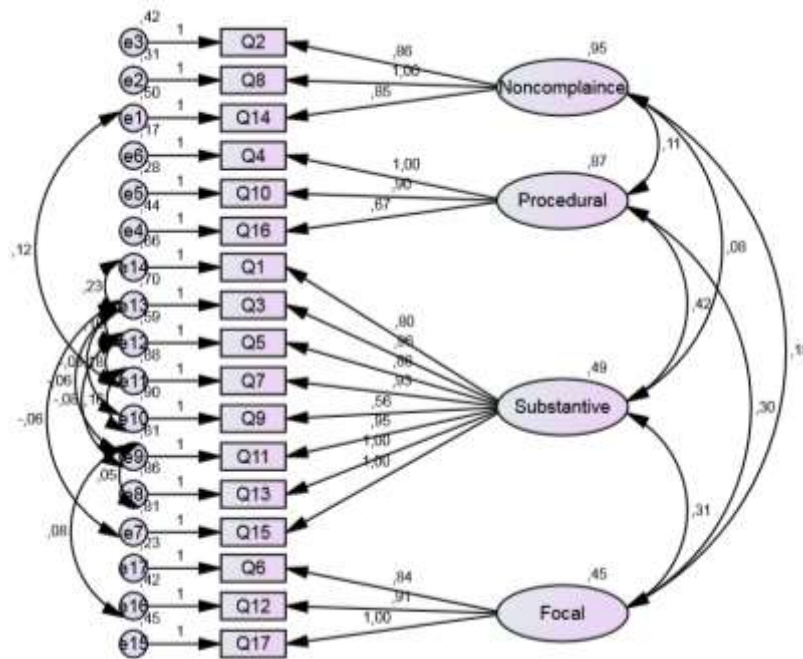


Figure 3.4: Four factor model of FLLES with standardized estimates

### 3.8.6. Reliability Analysis of the Model

The assessments regards the internal consistencies of the scales were carried out. The Cronbach's alpha values were calculated for all of the four subscales and are shown in Table 3.11. The first dimension labeled non-compliance has a Cronbach's alpha .85. The second dimension labeled procedural effort has a Cronbach's alpha .85. The third dimension labeled substantive effort has a

Cronbach's alpha .81 and the fourth dimension labeled focal effort has a Cronbach's alpha .75. The Cronbach's Alpha value for the scale was .86.

**Table 3.11: Cronbach's Alpha statistics for the scale**

| <i>Sub-Scale<br/>(<math>\alpha</math>)</i>              |   | <i>Scale<br/>mean<br/>if item<br/>deleted</i> | <i>Scale<br/>variance<br/>if item<br/>deleted</i> | <i>Corrected<br/>item-total<br/>correlation</i> | <i>Cronbach<br/><math>\alpha</math> if item<br/>deleted</i> |
|---|---|---|---|---|---|
| <b>Non-Compliance<br/>(.85)</b>                         | Q2. I engage in disruptive behaviors in my foreign language classes.                                      | 8.24  | 4.06  | .70   | .80   |
|   | Q8. I cheat on my foreign language exams  | 8.12  | 3.66  | .76   | .74   |
|   | Q14. I plagiarize my foreign language home assignments  | 8.36  | 4.01  | .68   | .82   |
| <b>Procedural<br/>effort<br/>(.85)</b>                  | Q4. I do my foreign language home assignments   | 7.99  | 2.88  | .79   | .73   |
|   | Q10. I submit my foreign language assignments on time   | 7.78  | 3.00  | .77   | .75   |
|   | Q16. I carry out the assigned in-class tasks in my foreign language classes                               | 7.76  | 3.61  | .63   | .88   |
| <b>Substantive<br/>effort<br/>(.81)</b>                 | Q1. I prepare well for my foreign language exams  | 19.89   | 25.59   | .53   | .79   |
|   | Q3. I revise the covered topics in my foreign language classes  | 20.48   | 24.58   | .57   | .79   |
|   | Q5. I review the topics to be covered in my next foreign language class.                                  | 21.39   | 25.11   | .59   | .78   |
|   | Q7. I practice foreign language from various sources even if I am not given a home assignment             | 20.83   | 23.80   | .60   | .78   |
|   | Q9. I engage in foreign language medium out-of-class activities   | 19.64   | 26.85   | .37   | .81   |
|   | Q11. I revise my foreign language assignments if I receive any correction or feedback.                    | 19.81   | 25.46   | .51   | .79   |
|   | Q13. I ask my foreign language instructor or other instructors for advice and help to improve my English. | 20.44   | 24.28   | .54   | .79   |
| Q15. I volunteer for extra foreign language assignments | 21.23   | 24.54   | .53   | .79   |   |
| <b>Focal<br/>Effort<br/>(.75)</b>                       | Q6. I attentively listen to my instructor in foreign language classes.                                    | 6.97  | 2.48  | .63   | .63   |
|   | Q12. I attentively listen to the contributions made by my peers in my foreign language classes.           | 7.36  | 2.19  | .58   | .67   |
|   | Q17. I concentrate solely on the lesson in my foreign language classes                                    | 7.67  | 2.08  | .56   | .71   |

Cronbach's alpha for the scale: .86, N=628

An analysis of the scale statistics, item variances and alpha if item removed did not show any questionable item except question 16 in the procedural effort sub-

dimension, but as this scale already has a satisfactory Cronbach's alpha ( $\alpha=.85$ ) and as the deletion of question 16 would only cause a very minor increase in the Cronbach's alpha ( $\alpha=.87$ ) and because it has a good corrected item-total correlation ( $r=.63$ ) all items including question 16 of procedural effort dimension were retained.

### 3.9. Findings of the Replication Study

#### 3.9.1. Cleansing and Normalization of Data

Before the analysis, the negatively worded items were reversed scored for the replication data. After that, data entry errors and means of the variables were investigated. Upon correcting the data entry errors, the data was examined to check missing data. The total data consisted of 992 entries. 257 cases with missing data were deleted. Next, the data was analyzed for multivariate outliers by finding the Mahalanobis Distance for all variables concerned. The Mahalanobis Distance is a common measure in multivariate statistics which is used to identify outliers in a set of data (Brereton, 2015). The analysis proved that there were 34 outliers in the dataset, so they were deleted to free the data of outlying cases. As a result the data was reduced to 701.

#### 3.9.2. Assumption Checks for the Analyses

##### 3.9.2.1. Sample Size

The sample size was evaluated in order to determine whether the sample is adequate or not to conduct EFA. The KMO value was .86 indicating a good sample size for the analysis to be conducted.

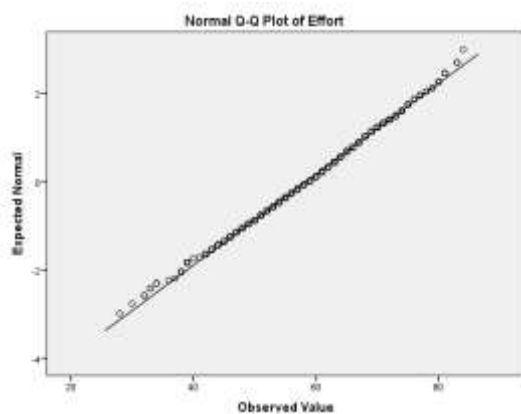
##### 3.3.2.2. Normality

Using SPSS 20 Skewness, Kurtosis, Kolmogorov-Smirnov, and Shapiro-Wilk statistics were calculated, also histograms and q-q plots were generated. Table 3.12 presents the relevant statistics for Kolmogorov-Smirnov, and Shapiro-Wilk tests and the skewness and kurtosis values.

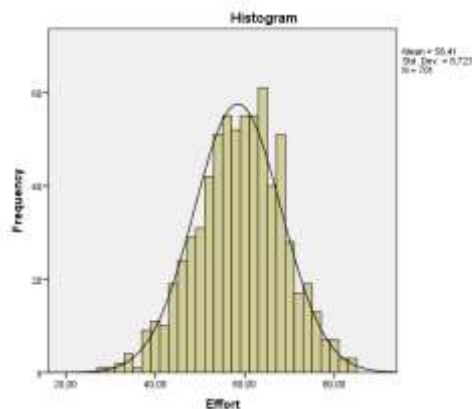
**Table 3.12: Statistics for tests of normality**

| <i>Kolmogorov-Smirnov</i> |           |             | <i>Shapiro-Wilk</i> |           |             | <i>Skewness</i> | <i>Kurtosis</i> |
|---------------------------|-----------|-------------|---------------------|-----------|-------------|-----------------|-----------------|
| <i>Statistic</i>          | <i>df</i> | <i>Sig.</i> | <i>Statistic</i>    | <i>Df</i> | <i>Sig.</i> |                 |                 |
| .04                       | 701       | .01         | .99                 | 701       | .11         | -.15            | -.09            |

As can be seen from the above table, the Kolmogorov-Smirnov statistic is significant. Although the Kolmogorov-Smirnov test value is significant, the Shapiro-Wilk, skewness and kurtosis vales present non-significant results, which are indicators of normality. As the sample size is large, the examination of the q-q plot (Figure 3.5) and histogram (Figure 3.6) can further provide for normality and linearity (Green & Salkind, 2008).



**Figure 3.5: Q-Q Plot for the distribution of effort scores**



**Figure 3.6: Histogram for the distribution of effort scores**

The histogram and q-q plot related to the effort scores were checked in order to assume that the data is normally distributed. The q-q plot (Figure 3.5) reflected a normal distribution of the data. Moreover, it can also be visually checked from the histogram that there is a bell-shaped figure (Figure 3.6). So it can be said that the normality is not violated substantially and it can be assumed that the data is normally distributed.



### 3.9.2.3. Multicollinearity

Multicollinearity is existent when there is a strong correlation between the items in the model. In order to conduct the EFA there should not be perfect multicollinearity. According to Field's (2009) suggestions, the multicollinearity of the data was checked by a procedure involving the scanning of the correlation matrix. Providing that there is no strong correlation ( $r > .90$ ) between the items, it is possible to validate the assumption of multicollinearity. The means, standard deviations, variances and inter-item correlations are shown in Table 3.13. In the replication study, the item with the highest mean was "I engage in disruptive behaviors in my foreign language classes" ( $M=4.17$ ). The mean values for other items ranged between 2.01 and 4.17. Moreover, correlations between the items ranged between  $r = .03$  and  $r = .78$ , and the correlations between most items were low and moderate as evident in the table above. Therefore, as none of the inter-item correlations were over  $.90$ , it can be said that the data set satisfied the multicollinearity assumption.

