

EFFECTS OF SECOND LANGUAGE EXPOSURE IN THE PRESCHOOL  
CONTEXT ON FIRST LANGUAGE SKILLS AND EXECUTIVE FUNCTIONS OF  
4 AND 5 YEAR OLDS

ASLI AKTAN ERCİYES

BOĞAZİÇİ UNIVERSITY

2011

EFFECTS OF SECOND LANGUAGE EXPOSURE IN THE PRESCHOOL  
CONTEXT ON FIRST LANGUAGE SKILLS AND EXECUTIVE FUNCTIONS OF  
4 AND 5 YEAR OLDS

Thesis submitted to the  
Institute for Graduate Studies in the Social Sciences  
in partial fulfillment of the requirements for the degree of

Master of Arts  
In  
Psychology

by

Aslı Aktan Erciyes

Boğaziçi University

2011

## Thesis Abstract

### Aslı Aktan Erciyes “Effects of Second Language Exposure in the Preschool Context on First Language Skills and Executive Functions of 4 and 5 year olds”

The emerging situation in the urban Turkish context involves the acquisition of an esteemed L2 in a context where L1 is the majority language which is also of high value, by children from advantaged social backgrounds. This makes the situation different from those studied most often and is therefore worth exploring. The present study asks whether there are negative or positive consequences of full time exposure to L2 in preschool on L1 and on executive functioning, where the exposure starts as early as age 3. Two age groups of 106 children, 4 year olds and 5 year olds, were chosen to participate in the study according to the school type they attend to, Turkish instruction schools and English Instruction schools. Participants performed the following tasks; for language competence: TEDİL (Test of Early Language Development- Turkish version), TELD-3 (Test of Early Language Development, English version), Narrative Skills Task and for executive functioning: DCCS, Bear/Dragon, Day/Night, Gift-Delay, Snack-Delay.

The first hypothesis that there will be difference due to age in L1 and L2 competence was supported. For L1, older group performed better in both TELD-3-T and Narrative Skills Task. For L2, there was also age effect on L2 measured by TELD-3. Older children were better than younger ones. The second hypothesis which stated that L2 competence of children who attend English instruction schools would be better than the ones who attend Turkish instruction schools was also supported.

The third hypothesis which predicted that there would be a difference in L1 measured by TEDİL due to amount of exposure in favor of those who are attending Turkish Instruction schools was not supported. The fourth hypothesis that there would be difference in L1 measured by Narrative Skills task due to amount of exposure in favor of those who are attending Turkish Instruction schools was not supported either. In terms of the complexity of the linguistic forms used in the stories, the amount of English spoken at home predicted the use of infinitival clauses, in English where speaking more English was associated with higher scores.

The last hypotheses which predicted that there would be positive effects of L2 competence on executive functioning tasks was partially supported. For DCCS and composite score of gift and snack delay, there was a significant effect of L2 competence. Higher competence was associated with higher scores. The results were also discussed in the light of SES and mother's education as well as English activities carried out at home.

## Tez Özeti

Aslı Aktan Erciyes “Okulöncesi Dönemde İkinci Dile Maruz Kalmanın 4 ve 5 yaş

Çocuklarının Anadil ve Yönetici İşlevlerine olan Etkileri”

Türkiye’deki büyük şehirlerde yakın zamanda ortaya çıkan okulöncesinde ikinci dil edinimi eğilimi , saygın ve kabul görmüş bir dil olan İngilizce’nin sosyo ekonomik düzeyi yüksek ailelerin çocuklarınca yine itibarlı bir dil olan Türkçe’yle birlikte edinilmesini kapsamaktadır. Önceki çalışmalardan farklı olarak iki dilin de önemli olması, çalışmanın gerekliliğine işaret etmektedir. Bu çalışma, 3 yaşta başlayarak tam gün İngilizce eğitime maruz kalmanın anadile ve yönetici işlevlere olan etkisini araştırmayı amaçlamıştır. İki ayrı okul tipinde (İngilizce eğitim veren ve Türkçe eğitim veren) iki yaş grubunda (4 ve 5 yaş çocukları) 106 çocukla çalışma tamamlanmıştır. Çalışmaya katılan çocuklar sıralanan testleri tamalamışlardır. TEDİL (Test of Early Language Development- Türkçe versiyonu), TELD-3 (Test of Early Language Development, İngilizce versiyonu), Anlatı Becerileri ve yönetici işlevler testleri : DCCS, Canavar Oyunu, Gece/gündüz oyunu, Yemeği Geciktirme ve Hediyeği geciktirme.