**Table 3.13: Means (M), Standard Deviations (SD), and Correlations for the Replication Study**

| Item | M    | SD   | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17 |
|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| 1    | 4,12 | 1,06 | -   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |
| 2    | 4,24 | 1,12 | .14 | -   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |
| 3    | 4,00 | 1,09 | .59 | .10 | -   |     |     |     |     |     |     |     |     |     |     |     |     |     |    |
| 4    | 3,77 | 1,02 | .36 | .10 | .34 | -   |     |     |     |     |     |     |     |     |     |     |     |     |    |
| 5    | 3,99 | 0,99 | .39 | .13 | .53 | .31 | -   |     |     |     |     |     |     |     |     |     |     |     |    |
| 6    | 4,01 | 0,91 | .38 | .17 | .33 | .31 | .26 | -   |     |     |     |     |     |     |     |     |     |     |    |
| 7    | 4,03 | 0,74 | .36 | .12 | .42 | .27 | .53 | .26 | -   |     |     |     |     |     |     |     |     |     |    |
| 8    | 3,64 | 0,89 | .10 | .64 | .04 | .04 | .09 | .11 | .10 | -   |     |     |     |     |     |     |     |     |    |
| 9    | 3,33 | 0,95 | .21 | .05 | .16 | .13 | .22 | .17 | .36 | .06 | -   |     |     |     |     |     |     |     |    |
| 10   | 3,50 | 0,99 | .30 | .11 | .30 | .78 | .27 | .26 | .24 | .03 | .11 | -   |     |     |     |     |     |     |    |
| 11   | 2,91 | 1,08 | .36 | .05 | .32 | .40 | .32 | .36 | .34 | .06 | .32 | .35 | -   |     |     |     |     |     |    |
| 12   | 2,00 | 0,98 | .28 | .17 | .24 | .28 | .28 | .57 | .21 | .18 | .19 | .24 | .40 | -   |     |     |     |     |    |
| 13   | 2,56 | 1,15 | .31 | .04 | .34 | .31 | .37 | .29 | .37 | .07 | .31 | .23 | .45 | .26 | -   |     |     |     |    |
| 14   | 3,74 | 1,03 | .12 | .51 | .07 | .11 | .11 | .16 | .17 | .58 | .08 | .10 | .11 | .17 | .05 | -   |     |     |    |
| 15   | 3,58 | 1,03 | .32 | .09 | .34 | .37 | .42 | .23 | .41 | .04 | .25 | .32 | .36 | .25 | .40 | .13 | -   |     |    |
| 16   | 2,95 | 1,16 | .29 | .14 | .31 | .54 | .29 | .41 | .27 | .15 | .21 | .52 | .40 | .38 | .29 | .18 | .28 | -   |    |
| 17   | 2,16 | 1,14 | .34 | .19 | .34 | .34 | .30 | .54 | .27 | .13 | .14 | .29 | .35 | .49 | .30 | .18 | .31 | .42 | -  |

### 3.9.3. Confirmatory Factor Analysis

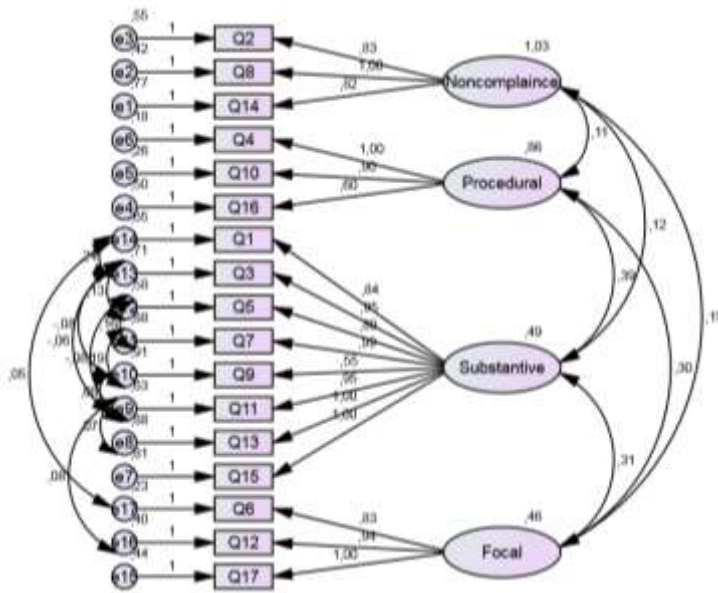
Using AMOS 22 the scale was tested for model fit again using this second sample ( $N= 701$ ) via a confirmatory factor analysis. The four factor model ( $\chi^2= 503.13$ ,  $df= 113$ ,  $RMSEA= .07$ ,  $NNFI= .89$ ,  $CFI= .91$ ,  $p=.00$ ) did not provide satisfactory results (Arbuckle, 2003; Byrne, 2001). Therefore, the modification index errors were checked and those with the highest values were identified in light of the suggestions of Arbuckle and Wothke (1999). So the modification index errors were checked and those with the highest values were identified in light of the suggestions of Arbuckle and Wothke (1999). The identified pairs with high error covariance were Q1 – Q3, Q1 – Q6, Q3 – Q5, Q3 – Q9, Q3 – Q11, Q5 – Q7, Q5 – Q11, Q7 – Q9, Q9 – Q11, Q11 – Q12, Q11 – Q13. These items were checked to decide whether they pertained to the same factor of the scale. Except for the Q1 – Q6 and Q11 – Q12 pairs, which belonged to factors named substantive and focal, all pairs pertained to the factor named substantive. An analysis of the items permitted to conclude that they were measures of the same scale. Therefore, the above listed item pairs that had high modification index errors were co-varied and the CFA procedure was repeated.

After repeating the CFA with the co-varied items the previously determined 4 dimensions were found to be a good fit ( $\chi^2 = 275.48$ ,  $df= 102$ ,  $RMSEA= .049$ ,  $NNFI= .95$ ,  $CFI= .96$ ,  $p=.00$ ). According to the fit indices, the 4 factor model displayed a good fit with the replication sample as well (Arbuckle, 2003; Byrne, 2001). Table 3.14 shows the fit indices for of the analysis.

**Table 3.14: Confirmatory factor analysis results**

| <i>Model</i>          | $\chi^2$ | <i>df</i> | <i>RMSEA</i> | <i>NNFI</i> | <i>CFI</i> |
|-----------------------|----------|-----------|--------------|-------------|------------|
| <b>4 Factor Model</b> | 275.48   | 102       | .049         | .947        | .960       |

$N= 701$ ,  $**p<.01$



**Figure 3.7. Four factor model of FLLES with standardized estimates**

### 3.9.4. Reliability Analysis of the Model

#### 3.9.4.1. Internal Consistency

In order to determine the internal consistency of the scale, the Cronbach's alpha values were calculated for all of the four subscales and are shown in Table 12. The reliabilities of the subscales were .80, .83, .82, and .77 for non-compliance, procedural effort, substantive effort, and focal effort respectively. The Cronbach's Alpha value for the scale was .85.

Consequently, the factor analysis revealed that foreign language learning effort embodies non-compliance, procedural effort, substantive effort, and focal effort. The relative results were verified with a second independent sample. The FLLES also showed good internal consistency reliability on both the pilot and replication.

#### 3.9.4.2. Test-re-test Reliability

As a last step in the replication phase of the study, the test-retest reliability of the current measure was assessed.

##### 3.9.4.2.1. Participants

A total of 64 students volunteered to take part in the two step process. All of the participants were studying at Atılım University. Among the participants, 21 of them were females whereas 43 of them were males. The ages of the participants ranged between 18 and 24; and the average age of the participants was 19.06.

#### **3.9.4.2.2. Procedure**

The test re-test reliability analysis necessitated two administrations of the FLLES. There was a one month interval between the two administrations. The administration of the FLLES took part during the class hours. And the volunteers were asked to write a nickname on the papers they were filling in so that the results of the first and second administration could be matched; and the researcher made sure that students made note of these nicknames so that they could provide the same nickname in the second administration as well. Upon collecting the data, it was entered to SPSS 20 in order for the necessary analysis to be carried out.

#### **3.9.4.2.3. Results**

The results of the test re-test reliability analysis conducted using SPSS 20 showed high correlations between the two tests ( $r = .86$ ,  $n = 64$ ,  $p = .00$ ) indicating high reliability. The significance and implications of these results is discussed in the discussion chapter.

### **3.10. Conclusion**

In summary, this study developed and assessed a new scale of foreign language learning effort called FLLES aimed at measuring the effort levels of tertiary level students learning a foreign language. The focus of the current study was the development of the scale and assessing its psychometric properties. The results revealed that foreign language learning effort was composed of four dimensions that are non-compliance, procedural, substantive and focal. Moreover, the current study also revealed that the FLLES was a reliable measure in light of the Cronbach's alpha values of the scale and its subscales and the test-retest reliability analysis results. However, this study is the first phase of scale development. Hinkin (2005) asserted that procedures like factor analysis, internal consistency, and test-retest reliability warrant evidence of construct validity and that it needs to be further circumstantiated by carrying out an assessment regards the convergent and predictive validity of the measure. This can be achieved by attesting criterion-related validity including predictive, convergent and discriminative validity. These in turn prove further evidence so as to the construct validity of the new scale (Hinkin, 1995). For that reason, the second part of this study (study 2) will concentrate on establishing a network of relationships between

effort and its known antecedents as well as exploring its ability to discriminate between successful and unsuccessful students.



## 4. VALIDATION OF THE SCALE

### 4.1. Introduction

The next phase in the scale development process after item generation, and scale construction is ascertaining its validity (Hinkin, 1995; 1998). The assessment of validity can take different forms. One way is the determination of content validity which was justified during the item generation phase as discussed in the previous chapter.

On the other hand, validity can also be assessed via predictive validity in which the scale is examined regards its ability to distinguish between successful and unsuccessful students. Another form of validity analysis is the analysis of the construct validity. It refers to the ability of a scale to measure precisely the concept under study. It is concerned with the theoretical relationship of a variable to other variables and the degree to which a measure behaves in the way the construct it is hypothesized to measure should act with respect to established scales of other variables (De Vellis, 1991). Therefore a similar process was undertaken to legitimize the validity of FLLES.

As it has been mentioned in the review of literature section, previous research on learning effort in foreign language learning contexts yielded a moderate positive to high positive correlation between attitudes and learning effort (Ghenghesh, 2010a; 2010b; Hemmings and Kay, 2010; Shahbaz and Liu, 2012; Wood, 1998), whereas it demonstrated that there exists a little to low negative correlation between amotivation and learning effort (Pelletier et al., 1995; Gao et al. 2012; Kusrkar et al., 2012; Benczenleitner, 2013; Gagne et al. 2015; Atalay et al., 2016). In this respect, the following research questions and hypotheses were generated:

1. Is FLLES able to discriminate between successful and unsuccessful students with respect to their FLLEs?

Hypothesis 1.a. The foreign language learning effort scale is able to discriminate between successful and unsuccessful foreign language students.

2. Is foreign language learning effort analogous to the measures of other constructs?

Hypothesis 2a There is a positive relationship between foreign language learning effort and attitudes towards learning a foreign language.

Hypothesis 2.b There is a negative relationship between foreign language learning effort and amotivation.

In light of these research questions, it is expected that the FLLES is a measure that is able to distinguish between successful and unsuccessful students. Moreover, it is also expected that FLLES is able to yield the predetermined relationships evident in literature regards the link between effort and attitudes and amotivation. More specifically, it is supposed that FLLES will be able to yield a positive relationship between foreign language learning effort and attitudes; and a negative relationship between effort expended in learning a foreign language and amotivation as these are the relationships the literature on effort sets forth

In light of the purposes specified above, the relevant analyses were carried out and in line with these, this section includes the relevant methodology employed, the results of the validation analyses and discussion of the analyses regards the validation of the FLLES.

## **4.2. Methodology**

### **4.2.1. Introduction**

This section will deal with data collection procedures, participants of the study, measures used, and the data collection procedures. The relevant details are explained below.

### **4.2.2. Data Collection Procedures**

The data for this study came from the University of Turkish Aeronautical Association collected in April 2016 using random sampling methodology. All participants were enrolled at the foreign language preparatory school of the institution. The questionnaire administration process took place during their class hours after the necessary permissions were taken. The paper copies of the questionnaire that included the FLLES, the Attitudes towards learning a foreign language scale, and the amotivation scale, and a demographic information form that asked students to fill out information regards their gender, age, and mid-term scores were distributed to the students by their instructor. Before students started to fill out the questionnaire the guidelines regards separate scales were read out

by the instructors to avoid any confusion. Participation as in any other administration in the current study was voluntary. Students were free to opt out of the survey or leave questions unanswered. Additionally, no ID information was asked from the students. The items of the instruments along with their instructions can be seen in Appendix 5.

#### 4.2.3. Participants

The participants of this phase were enrolled into the foreign language preparatory school of a foundation university in Ankara. All the participants were enrolled to B1 level English classes. A total of 650 questionnaires were distributed from which 574 replies were received (88% response rate).

#### 4.2.4. Cleansing and Normalization of the Data

Before the analysis, the negatively worded items were reversed scored for the replication data. After that, data entry errors and means of the variables were investigated. Upon correcting the data entry errors, the data was examined to check missing data. 78 cases with missing data were deleted. Next, the data was analyzed for multivariate outliers by finding the Mahalanobis Distance for all variables concerned. The Mahalanobis distance is a common measure in multivariate statistics which is used to identify outliers in a set of data (Brereton, 2015, p.1). The analysis proved that there were 23 outliers in the dataset, so they were deleted to free the data of outlying cases. As a result the data was reduced to 472 and included 159 female and 313 male participants, and the average age of the participants was 19.01 as can be seen in Table 4.1.

**Table 4.1: Descriptive statistics for the validation sample**

| <i>N</i> | <i>Females</i> | <i>Males</i> | <i>Average Age</i> |
|----------|----------------|--------------|--------------------|
| 472      | 159            | 313          | 19.01              |

#### 4.2.5. Measures

Effort Scale: The scale called FLLES (Foreign Language Learning Effort Scale) developed in study 1 was used for this study. As it was reported afore, the scale was found to have four dimensions named non-compliance, procedural effort, substantive effort, and focal effort and is scored on a 5-point Likert scale ranging from “never” to “always”. As in the first study the scale had a high reliability with a Cronbach’s alpha value .84.



Grades: Students grades were obtained via self-reporting. In this respect, students were asked to report their mid-term grades. The mid-term examination was composed of five sections that are listening, structure, vocabulary, reading and writing. Those students who could not remember their exam result were assisted by the English instructor's in this respect.

Attitude scale: The Attitudes towards Learning English Scale developed by Dörnyei (2010) was used in this study to assess the attitude levels of tertiary levels students learning English as a foreign language. The measure is composed of five items and is scored on a 6-point Likert scale that range from "strongly disagree" to "strongly agree". The scale yielded a Cronbach's alpha value of .88.

Amotivation scale: The amotivation subscale of the Language Learning Orientations Scale of Noels, Pelletier, Clement, and Vallerand (2000) was used to determine the levels of amotivation among Turkish university students studying English as a foreign language. The measure has been proven to be a valid and reliable instrument in assessing amotivation that can be used separately from the original scale (Noels, Pelletier, Clement, and Vallerand; 2000). The instrument consists of three questions and is scored on a 7-point Likert scale ranging from "does not correspond" to "corresponds exactly". The internal consistency of the scale for the current study was .83.

#### **4.2.6. Procedures for the Analyses**

First the assumptions for each test were checked and reported below in the results section. After determining that they were satisfied or not, a variety of analyses were employed to test the scale in terms of its validity. In order to determine the predictive validity of the scale, first assumptions regards the analysis were checked, and as the assumptions were satisfied an independent samples t-test was conducted to see whether the scale was able to perform its main function that is discriminating between successful and unsuccessful student. The analysis included the top and bottom 20% achievers of the sample, which will from here on be referred as successful ( $n=114$ ) and unsuccessful ( $n=114$ ) students respectively. As to determining the convergent and discriminative validity of the scale, a Pearson's correlation coefficient analyses were conducted to see whether the

scale proved theoretically determined relationships between effort and attitudes and amotivation.

#### 4.2.7. Descriptive Statistics for the Variables

As mentioned before Study 2 ( $N=472$ ) included four variables that are effort, exam scores, attitudes and amotivation. The descriptive statistics for each variable were calculated to provide an overview and are presented in Table 4.2.

**Table 4.2: Descriptive statistics for effort, attitude, amotivation and exam scores**

|                           | <i>Min.</i> | <i>Max.</i> | <i>M</i> | <i>SD</i> |
|---------------------------|-------------|-------------|----------|-----------|
| <b><i>FLLE</i></b>        | 28.00       | 80.00       | 56.77    | 9.28      |
| <b><i>Attitude</i></b>    | 4.00        | 16.00       | 9.98     | 3.28      |
| <b><i>Amotivation</i></b> | 12.00       | 21.00       | 16.36    | 1.78      |
| <b><i>Exam score</i></b>  | 20.00       | 100.00      | 71.07    | 16.12     |

$N=472$

As can be seen from Table 4.2, the mean value for students' foreign language learning effort was 56.77 and scores ranged from 28 to 80. Scores for attitudes towards learning foreign languages were between 4.00 and 16, with a mean of 9.98. The other variable, amotivation had a mean value 16.36 and the minimum and maximum values were 12 and 21 respectively. Lastly, the exam scores of the sample ranged from 20 to 100 and had a mean value 71.07.

### 4.3. Predictive Validity

#### 4.3.1. Descriptive Statistics

An analysis was carried out to assess the predictive validity of the instrument. In order to do this the effect of foreign language learning effort on the exam scores of successful ( $n=114$ ) and unsuccessful ( $n=114$ ) students was analyzed. The descriptive statistics related to these two sets of data are provided in Tables 4.3, 4.4, and 4.5.

**Table 4.3: Descriptive statistics for successful and unsuccessful student samples with respect to their gender and age**

|                            | <i>Female</i> | <i>Male</i> | <i>Age Range</i> | <i>Mean Age</i> |
|----------------------------|---------------|-------------|------------------|-----------------|
| <b><i>Successful</i></b>   | 39            | 75          | 18-24            | 18.97           |
| <b><i>Unsuccessful</i></b> | 32            | 82          | 17-23            | 19.04           |

As can be seen from Table 4.3, the successful student sample composed of 32 females and 82 males. The age of the successful student sample ranged between 17 and 23; and had a mean age value of 19.04. On the other hand, the

unsuccessful student sample composed of 39 females and 75 males. The age of the successful student sample ranged between 18 and 24; and had a mean age value of 18.97.

**Table 4.4: Descriptive statistics for successful and unsuccessful students with respect to exam scores**

|                     | <i>N</i> | <i>Minimum</i> | <i>Maximum</i> | <i>M</i> | <i>SD</i> |
|---------------------|----------|----------------|----------------|----------|-----------|
| <i>Successful</i>   | 114      | 83             | 100            | 89.83    | 5.21      |
| <i>Unsuccessful</i> | 114      | 20             | 60             | 48.95    | 10.28     |

Table 4.4 provides information regarding the descriptive statistics for successful and unsuccessful students with respect to their exam scores. As it can be elicited from the table, exam scores of successful and unsuccessful students ranged between 83 and 100 and 20 to 60, whereas the mean values were 89.83 and 48.95 respectively.

**Table 4.5: Descriptive statistics for successful and unsuccessful students with respect to foreign language learning effort scores**

|                     | <i>N</i> | <i>Minimum</i> | <i>Maximum</i> | <i>M</i> | <i>SD</i> |
|---------------------|----------|----------------|----------------|----------|-----------|
| <i>Successful</i>   | 114      | 28             | 80             | 59.40    | 9.57      |
| <i>Unsuccessful</i> | 114      | 30             | 78             | 54.24    | 9.22      |

Table 4.5 presents the descriptive statistics for successful and unsuccessful students with respect to foreign language learning effort scores. As it can be seen in table, the foreign language learning effort scores of successful and unsuccessful students ranged between 28 to 80 and 30 and 78, whereas the mean values were 59.40 and 54.24 respectively.

### **4.3.2. Assumption Checks**

#### **4.3.2.1. Sample Size**

First the suitability of the sample size was evaluated. Green (1991) asserted that the minimal adequate sample size can be calculated by the formula  $N > 50 + 8k$ , in which  $k$  refers to the number of criterion variables. The minimum adequate sample size was calculated to be 58 with 1 independent variable. So the sample size of the study ( $N=228$ ) was suitable to conduct the independent samples t-test.

#### **4.3.2.2. Normality**

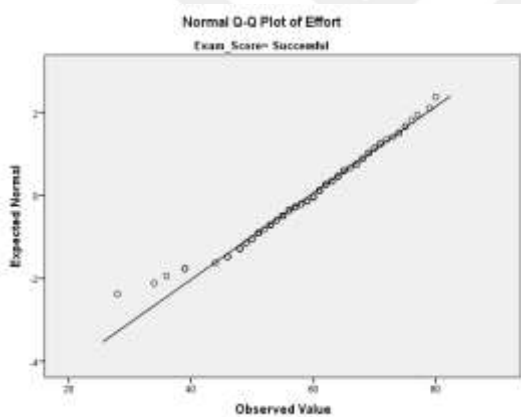
Using SPSS 20 skewness, kurtosis, Kolmogorov-Smirnov, and Shapiro-Wilk statistics were calculated, also histograms and q-q plots were generated. Table 4.6 presents the relevant statistics for Kolmogorov-Smirnov, and Shapiro-Wilk

tests and the skewness and kurtosis values regards the successful and the unsuccessful student sample.