İlk hipotez olan anadil ve ikinci dil yetkinliğinin yaşla değişeceğini öngören varsayım doğrulanmış, hem Türkçe hem de İngilizce testlerde büyük çocuklar küçüklerden daha iyi performans göstermişlerdir. İngilizce okula devam eden çocukların İngilizce yetkinliğinin Türkçe okula devam edenlere göre daha iyi olacağını öngören hipotez doğrulanmıştır.

Üçüncü hioptezde TEDİL ile ölçülen değerler çerçevesinde, Türkçe okula devam eden çocukların İngilizce okula devam eden çocuklardan daha yetkin olacağı öngörülmüştür. Bu hipotez doğrulanamamıştır. Dördüncü hipotezde Türkçe eğitim veren okullardaki çocukların Anlatı Becerilerinin İngilizce eğitim veren okullardakine nazaran daha iyi performans göstereceği öngörülmüştür. Bu hipotez de doğrulanmamış, ancak anlatılar dilbilgisel karmaşıklık açısından değerlendirildiğinde, master yan tümcecikleri üretme oranının evdeki İngilizce konuşma oranına göre değiştiği, konuşma miktarı arttıkça skorların yükseldiği görülmüştür.

Son hipotezde, ikinci dildeki yetkinliğin yönetici işlevler üzerinde olumlu etkisi olacağı öngörülmüştür. Bu hipotez kısmen doğrulanmış, DCCS skorlarının ve yemeği ve hediyeği geciktirme skorlarından oluşturulan Bekleme endeksinin üzerinde ikinci dil yetkinliğinin etkisi bulunmuştur. Sonuçlar sosyo ekonomik durum, annenin eğitim düzeyi, evdeki İngilizce aktiviteler eşliğinde tartışılmıştır.

## ACKNOWLEDGMENTS

Long before I was involved in language development or even in the field of developmental psychology as a career, I was curious about the subject matter I studied in the present thesis. For many others the completion of a master's thesis is a requirement to be fulfilled in order to achieve an end, MA degree. Unlike them, for me it also stands as a dream coming true where I partially satisfied my curiosity about a contemporary issue.

I would like to express my special gratitude to my thesis advisor Prof. Ayhan Aksu-Koç. During my remedial year in psychology and graduate years in developmental psychology, I have learned a lot from her in both theory and practice. My interest in language development while I was a remedial student has flourished when I received the very first courses from her. From that small project which I gathered data from 12 children, I started a journey in the field of language development from where I think I will shape my career in the future. Her ideas, knowledge and wisdom made my simple curiosity turn into a thesis. I am grateful for her valuable time invested in my work and I really appreciate every minute of it.

I am grateful to Assoc. Prof. Feyza Çorapçı, for her invaluable ideas and suggestions throughout the data collection and coding processes. I also want to thank Assoc. Prof. Belma Haznedar for her contributions and suggestions for the thesis.

I would like to express my special thanks to Prof. Ali İ. Tekcan for his interest and suggestions regarding the thesis as a whole and associated statistical analysis. He responded promptly every time I was in need. I also owe thanks to Prof. Hamit Fişek, for his invaluable suggestions and insight about statistics. He patiently responded every single detail I was curious about.

I would also want to thank to participant preschools that made the data collection easier and efficient. I owe thanks to lovely children who took part, without them nothing would be possible. I would like to thank Maria Peace for helping out with data collection.

My special thanks go to my own children Ela and Kaan, who in the first place inspired me to become what I want to be. My daughter deserves special thanks for her patience for accepting me to be a busy mom and taking care of her younger brother whenever I was in need.

Last but not the least; my thanks go to my life-time partner Hakan Erciyes, who enabled my dreams come true both in personal and academic life. Without him, I couldn't have succeeded.