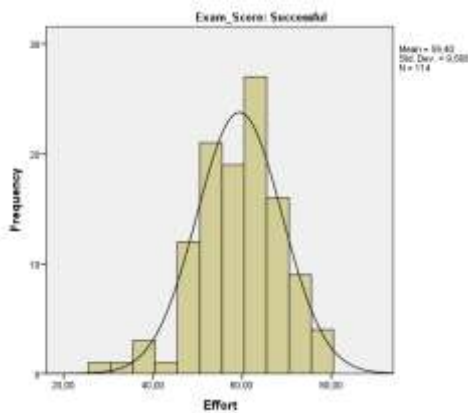
**Table 4.6: Statistics for tests of normality**

|                     | <i>Kolmogorov-Smirnov</i> |           |             | <i>Shapiro-Wilk</i> |           |             | <i>Skewness</i> | <i>Kurtosis</i> |
|---------------------|---------------------------|-----------|-------------|---------------------|-----------|-------------|-----------------|-----------------|
|                     | <i>Statistic</i>          | <i>df</i> | <i>Sig.</i> | <i>Statistic</i>    | <i>df</i> | <i>Sig.</i> |                 |                 |
| <i>Successful</i>   | .06                       | 114       | .20         | .98                 | 114       | .20         | -.44            | .57             |
| <i>Unsuccessful</i> | .06                       | 114       | .20         | .99                 | 114       | .58         | -.24            | .09             |

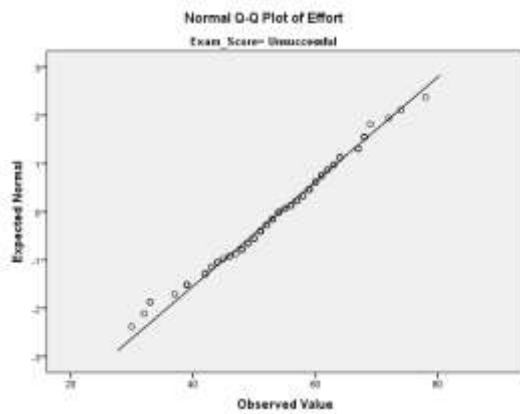
As can be seen from the above table, both the Kolmogorov-Smirnov statistic and the Shapiro-Wilk statistic are not significant, which means that the normality assumption is statistically satisfied. Moreover, the Skewness value presents no significant skewness problem, and Kurtosis value is in expected range. A further examination of normality for the independent samples was carried out via the examination of histograms (Figures 4.1 and 4.3) and normal Q-Q plots (Figures 4.2 and 4.4).



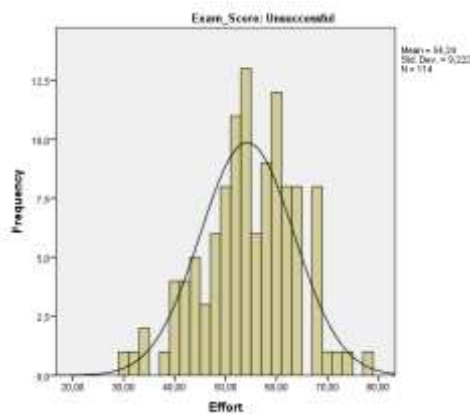
**Figure 4.1: Q-Q plot of the distribution of successful students with respect to their effort scores**



**Figure 4.2: Histogram of the distribution of successful students with respect to their effort scores**



**Figure 4.3: Q-Q plot of the distribution of unsuccessful students with respect to their effort scores**



**Figure 4.4: Histogram of the distribution of unsuccessful students with respect to their effort scores**

The histograms of successful and unsuccessful students as well as the Q-Q plots related to the effort scores were checked in order to assume that the data is normally distributed. The visual checks of both the histograms and the Q-Q plots of the successful and unsuccessful student samples show that normality is not violated substantially and it can be assumed that the data is normally distributed.

### 4.3.3. Analysis

An independent-samples t-test was conducted to investigate the differences in the foreign language learning efforts of successful and unsuccessful students in order to assess whether the FLLES is able to discriminate between the two groups of learners. Given that there was no violation of Levene's test of homogeneity of variances,  $F(1, 226) = 0.81, p = .78$ , the independent t-test assuming  $N$  homogeneous variances was calculated. The results showed that there was a significant difference in the scores of successful ( $M = 59.40, SD = 9.57$ ) and unsuccessful ( $M = 54.24, SD = 9.22$ ) students;  $t(226) = -4.15, p = 0.00$ . The results of this analysis will be discussed in the next chapter.

## 4.4. Convergent and Discriminant Validity

### 4.4.1. Assumption Checks

#### 4.4.1.1. Sample Size

First the suitability of the sample size was evaluated. Green (1991) asserted that the minimal adequate sample size can be calculated by the formula  $N > 50 + 8k$ , in which  $k$  refers to the number of criterion variables. The minimum adequate sample size was calculated to be 72 with 3 independent variables. So the sample size of the study ( $N=472$ ) was suitable to conduct the independent samples t-test.

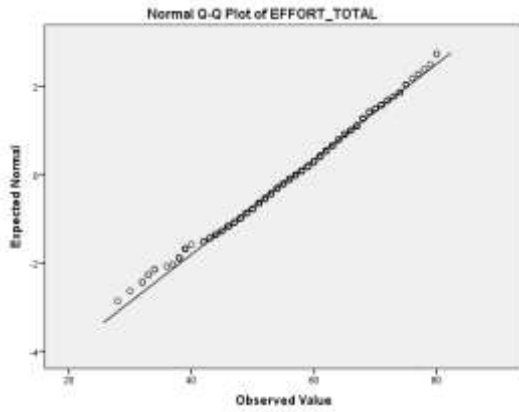
#### 4.4.1.2. Normality

Using SPSS 20 skewness, kurtosis, Kolmogorov-Smirnov, and Shapiro-Wilk statistics were calculated, also histograms and q-q plots were generated. Table 4.7 presents the relevant statistics for Kolmogorov-Smirnov, and Shapiro-Wilk tests and the skewness and kurtosis values regards foreign language learning effort, attitudes towards learning a foreign language and amotivation.

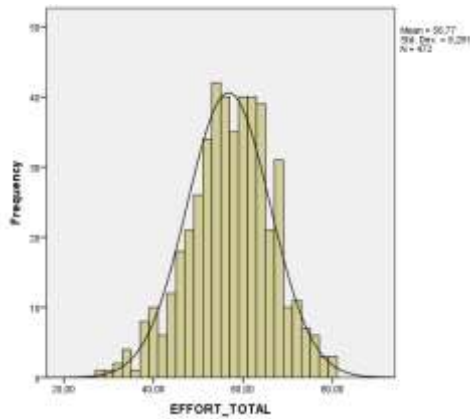
**Table 4.7: Statistics for tests of normality**

|                    | <i>Kolmogorov-Smirnov</i> |           |             | <i>Shapiro-Wilk</i> |           |             | <i>Skewness</i> | <i>Kurtosis</i> |
|--------------------|---------------------------|-----------|-------------|---------------------|-----------|-------------|-----------------|-----------------|
|                    | <i>Statistic</i>          | <i>Df</i> | <i>Sig.</i> | <i>Statistic</i>    | <i>df</i> | <i>Sig.</i> |                 |                 |
| <i>Effort</i>      | .04                       | 472       | .04         | .99                 | 472       | .05         | -.23            | .03             |
| <i>Attitudes</i>   | .10                       | 472       | .00         | .97                 | 472       | .00         | -.03            | .84             |
| <i>Amotivation</i> | .13                       | 472       | .00         | .96                 | 472       | .00         | .18             | .15             |

As can be seen from the above table, only the Shapiro-Wilk statistic for effort is not significant, which is a sign of normality for this data set; yet statistics related to attitudes and amotivation denote that their data is not normally distributed. However, as the sample size is large, it was suggested by Green and Salkind (2008) that visual checks of Q-Q plots and histograms can provide for the normality assumption given that they denote a normal distribution. Therefore, the Q-Q plots and histograms of the data regards the variables were checked, which in turn will justify the type of analysis that will be conducted in answering the research questions.

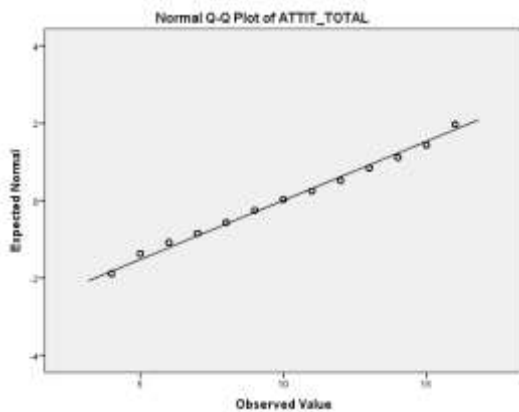


**Figure 4.5: Q-Q plot of the distribution of effort scores**

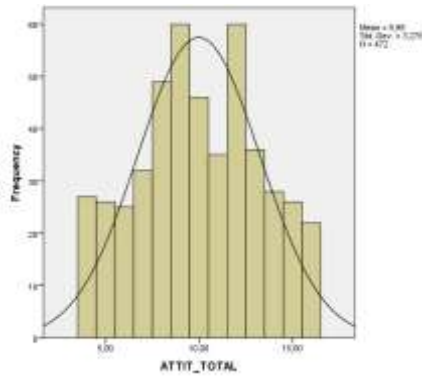


**Figure 4.6: Histogram of the distribution of effort scores**

In light of the visual checks of the Q-Q plot (Figures 4.5) and the histogram (Figure 4.6), the effort scores can be said to denote a normal distribution.

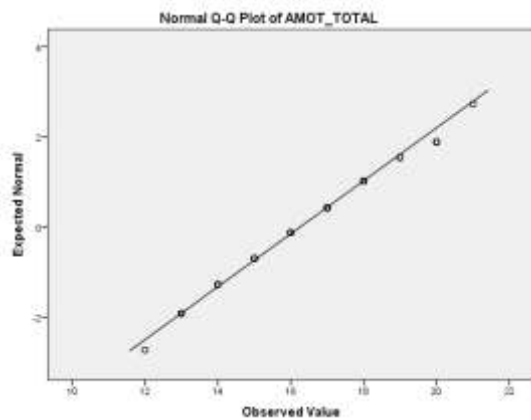


**Figure 4.7: Q-Q plot of the distribution of attitude scores**

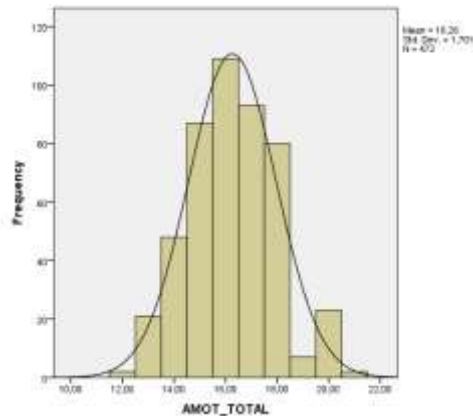


**Figure 4.8: Histogram of the distribution of attitude scores**

In light of the visual checks of the Q-Q plot (Figures 4.7) and the histogram (Figure 4.8), the effort scores can be said to denote a normal distribution.



**Figure 4.9: Q-Q plot of the distribution of amotivation scores**



**Figure 4.10: Histogram of the distribution of amotivation scores**

In light of the visual checks of the Q-Q plot (Figures 4.9) and the histogram (Figure 4.10), the effort scores can be said to denote a normal distribution.

Therefore, in light of our visual checks for the distributions of the effort, attitudes and amotivation data we conclude they are normally distributed. Therefore, a



Pearson's Correlation Coefficient was calculated to determine the relationship between the relevant variables for each type of validity.

#### 4.4.2. Convergent Validity

Convergent validity of the FLLES was determined to provide further evidence for the validity of the scale. In order to explore whether the FLLES demonstrated convergent validity a Pearson's correlation coefficient was computed to assess the relationship between foreign language learning effort and attitudes towards learning a foreign language and the relevant statistics are shown in Table 4.8.

**Table 4.8: Pearson's Correlation Coefficient regards the correlation between foreign language learning effort and attitudes**

| <i>Scale Effort</i> | <i>Attitudes</i> |
|---------------------|------------------|
|                     | .73**            |

*N*=472, \*\**p*<0.01

A Pearson's correlation coefficient was calculated to determine the relationship between foreign language learning effort and attitudes towards learning a foreign language. There was a strong, positive correlation between foreign language learning effort and attitudes towards learning a foreign language, which was statistically significant  $r = .73$ ,  $p = .00$ . The results will be further elaborated on in the discussion section.

#### 4.4.3. Discriminant Validity

Discriminant validity of the FLLES was determined to provide further evidence for the validity of the scale. In order to explore whether the FLLES demonstrated discriminant validity a Pearson's correlation coefficient was computed to assess the relationship between foreign language learning effort and amotivation and the related statistics are presented in Table 4.9 below.

**Table 4.9: Pearson's Correlation Coefficient regards the correlation between foreign language learning effort and amotivation**

| <i>Scale Effort</i> | <i>Amotivation</i> |
|---------------------|--------------------|
|                     | -.20**             |

*N*=472, \*\**p*<0.01

A Pearson's correlation coefficient was calculated to ascertain the relationship between foreign language learning effort and attitudes towards learning a foreign language. There was a strong, positive correlation between foreign language

learning effort and attitudes towards learning a foreign language, which was statistically significant  $r = -.20$ ,  $p = .00$ . The results will be discussed in the next section.

#### **4.4.4. Conclusion**

In summary, this study assessed the validity of the scale developed in Study 1 called FLLES. In this respect the predictive, convergent and discriminant validities of the scale were ascertained. As presented in the previous chapter, the results revealed that FLLES was able to discriminate between successful and unsuccessful students to provide for predictive validity. Moreover, the results also ascertained the convergent and discriminant validities of the scale via revealing that FLLES was able to reveal the predetermined theoretical relationships between effort and attitudes and amotivation. In the next section which is entitled Discussion and Conclusion, the results of both study 1, which set out to develop and assess a new scale of foreign language learning effort called FLLES aimed at measuring the effort levels of tertiary level students learning a foreign language and study 2, which was aimed at ascertaining the validity of the instrument will be discussed.

## 5. DISCUSSION AND CONCLUSION

### 1. Introduction

Even though findings regards the relationship of effort and learning outcomes were mixed so far, they are still suggestive of the importance of examining effort in the context of learning a foreign language as effort is found to be an important variable in determining the extent to which foreign languages are learnt (Opare & Dramanu, 2002; Aratibel, 2013; Inagaki, 2014; Ampofo & Osei-Owusu, 2015a; 2015b). Therewithal, the methods used to measure effort focus on the time expended and behaviors contended with in and out of a given classroom to master the subject. To this end, time spent on academic endeavors was found to be the least accurate measure of effort (Zinn et al., 2011) as an individual hardly spends all of his or her study time actually studying as a part of that time is spent on settling down, being distracted or daydreaming (Schuman, 2001). On the other hand, attempts to measure effort via behavioral indexes have failed to address its multidimensional nature and opted for single scale measures. As argued by Bozick and Dempsey (2010), even though this might be favorable from an analytical point of view, it conceals the theoretical and analytical distinctions between the sub-dimensions evident in the literature and masks the various ways in which students expend effort in their academic endeavors, which might in some cases conduce towards misleading results. Furthermore, Carbonaro (2005) asserted researchers to recognize different types of effort as they may be related to distinct outcomes.

In light of such suggestions, the main purpose of this study develop a measure of foreign language effort that is reliable and valid and one which encompasses each unique dimension and allows for the analysis of the contributions made by each unique dimension to learning outcomes. With this objective in mind, foreign language learning effort was defined as the amount of individual resources students invest in the act of learning a foreign language and characterized by in and out of class endeavors students engage in to fulfill the process of learning a foreign language. The scale was developed using preexisting and new effort items that were reduced via a Q-sort technique and refined by administering the FLLES to two distinct samples. The initial sample was used in assessing the factor

structure of the scale and to eliminate items that were ill fitting. The second sample on the other hand, was used to verify the scale structure via confirmatory analysis. After the development of the foreign language learning effort scale, the next phase involved its validation. In this regard, the predictive, convergent, and discriminant validities of the scale were assessed. In order to determine the predictive validity of the scale, the top and bottom 20% achievers were sorted first and afterwards an independent sample t-test was carried out to specify whether the FLLES was able to distinguish between successful and unsuccessful foreign language learners. Moreover, the validity of the scale was further determined via ascertaining its convergent and discriminant validity. This procedure was undertaken by assessing whether the scale was able to yield the predetermined theoretical relationships of effort with attitudes and amotivation. Herein the results of these procedures will be discussed.

## **5.2. Factor Structure**

The related line of literature suggested that learning effort was composed of three dimensions. However, the factor analysis indicated that there were four factors that make up foreign language learning effort which were a good fit. Items that fell under each factor were reviewed to see the way they were linked with the dimensions that were conceptualized afore.

The first factor included items from the formerly conceptualized non-compliance and was labeled so. Non-compliance refers to behaviors that hinder effort exertion in the foreign classroom. The second factor comprised of items that fell in the category of formerly conceptualized procedural effort that indicate endeavors engaged to fulfil the demands specific to the foreign language classroom. Moreover, items that were included in the third dimension represented substantive effort, which is related to behaviors that denote active involvement in learning a foreign language. An additional factor named focal effort arose from the analysis, and reflected attentiveness in the foreign language classroom, which was formerly classified under procedural effort by Bozick and Dempsey (2010) and as intellectual effort by Carbonaro (2005). This might be because the dimensions of both learning effort models were not empirically analyzed before and because both conceptualizations were solely done in light of the literature. Yet, a review of

related literature proves that many researchers have acknowledged attention and attentiveness as an effort dimension (Finn et al., 2014; Ceballo, McLoyd & Toyokawa 2004; Shouse, Schneider & Plank, 1992; Idan & Margalit, 2013; Cowan, 2005, Cho, 2015, Chao, 2001); moreover as argued by Kanfer (1992) effort is both physical and cognitive; and as asserted by many scholars, cognitive effort is the load of attention apportioned to a process, that is learning English in this context; so there is sufficient evidence in literature to argue that Foreign language learning effort has a focal dimension. The finding that foreign language learning effort has four dimensions implies that foreign language learning effort is indeed a multifaceted construct and that the current measure is unique in that it includes focal effort as a distinct aspect of foreign language learning effort.

The multidimensional nature of neither learning nor foreign language learning effort has not been firmly established to date. It can be argued that to our knowledge, only Finn et al. (1995), who created two separate scales to measure minimally adequate effort and initiative taking, where the former represents procedural effort whereas the latter explores substantive effort; acknowledged the multidimensional nature of effort, yet the measures were unidimensional with respect to the type of effort it was aimed to measure. All other measures constructed were unidimensional measures of learning effort and naturally studies on effort in the relevant line of literature failed to prove its unidimensional nature. Therefore, the four factor fit established in this study is a unique contribution to the literature as it can be considered as a concrete proof of the multifaceted nature of learning and more specifically foreign language learning effort. This asserts that in order for a learner to be considered as putting forth effort in learning a foreign language, a student has to avoid noncompliant behaviors, meet the demands of the foreign language classroom, take the initiative in learning, and concentrate in the foreign language learning setting. The aspect of focal effort differentiates FLLES from the previous measures in that it also accounts for students' level of concentration in academic settings.

### **5.3. Reliability**

The results section of study 1 also revealed that the FLLES and its sub-scales performed adequate enough with respect to internal consistency, exhibiting Cronbach alpha scores over the prescribed limit of .70 (Nunnally 1967), indicating

that the scale and its subscales are strong internally. Moreover, the test re-test statistic was also satisfactory showing a .86 correlation between the first administration and the second administration four weeks later according to the minimum threshold of .70 suggested by Terwee et al. (2007).

#### **5.4. Validity**

As reported in the results section of study 2, there was a significant difference between the foreign language learning effort scores of successful and unsuccessful students studying foreign languages which suggest that the FLLES as a measure of foreign language learning effort does discriminate between successful and unsuccessful students and therefore demonstrates predictive validity. Moreover, it was found that the FLLES scores were highly correlated with attitudes towards learning a foreign language in a positive fashion, which is in line with the related line of literature which indicates that there is positive moderate to high correlation between the two constructs (Ghenghesh, 2010a; 2010b; Hemmings & Kay, 2010; Shahbaz & Liu, 2012; Wood, 1998). Therefore, this result testifies that the FLLES demonstrates convergent validity. On the other hand, a low and negative correlation was found between the FLLES scores and motivation, which is also in line with the related line of literature, which indicates that there is negative and low correlation between the two constructs (Atalay et al., 2016; Benczenleitner, 2013; Gagne et al. 2015; Gao et al. 2012; Kusrkar et al., 2012; Pelletier et al., 1995). Consequently, this result denoted that the FLLES demonstrates discriminant validity as well.

#### **5.5. Implications**

It has been argued that measure construction is the most important part of any study and many well designed studies have never eventuated because of flawed measures (Schoenfeldt, 1984). Therefore, it is of utmost importance to have well-developed and theoretically sound measures of constructs. As it has been discussed in previous chapters, learning effort has been defined, conceptualized and measured in many ways. However, none of these have focused on the multidimensional nature of learning and foreign language learning effort in particular. In this respect, the current measure does account for the multifaceted nature of foreign language learning effort and contributes to the literature by enabling a network of dimensions associated with foreign language effort to be

built, which in turn can ease our understanding of what types of student behaviors contribute to positive learning outcomes more.

Moreover, theoretically grounded scales are asserted to be more reliable and valid (Hinkin, 1995); and in this respect, FLLES is a measure that is strongly grounded in theory as it is based on preexisting literature on learning effort. On the other hand, it is also important to link measurement and the underlying theory. As a link between the theory and measurement of foreign language learning effort is established herein, further studies can be conducted to assess its outcomes and antecedents as well as profiling effortful students and investigating ways to increase the effort students expend in learning a foreign language. Furthermore, the FLLES is distinct from other effort measures in that it does not ignore the aspect of focusing or concentration and it supports the evidence that focusing is a significant aspect of putting forth effort in learning a foreign language.