## CONTENTS

CHAPTER 1 INTRODUCTION.....	10
Some definitions: Second Language Acquisition and Bilingualism.....	10
The Children of the Present Study: .....	13
CHAPTER 2 LITERATURE REVIEW.....	16
Relationship Between the Two Languages in Bilingualism.....	16
Cognitive Consequences of Second Language Acquisition .....	27
Aim of the Study and Hypotheses.....	39
CHAPTER 3 METHOD.....	43
Design.....	43
Participants.....	43
Instruments of Assessment.....	44
Procedure.....	56
CHAPTER 4 RESULTS.....	57
Bivariate Relations.....	57
Regression Analyses for Language Tests TELD-3 and TEDİL.....	59
Regression Analyses for Narrative Skills Task.....	62
Regression Analyses for Executive Function Tasks.....	66
Further Analyses.....	68
CHAPTER 5 DISCUSSION.....	69
Narrative Competence.....	74
Limitations and Contributions.....	78
Future Directions.....	80
APPENDICES.....	83
A. SAMPLE QUESTIONS TEDİL/TELD-3.....	85
B. HORSE-BUNNY STORY PICTURES.....	88
C. SAMPLE NARRATIVE SCORES.....	90
D. DEMOGRAPHIC FORM.....	92
E. TABLES.....	100
F. FIGURES.....	125
REFERENCES.....	126

## FIGURES

Figure 1: Comparison of Mother's Education According to School Type

## TABLES

1. Mean Age and Standard Deviations by Age-Group, School Type and Gender
2. Story Components, Definitions and an Example
3. Linguistic Structure Coding for Story by T.D. (5;10) Given in Example
4. Means and Standard Deviations for Frequency of Activities in English at Home, Mother's Years of Education and Family's Income
5. Means and Standard Deviations for Frequency of Activities in English at Home, Mother's Years of Education and Family's Income, Chi-square Analysis
6. Correlations among Dependent and Predictor Variables ( $n=104$ )
7. Means and Standard Deviations of TEDİL/TELD-3 Language Competence Test Scores by Instruction Group, Age and Gender
8. Hierarchical Regression Analyses for TEDİL Receptive Scores as Dependent Variable
9. Hierarchical Regression Analyses for TEDİL Expressive Scores as Dependent Variable
10. Hierarchical Regression Analyses for TELD3- (English) Receptive Scores as Dependent Variable
11. Hierarchical Regression Analyses TELD3 (English) Expressive Scores as Dependent Variable
12. Table 11. Total Number of Narrative Clauses, Words, Words/Clauses by School Type and Age.
13. Means and SDs for the Narrative Task Variables by School type, Age and Gender
14. Hierarchical Regression Analyses for Narrative Quality Scores as Dependent Variable
15. Hierarchical Regression Analyses for Narrative Structure Scores as Dependent Variable
16. Hierarchical Regression Analyses for Infinitival Clauses as Dependent Variable
17. Hierarchical Regression Analyses for Multiclausal Utterance –Coordinate as Dependent Variable



18. Hierarchical Regression Analyses Multiclaue Utterance – Subordinate as Dependent Variable
19. Hierarchical Regression Analyses for Multiclaue Utterance –Subordination with Converbs as Dependent Variable
20. Hierarchical Regression Analyses for Total Linguistic Complexity Score As Dependent Variable
21. Means and SDs of Executive Function Scores by School Type and Age
22. Hierarchical Regression Analyses for DCCS Task Scores (Dimensional Card Change Sort Task Scores)
23. Hierarchical Regression Analyses for Bear/Dragon Scores as Dependent Variable
24. Hierarchical Regression Analyses for Composite Wait Score for Delay Tasks (Snack Delay + Gift Delay) as Dependent Variable