On the other hand, FLLES is a measure strongly grounded in theory, it allows for the valid and reliable assessment of the relationship between foreign language learning effort and other factors, which will in turn assist research dedicated to the motives behind and effects of foreign language learning effort, as well as studies on how it can be improved. On the other hand, the unidimensional measure of foreign language effort can allow researchers to assess the significance of each dimension in affecting learning outcomes and pave the way in establishing means to improve each aspect. Moreover, FLLES is a measure that concentrates solely on endeavors students engage in the act of learning a foreign language. It discards time spent as a measure of effort, which is proven to be an inaccurate mean to assess effort in educational contexts as its reporting can be flawed by uncontrollable factors such as daydreaming or home duties. Therefore, the current measure can enable us to more accurately gauge the mediators and outcomes of foreign language learning effort.

The second study of the current research was a follow up of the first one which concentrated on the development of a measure of foreign language learning effort (FLLES). This second study on the other hand was aimed at establishing the validity of the FLLES. In this regard it was argued that a sound measure should be able to distinguish between successful and unsuccessful students, denoting predictive validity. Moreover, it was also asserted that in order for a measure to be

considered as valid, it should also yield results similar to the results evident in the related line of literature. As mentioned in the previous section, the FLLES was able to discriminate between successful and unsuccessful students and did yield formerly proven correlations between effort and attitudes towards learning a foreign language and amotivation. All in all, the results are indicative that FLLES is a valid measure of foreign language learning effort demonstrated by tertiary level students; thereby this study contributes a new measure to the area of learning effort. A new reliable and valid measure of foreign language learning effort can grant the opportunity to establish better connections between the various student learning theories and outcomes.

One of the dilemmas in the area of learning effort has been the inability to separate the effort dimensions from each other, which is a unique contribution of this study to the related literature. The current study shows that foreign language learning effort has four distinct dimensions that are non-compliance, procedural effort, substantive effort, and focal effort. The multidimensional nature of the FLLES sets it apart from other measures of effort as they fail to distinguish between different facets of learning effort evident in literature. Therefore, by using FLLES, it may be possible to enhance the literature in the area by assessing the unique contribution of each dimension in promoting learning outcomes through which the theory of learning effort can make use of a more detailed look at the endeavors students engage in to learn a foreign language.

Another important issue in student learning and development in secluding the effects of student characteristics from that of environmental and college related factors. Students that enroll to universities bring along various college related and foreign language preparatory school related perceptions as well as foreign language related study patterns, academic histories and previous efforts. The question then is to what extent these characteristics change in higher education. By focusing on the in and out of classroom behaviors students engage in learning a foreign language and by splitting effort up to more operable parts, the FLLES allows for an in depth analysis in this regard.

Moreover, it can be argued that effort is an important theme in the area of foreign language education. Nonetheless, the way learning effort has been studied with respect to foreign language learning or other areas like time spent studying,



number of assignments handed in, and attendance does not allow for a sound identification of the factors that lead to effort or are influenced by it. Using FLLES may help to uncover and pinpoint the network of constructs surrounding foreign language learning effort in a more accurate and detailed fashion.

### **5.6. Directions for future research**

An important direction for further research is the investigation of other variables that might be related to foreign language learning effort. In this way, both theory and practice can draw on studies concentrating on the factors that augment or hinder foreign language learning effort in and out of the classroom setting. These can range from student demographics like previous foreign language education and student majors to other constructs like L2 motivation, self-efficacy beliefs in the foreign language learning setting, and foreign language learning anxiety. In the same vein, it would also be beneficial to explore the effects of effort in learning a foreign language such as achievement, retention, interest, and desire to further education at a higher academic level.

Moreover, FLLES can be used to assess the learning efforts students expend in learning a foreign language either with an experimental or longitudinal design. Investigations at different time periods like pretest/posttest studies at the beginning and end of the semester or before and after exams can offer interesting insight so as to whether or not students increase or decrease their efforts in learning a foreign language at different time intervals and the reasons behind their shifts in effort expansion. On the other hand, a longitudinal approach in assessing foreign language learning effort can shed light on the persistence and continuation of effort and their effect on retention and learning outcomes.

As mentioned in the introduction section, one of the limitations of this study was that the sample was limited to tertiary level foreign language preparatory school students. Further validation of the FLLES with distinct samples or at different levels of higher education can be undertaken. Moreover, another line of research that might yield interesting results may be that of the foreign language learning levels of foreign language preparatory school students and that of first year or senior university students.

## **5.7. Conclusion**

The current research that is composed of two parts contributed to the literature by in developing and validating of an instrument designed to the measure tertiary level students' foreign language learning effort. The first study proved that effort can be measured and examined reliably in line with its multidimensional nature. The second study on the other hand, provided evidence for the validity of the FLLES by comparing its ability to distinguish between successful and unsuccessful students and by showing that the instrument yields results congruent to the previously determined relationships between effort and attitudes and amotivation. Studying learning effort using FLLES can enable us to investigate the learning efforts university students devote to learning foreign languages and improve it, that can only result in favorable educational outcomes that might also assist students in their future education and careers after graduation.

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**APPENDICES**



## APPENDIX 1. ETHICS COMMITTEE APPROVAL



T.C.  
HACETTEPE ÜNİVERSİTESİ  
Rektörlük

11 Mart 2016

Sayı : 35853172/ 431-645

### EGİTİM FAKÜLTESİ DEKANLIĞINA

Fakülteniz Yabancı Diller Eğitimi Bölümü İngiliz Dili Eğitimi Anabilim Dalı Öğretim üyesi **Prof. Dr. İsmail Hakkı MİRİCİ** danışmanlığında **Arş. Gör. Ceyhan KARABIYIK**'ın hazırladığı "**Türk Öğrencilerinin Yabancı Dil Öğrenme Çabalarını Ölçmek İçin Standart Bir Ölçek Geliştirilmesi**" başlıklı doktora tez çalışması, Üniversitemiz Senatosu Etik Komisyonunun 8 Mart 2016 tarihinde yapmış olduğu toplantıda incelenmiş olup, etik açıdan uygun bulunmuştur.

Bilgilerinizi ve gereğini rica ederim.

Prof. Dr. Rahime M. NOHUTCU  
Rektör a.  
Rektör Yardımcısı

## APPENDIX 2. INITIAL ITEM POOL

1. Yabancı dil derslerime devamsızlık yaparım (I skip my foreign language classes)
2. Yabancı dil derslerinde dikkat dağıtıcı davranışlarda bulunurum (I engage in disruptive behaviors in my foreign language classes)
3. Yabancı dil sınavlarında kopya çekerim (I cheat on my foreign language exams)
4. Yabancı dil ödevlerimde ödev kopyacılığı yaparım (I plagiarize my foreign language home assignments)
5. Yabancı dil derslerimde verilen ev ödevlerini yaparım (I do my foreign language home assignments)
6. Yabancı dil derslerimde verilen ev ödevlerini zamanında teslim ederim (I submit my foreign language home assignment on time)
7. Yabancı dil derslerimde verilen sınıf içi çalışmalarını yaparım (I carry out the assigned in-class tasks in my foreign language classes)
8. Yabancı dil derslerimde dersi dikkatli bir şekilde takip ederim (I carefully follow my foreign language lessons)
9. Yabancı dil derslerinde öğretmenimi dikkatli bir şekilde dinlerim (I attentively listen to my instructor during foreign language classes)
10. Yabancı dil derslerinde sınıf arkadaşlarımdan derse yaptıkları katkıları dikkatli bir şekilde dinlerim (I attentively listen to the contributions made by my peers in my foreign language classes)
11. Yabancı dil derslerinde verilen sınıf içi çalışmalarını en iyi şekilde yaparım (I carry out the assigned in-class tasks in my foreign language classes in the best possible way)
12. Yabancı dil derslerimde sınıf içinde zor bir çalışma verilse bile elimden gelenin en iyisini yapmaya çalışırım (I try my best even if a difficult in-class task is given in my foreign language classes)
13. Yabancı dil derslerimde verilen ev ödevlerini elimden gelen en iyi şekilde yapmaya çalışırım (I do my foreign language home assignments in the best possible way)

14. Yabancı dil derslerimde verilen ev ödevlerim zor olsa bile onları yapmak için çok uğraşırım (I try my best even if a difficult home assignment is given in my foreign language classes)
15. Yabancı dil sınavlarıma iyi hazırlanırım (I prepare well for my foreign language exams)
16. Yabancı dil derslerinde işlenen konuları tekrar ederim (I revise the covered topics in my foreign language classes)
17. Yabancı dil derslerinde sınıf içi etkinliklere aktif olarak katılırım (I actively participate in the in-class activities in my foreign language classes)
18. Yabancı dilimi geliştirmek için bir öğretmen ya da kurumdan özel ders alırım (I take additional private tuition from an instructor or institution to improve my foreign language)
19. Bir sonraki yabancı dil dersimde işlenecek konuyu gözden geçiririm (I review the topics to be covered in my next foreign language class)
20. Ödev verilme bile çeşitli kaynaklardan yabancı dil üzerine pratik yaparım (I practice my foreign language from various sources even if I am not given a home assignment)
21. Yabancı dil üzerine çalışırken ek kaynaklarda yararlanırım (I use different sources when I study foreign languages)
22. Yabancı dil ile ilgili ders dışı etkinlikler yaparım (I engage in foreign language medium out-of-class activities)
23. Yabancı dil çalışmalarım ile ilgili düzeltme alırsam, verilen çalışmadaki eksikleri tamamlarım (I revise my foreign language assignments if I receive any correction or feedback)
24. Yabancı dilimi nasıl geliştirebileceğim konusunda İngilizce öğretmenime ya da başka İngilizce uzmanlarına danışırım (I ask my foreign language instructor or other instructors for advice and help to improve my English)
25. Yabancı dil derslerim sırasında yalnızca derse odaklanırım (I concentrate solely on the lesson in my foreign language classes)
26. Derste öğrendiklerimi günlük hayatta nasıl kullanabileceğim hakkında düşünürüm (I think about how I can use what I have learnt in my foreign language classes in my daily life)
27. Ek ödevler için gönüllü olurum (I volunteer for extra foreign language home assignments)

## APPENDIX 3. PILOT SURVEY

### ÇALIŞMA İLE İLGİLİ GENEL BİLGİLER

Bu çalışma, Ufuk Üniversitesi Araştırma Görevlisi Ceyhan KARABIYIK ve doktora tez danışmanı Hacettepe Üniversitesi öğretim üyesi Prof.Dr. İsmail Hakkı MİRİCİ tarafından "Türk Öğrencilerinin Yabancı Dil Öğrenme Çabalarını Ölçmek için Standart bir Ölçek Geliştirilmesi" başlıklı doktora tezinin bir parçası olarak yürütülmektedir. Çalışmamızın amacı, Yabancı Dil olarak İngilizce öğrenen Türk öğrencilerin öğrenme çabalarını ölçmek için geçerli ve güvenilir standart bir ölçek geliştirmektir. Bu araştırma için ilgili tüm kurumlardan gerekli yetki ve izinler alınmıştır. Çalışmada sizden kimlik belirleyici hiçbir bilgi istenmemektedir. Tüm oturumlar size verilecek olan bir kimlik numarası ile yapılacaktır. Sizden alınan veriler tamamıyla gizli tutulacak ve sadece araştırmacı tarafından değerlendirilecektir. Elde edilecek bilgiler sadece bilimsel yayımlarda kullanılacaktır.

Bu çalışmaya katılmak tamamen gönüllülük esasına göredir. Çalışmaya katılıp katılmamak sizin seçiminizdir. Çalışmaya katılmayı kabul ettikten sonra da istediğiniz anda vazgeçebilirsiniz. Bu size herhangi bir sorumluluk getirmeyecektir. Katılım sırasında herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz oturumu yarıda bırakıp çıkmakta serbestsiniz. Böyle bir durumda, araştırmacıyı bilgilendirmeniz yeterli olacaktır. Bu çalışmaya katıldığınız için şimdiden çok teşekkür ederiz.

### ÖĞRENCİ BİLGİ FORMU

|    |   |         |           |
|----|---|---------|-----------|
| 1. | Cinsiyetinizi nedir? İşaretleyiniz.                           | Kız ( ) | Erkek ( ) |
| 2. | Kaç yaşındasınız? Belirtiniz.                                 |         |           |
| 3. | Öğrenim görmekte olduğunuz üniversite hangisidir? Belirtiniz. |         |           |

### İNGİLİZCE ÖĞRENME ÇABASI ÖLÇEĞİ MADDE HAVUZU

**Yönerge:** Lütfen aşağıdaki ifadeleri okuduktan sonra kendinizi yabancı dil derslerinize ve yabancı öğrenme faaliyetlerinize göre değerlendirip en uygun şıkla işaretleyiniz. Seçenekler 1'den (Hiçbir zaman) 5'e (Her zaman) doğru sıralanmaktadır.

|    |  | Hiçbir zaman | Nadiren | Bazı zamanlar | Sık sık | Her zaman |
|----|--|--------------|---------|---------------|---------|-----------|
| 1  | Sınavlara iyi hazırlanırım.  | 1            | 2       | 3             | 4       | 5         |
| 2  | Derslerde dikkat dağınıcı davranışlarda bulunurum.   | 1            | 2       | 3             | 4       | 5         |
| 3  | İşlenen konuları tekrar ederim.  | 1            | 2       | 3             | 4       | 5         |
| 4  | Verilen ev ödevlerini zamanında yaparım.   | 1            | 2       | 3             | 4       | 5         |
| 5  | Bir sonraki dersimde işlenecek konuyu gözden geçiririm.  | 1            | 2       | 3             | 4       | 5         |
| 6  | Öğretmenimi dikkatli bir şekilde dinlerim.   | 1            | 2       | 3             | 4       | 5         |
| 7  | Ödev verilme bile çeşitli kaynaklardan İngilizce pratik yaparım.   | 1            | 2       | 3             | 4       | 5         |
| 8  | Sınavlarda kopya çekerim.  | 1            | 2       | 3             | 4       | 5         |
| 9  | Yabancı dil kullanımı içeren ders dışı etkinlikler (örn. kitap okumak, film izlemek, İngilizce konuşmak, vb.) yaparım. | 1            | 2       | 3             | 4       | 5         |
| 10 | Verilen ev ödevlerini zamanında teslim ederim.   | 1            | 2       | 3             | 4       | 5         |
| 11 | Yabancı dil çalışmalarım ile ilgili düzeltme alırsam, verilen çalışmadaki eksiklikleri tamamlarım.                     | 1            | 2       | 3             | 4       | 5         |
| 12 | Sınıf arkadaşlarımdan derse yaptıkları katkıları dikkatli bir şekilde dinlerim.  | 1            | 2       | 3             | 4       | 5         |
| 13 | Yabancı dilimi nasıl geliştirebileceğim konusunda İngilizce öğretmenime ya da başka İngilizce uzmanlarına danışırım.   | 1            | 2       | 3             | 4       | 5         |
| 14 | Ödev kopyacılığı yaparım.  | 1            | 2       | 3             | 4       | 5         |
| 15 | Verildiği takdirde ek ödevler yapmak için gönüllü olurum.  | 1            | 2       | 3             | 4       | 5         |
| 16 | Verilen sınıf içi çalışmalarını yaparım.   | 1            | 2       | 3             | 4       | 5         |
| 17 | Ders sırasında yalnızca derse odaklanırım.   | 1            | 2       | 3             | 4       | 5         |
| 18 | Derslere devamsızlık yaparım.  | 1            | 2       | 3             | 4       | 5         |

Anketimiz bitmiştir. Çalışmamıza vermiş olduğunuz değerli katkıdan dolayı size çok teşekkür ederim.

Anket veya çalışmam ile ilgili bir sorunuz olması durumunda bana, [ceyhun.karabiyik@ufuk.edu.tr](mailto:ceyhun.karabiyik@ufuk.edu.tr) e-posta adresinden ulaşabilirsiniz.

## APPENDIX 4. REPLICATION SURVEY

### ÇALIŞMA İLE İLGİLİ GENEL BİLGİLER

Bu çalışma, Ufuk Üniversitesi Araştırma Görevlisi Ceyhan KARABIYIK ve doktora tez danışmanı Hacettepe Üniversitesi öğretim üyesi Prof.Dr. İsmail Hakkı MIRİCİ tarafından "Türk Öğrencilerinin Yabancı Dil Öğrenme Çabalarını Ölçmek için Standart bir Ölçek Geliştirilmesi" başlıklı doktora tezinin bir parçası olarak yürütülmektedir. Çalışmamızın amacı, Yabancı Dil olarak İngilizce öğrenen Türk öğrencilerin öğrenme çabalarını ölçmek için geçerli ve güvenilir standart bir ölçek geliştirmektir. Bu araştırma için ilgili tüm kurumlardan gerekli yetki ve izinler alınmıştır. Çalışmada sizden kimlik belirleyici hiçbir bilgi istenmemektedir. Tüm oturumlar size verilecek olan bir kimlik numarası ile yapılacaktır. Sizden alınan veriler tamamıyla gizli tutulacak ve sadece araştırmacı tarafından değerlendirilecektir. Elde edilecek bilgiler sadece bilimsel yayımlarda kullanılacaktır.

Bu çalışmaya katılmak tamamen gönüllülük esasına göre'dir. Çalışmaya katılıp katılmamak sizin seçiminizdir. Çalışmaya katılmayı kabul ettikten sonra da istediğiniz anda vazgeçebilirsiniz. Bu size herhangi bir sorumluluk getirmeyecektir. Katılım sırasında herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz oturumu yarıda bırakıp çıkmakta serbestsiniz. Böyle bir durumda, araştırmacıyı bilgilendirmeniz yeterli olacaktır. Bu çalışmaya katıldığınız için şimdiden çok teşekkür ederiz.

### ÖĞRENCİ BİLGİ FORMU

|    |   |                |                |
|----|---|----------------|----------------|
| 1. | Cinsiyetinizi nedir? İşaretleyiniz.   | Kız ( )        | Erkek ( )      |
| 2. | Kaç yaşındasınız? Belirtiniz.   |                |                |
| 3. | Öğrenim görmekte olduğunuz üniversite hangisidir? Belirtiniz.   |                |                |
| 4. | Bu çalışmanın güvenilirlik çalışmasına da gönüllü olarak katkı vermek isterim.  | Evet ( )       | Hayır ( )      |
|    | 4. Soruya cevabınız "evet" ise güvenilirlik çalışmasında kimliğinizi doğrulayabilmemiz ve size duyuru yolu ile ulaşabilmemiz için lütfen iki adet rumuz belirtiniz. Başka bir katılımcının da sizinle aynı rumuza sahip olması durumunda size ulaşabilmemiz için iki rumuz kombiniz kullanılacaktır | Rumuz 1: _____ | Rumuz 2: _____ |

### İNGİLİZCE ÖĞRENME ÇABASI ÖLÇEĞİ MADDE HAVUZU

**Yönerge:** Lütfen aşağıdaki ifadeleri okuduktan sonra kendinizi Yabancı dil derslerinize ve yabancı dil öğrenme faaliyetlerinize göre değerlendirip en uygun şıkki işaretleyiniz. Seçenekler 1'den (Hiçbir zaman) 5'e (Her zaman) doğru sıralanmaktadır.

|    |  | Hiçbir zaman | Nadiren | Bazen zamanlar | Sık sık | Her zaman |
|----|--|--------------|---------|----------------|---------|-----------|
| 1  | Sınavlara iyi hazırlanırım.  | 1            | 2       | 3              | 4       | 5         |
| 2  | Derslerde dikkat dağınıc davranışlarda bulunurum.  | 1            | 2       | 3              | 4       | 5         |
| 3  | İşlenen konuları tekrar ederim.  | 1            | 2       | 3              | 4       | 5         |
| 4  | Verilen ev ödevlerini zamanında yaparım.   | 1            | 2       | 3              | 4       | 5         |
| 5  | Bir sonraki dersimde işlenecek konuyu gözden geçiririm.  | 1            | 2       | 3              | 4       | 5         |
| 6  | Öğretmenimi dikkatli bir şekilde dinlerim.   | 1            | 2       | 3              | 4       | 5         |
| 7  | Ödev verilme bile çeşitli kaynaklardan İngilizce pratik yaparım.   | 1            | 2       | 3              | 4       | 5         |
| 8  | Sınavlarda kopya çekerim.  | 1            | 2       | 3              | 4       | 5         |
| 9  | Yabancı dil kullanımı içeren ders dışı etkinlikler (örn. kitap okumak, film izlemek, İngilizce konuşmak, vb.) yaparım. | 1            | 2       | 3              | 4       | 5         |
| 10 | Verilen ev ödevlerini zamanında teslim ederim.   | 1            | 2       | 3              | 4       | 5         |
| 11 | Yabancı dil çalışmalarım ile ilgili düzeltme alırsam, verilen çalışmadaki eksiklikleri tamamlarım.                     | 1            | 2       | 3              | 4       | 5         |
| 12 | Sınıf arkadaşlarımdan derse yaptıkları katkıları dikkatli bir şekilde dinlerim.  | 1            | 2       | 3              | 4       | 5         |
| 13 | Yabancı dilimi nasıl geliştirebileceğim konusunda İngilizce öğretmenime ya da başka İngilizce uzmanlarıma danışırım.   | 1            | 2       | 3              | 4       | 5         |
| 14 | Ödev kopyacılığı yaparım.  | 1            | 2       | 3              | 4       | 5         |
| 15 | Verildiği takdirde ek ödevler yapmak için gönüllü olurum.  | 1            | 2       | 3              | 4       | 5         |
| 16 | Verilen sınıf içi çalışmaların yaparım.  | 1            | 2       | 3              | 4       | 5         |
| 17 | Ders sırasında yalnızca derse odaklanırım.   | 1            | 2       | 3              | 4       | 5         |

Anketimiz bitmiştir.

Çalışmamıza vermiş olduğunuz değerli katkıdan dolayı size çok teşekkür ederim.

Anket veya çalışmam ile ilgili bir sorunuz olması durumunda bana, [ceyhun.karabiyik@ufuk.edu.tr](mailto:ceyhun.karabiyik@ufuk.edu.tr) e-posta adresinden ulaşabilirsiniz.

## APPENDIX 5. VALIDATION SURVEY

### ÇALIŞMA İLE İLGİLİ GENEL BİLGİLER

Bu çalışma, Ufuk Üniversitesi Araştırma Görevlisi Ceyhan KARABİYİK ve doktora tez danışmanı Hacettepe Üniversitesi öğretim üyesi Prof. Dr. İsmail Hakkı MİRİCİ tarafından "Türk Öğrencilerinin Yabancı Dil Öğrenme Çabalarını Ölçmek için Standart bir Ölçek Geliştirilmesi" başlıklı doktora tezinin bir parçası olarak yürütülmektedir. Çalışmamızın amacı, Yabancı Dil olarak İngilizce öğrenen Türk öğrencilerin öğrenme çabalarını ölçmek için geçerli ve güvenilir standart bir ölçek geliştirmektir. Bu araştırma için ilgili tüm kurumlardan gerekli yetki ve izinler alınmıştır. Çalışmada sizden kömik belirleyici hiçbir bilgi istenmemektedir. Tüm oturumlar size verilecek olan bir kimlik numarası ile yapılacaktır. Sizden alınan veriler tamamıyla gizli tutulacak ve sadece araştırmacı tarafından değerlendirilecektir. Elde edilecek bilgiler sadece bilimsel yayımlarda kullanılacaktır.

Bu çalışmaya katılmak tamamen gönüllülük esasına göredir. Çalışmaya katılıp katılmamak sizin seçiminizdir. Çalışmaya katılmayı kabul ettikten sonra da istediğiniz anda vazgeçebilirsiniz. Bu size herhangi bir sorumluluk getirmeyecektir. Katılım sırasında herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz oturumu yarıda bırakıp çıkmakta serbestsiniz. Böyle bir durumda, araştırmacıyı bilgilendirmeniz yeterli olacaktır. Bu çalışmaya katıldığınız için şimdiden çok teşekkür ederiz.

### ÖĞRENCİ BİLGİ FORMU

|   |          |           |
|---|----------|-----------|
| 1. Cinsiyetinizi nedir? İşaretleyiniz.  | Kız ( )  | Erkek ( ) |
| 2. Kaç yaşındasınız? Belirtiniz.  |          |           |
| 3. Ara sınav (mid-term exam) puanınız kaçtır? Belirtiniz.                         |          |           |
| 4. Bu çalışmanın güvenilirlik çalışmasına da gönüllü olarak katkı vermek isterim. | Evet ( ) | Hayır ( ) |

**Yönerge:** Lütfen aşağıdaki ifadeleri okuduktan sonra kendinizi yabancı dil dersinize ve yabancı dil öğrenme faaliyetlerinize göre değerlendirip en uygun şıkı işaretleyiniz. Seçenekler 1'den (Hiçbir zaman) 5'e (Her zaman) doğru sıralanmaktadır.

|   | Hiçbir zaman | Nadiren | Bazen zamanlar | Sık sık | Her zaman |
|---|--------------|---------|----------------|---------|-----------|
| 1. Sınavlara iyi hazırlanırım.  | 1            | 2       | 3              | 4       | 5         |
| 2. Derslerde dikkat dağıtıcı davranışlarda bulunurum.   | 1            | 2       | 3              | 4       | 5         |
| 3. İşlenen konuları tekrar ederim.  | 1            | 2       | 3              | 4       | 5         |
| 4. Verilen ev ödevlerinizi zamanında yaparım.   | 1            | 2       | 3              | 4       | 5         |
| 5. Bir sonraki dersimle işlenecek konuyu gözden geçiririm.  | 1            | 2       | 3              | 4       | 5         |
| 6. Öğretmenimi dikkatli bir şekilde dinlerim.   | 1            | 2       | 3              | 4       | 5         |
| 7. Ödev verilirse bile çeşitli kaynaklardan pratik yaparım.   | 1            | 2       | 3              | 4       | 5         |
| 8. Sınavlarda kopya çekerim.  | 1            | 2       | 3              | 4       | 5         |
| 9. Yabancı dilde ders dışı etkinlikler (örn. kitap okumak, film izlemek, yabancılarla konuşmak, vb.) yaparım. | 1            | 2       | 3              | 4       | 5         |
| 10. Verilen ev ödevlerinizi zamanında teslim ederim.  | 1            | 2       | 3              | 4       | 5         |
| 11. Çalışmalarım ile ilgili düzeltme alırsam, verilen çalışmadaki eksiklikleri tamamlarım.                    | 1            | 2       | 3              | 4       | 5         |
| 12. Sınıf arkadaşlarımla derse yaptıkları katkıları dikkatli bir şekilde dinlerim.                            | 1            | 2       | 3              | 4       | 5         |
| 13. Yabancı dil becerimi nasıl geliştirebileceğim konusunda öğretmenime ya da başka uzmanlarıma danışırım.    | 1            | 2       | 3              | 4       | 5         |
| 14. Ödev kopyasıyla yaparım.  | 1            | 2       | 3              | 4       | 5         |
| 15. Verildiği takdirde ek ödevler yapmak için gönüllü olurum.   | 1            | 2       | 3              | 4       | 5         |
| 16. Verilen sınıf içi çalışmalarını yaparım.  | 1            | 2       | 3              | 4       | 5         |
| 17. Ders sırasında yalnızca derse odaklanırım.  | 1            | 2       | 3              | 4       | 5         |

*Diğer sorular için lütfen arka sayfayı çeviriniz.*

**Yönerge:** Aşağıdaki ifadeleri yabancı dil öğrenme nedenleri ile ilgili üç adet İngilizce cümle içermektedir. Lütfen aşağıdaki ifadeleri okuduktan sonra size en uygun şıkı işaretleyiniz. Anlamadığınız bir cümle var ise anlamını araştırmacıya sormaktan çekinmeyiniz. Seçenekler 1'den (hiç uyumuyor) 7'ye (tam uyuyor) doğru sıralanmaktadır.

|   | Does not correspond | Corresponds very little | Corresponds a little | Corresponds moderately | Corresponds a lot | Corresponds almost exactly | Corresponds exactly |
|---|---------------------|-------------------------|----------------------|------------------------|-------------------|----------------------------|---------------------|
| 1. I cannot come to see why I study a foreign language, and frankly, I don't give a damn.                 | 1                   | 2                       | 3                    | 4                      | 5                 | 6                          | 7                   |
| 2. Honestly, I don't know; I truly have the impression of wasting my time in studying a foreign language. | 1                   | 2                       | 3                    | 4                      | 5                 | 6                          | 7                   |
| 3. I don't know; I can't come to understand what I am doing studying a foreign language.                  | 1                   | 2                       | 3                    | 4                      | 5                 | 6                          | 7                   |

**Yönerge:** Aşağıdaki ifadeleri yabancı dil öğrenmeye karşı tutumlarınız ile ilgili dört adet İngilizce cümle içermektedir. Lütfen aşağıdaki ifadeleri okuduktan sonra size en uygun şıkı işaretleyiniz. Anlamadığınız bir cümle var ise anlamını araştırmacıya sormaktan çekinmeyiniz. Seçenekler 1'den (kesinlikle katılmıyorum) 6'ya (kesinlikle katılıyorum) doğru sıralanmaktadır.

|   | Strongly disagree | Disagree | Slightly disagree | Slightly agree | Agree | Strongly agree |
|---|-------------------|----------|-------------------|----------------|-------|----------------|
| 1. I like the atmosphere of my English classes. | 1                 | 2        | 3                 | 4              | 5     | 6              |
| 2. I always look forward to English classes.    | 1                 | 2        | 3                 | 4              | 5     | 6              |
| 3. I find learning English really interesting.  | 1                 | 2        | 3                 | 4              | 5     | 6              |
| 4. I really enjoy learning English.             | 1                 | 2        | 3                 | 4              | 5     | 6              |

Anketimiz bitmiştir.

Çalışmamıza vermiş olduğunuz değerli katkıdan dolayı size çok teşekkür ederim.

Anket veya çalışmam ile ilgili bir sorunuz olması durumunda bana, [ceyhan.karabiyik@ufuk.edu.tr](mailto:ceyhan.karabiyik@ufuk.edu.tr) e-posta adresinden ulaşabilirsiniz.

## APPENDIX 6. ORIGINALITY REPORT

The screenshot shows a Turnitin originality report for a document titled "DEVELOPING A STANDARD SCALE TO MEASURE TURKISH STUDENTS' FOREIGN LANGUAGE LEARNING EFFORT". The document is in Turkish, with the title translated as "TÜRK ÖĞRENCİLERİN YABANCI DİL ÖĞRENME ÇABALARINI ÖLÇMEK İÇİN STANDART BİR ÖLÇEK GELİŞTİRİLMESİ". The report shows a 10% similarity score. The match overview table is as follows:

| Match Number | Source                     | Similarity Percentage |
|--------------|----------------------------|-----------------------|
| 1            | Submitted to Akadik Ex.    | 1%                    |
| 2            | Submitted to TechKnow.     | 1%                    |
| 3            | ccorrel.org                | <1%                   |
| 4            | esizib.metu.edu.tr         | <1%                   |
| 5            | Contemporary Address...    | <1%                   |
| 6            | Journal of Services Ma...  | <1%                   |
| 7            | Prof. Michael W. Abidin... | <1%                   |
| 8            | sozleri.ciyu.edu.tr        | <1%                   |
| 9            | Carbonari W. "Tracki...    | <1%                   |

## CURRICULUM VITAE

### Personal Details

|                         |                  |
|-------------------------|------------------|
| <b>Name and Surname</b> | Ceyhun KARABIYIK |
| <b>Place of Birth</b>   | Gelibolu         |
| <b>Date of Birth</b>    | 28.01.1983       |

### Educational Background

|                          |                                       |      |
|--------------------------|---------------------------------------|------|
| <b>High School</b>       | Claremont High School, London/England | 2001 |
| <b>Bachelor's Degree</b> | Ufuk University, Ankara/Turkey        | 2009 |
| <b>Master's Degree</b>   | Gazi University, Ankara/Turkey        | 2012 |
| <b>Ph. D. Degree</b>     | Hacettepe University, Ankara/Turkey   | 2016 |
| <b>Foreign Language</b>  | English (C2)                          |      |

### Contact Information

|                  |  |
|------------------|--|
| E-mail addresses | ceyhun.karabiyik@ufuk.edu.tr   |
|                  | <a href="mailto:ceyhunkarabiyik@hotmail.com">ceyhunkarabiyik@hotmail.com</a> |

|                  |            |
|------------------|------------|
| Date of the jury | 16.06.2016 |
|------------------|------------|