## CHAPTER 1

### INTRODUCTION

There are a growing number of Turkish-English bilingual preschools and full-time English preschools in urban contexts in Turkey. This development necessitates the examination of possible effects of early exposure to a second language before the first language has been fully acquired in contexts where bilingualism is not the natural condition of the home. The positive effects -- such as those on executive functioning and metalinguistic awareness -- are to be well received but the possible negative effects need also be considered as they may cause delay of full-fledged native competence. Today's trends towards multilingualism force upper middle-class families to show extensive interest in second language teaching for their preschool aged children. Especially in affluent communities, nearly all preschool institutions have some level of English in their curriculum. Since the Ministry of Education does not limit preschool institutions for the number of hours of English to be taught, education can be in a second language on a full-time basis. At first, the preschools that teach full-time English or languages other than Turkish were meant to serve primarily expatriates or families who raise bilingual children (in situations where the mother and father have different native tongues), however affluent Turkish families have shown such an extensive interest in those preschools that there was a market demand to be satisfied. Therefore, the number of full-time English or other language preschools has increased rapidly. For primary schools, on the other hand, the regulations of the Ministry of Education do not allow weekly second language teaching to exceed 10 hours. It is because of this regulation that some preschools take advantage of this demand for a second language and adjust their curriculum to teach second language (L2) on full-time

basis. In addition, the child who attends a second-language preschool might have a caregiver who does not speak Turkish which further limits usage of the first language to a great extent. Therefore, an investigation of the level of the first language (L1) competence under different levels of exposure to the L2 is expected to shed light on whether these conditions may be conducive to delay in the L1 development as well as demonstrating the possible advantages of acquiring a second language at a young age.

The present study aimed to explore these questions in the context of second language learning in the preschool setting by children from highly advantaged family backgrounds, in a basically monolingual community. For this purpose children from two preschools, one with full time English instruction and the other with full time Turkish instruction with 5 hours / week English, were compared. The research questions focused on the effects of the L2 on (1) children's level of general receptive and expressive skills in the L1, and (2) their executive functions as an aspect of their cognitive functioning.

The organization of the thesis is as follows: In the rest of this chapter some definitions will be given in order to explicate the characteristics of the children studied. The literature review in Chapter 2 presents findings from research on the positive and negative effects of L2 on L1 and an overview of the literature on the effects of second language – bilingualism on executive functions. In Chapter 3 the methodology is explained. Chapter 4 gives the analyses and results and Chapter 5, the discussion and conclusion.

### Some definitions: Second Language Acquisition and Bilingualism

Second language acquisition (SLA) is the process by which people learn a second language in addition to their mother tongue. MacNamara (1969, cited in Wakefield et al., 1975) proposes that if someone has some skills in one of the four modalities (speaking, listening, writing, and reading) in a second language, he would be called a 'bilingual'. In opposition to this definition is the one by Bloomfield (1933 as cited in Grosjean, 1989) which posits that a bilingual should possess 'native-like control of two or more languages'. These definitions illustrate the extent to which the notions of bilingualism and second language acquisition are difficult to define. A well accepted definition in the field today in the light of the above definitions is that bilingualism can be considered as a phenomenon where an individual has competence at a certain level in both of his/her languages (Bialystok, 2001, p.5-9).

The question of 'who is a bilingual?' is an important one to ask since it differentiates between individuals who have learned a second language at different ages, for different reasons, in different contexts and through different learning processes. These factors that influence the nature of bilingualism, for child second language learners in particular are briefly discussed below.

#### Age of Onset and the Nature of the Learning Process

Whether second language learning process for early bilinguals is like first language acquisition or more like adult L2 learning is still a matter of debate. Pearson summarizes this debate by setting the upper boundary to age 9, suggesting that the processes of learning L2 is like L1 learning. Sensitivity in different domains of language (e.g. phonology vs. syntax) is found to be decreased at different points in

time while learning the L2. Children learning a second language prior to age 9 she considers ‘child bilinguals’ (Pearson, 2009, p.382).

### Timing of Acquisition

Two kinds of bilingualism are distinguished on the basis of the timing of the acquisition of the two languages. In case of simultaneous bilingualism the child is exposed to two languages from birth onwards. Successive or sequential bilingualism, on the other hand, is defined as the situation where L2 is learned after L1 is fully acquired (Kohnert, Bates and Hernandez, 1999). Given that it is within the general time frame above, both types of child bilinguals are considered early bilinguals; for them, the expectation is that the outcome will be success, in that the learner will achieve near-native fluency (Pearson, 2009).

### Contexts of Learning

Contexts of L2 acquisition may involve formal instruction or informal processes of learning. For example, although mostly used interchangeably, there is a difference between “second language” and “foreign language” learning. Second language is acquired in a natural setting such as in a social environment, more like L1 learning. But foreign language learning involves guidance in a classroom setting (Klein, 1996). One major difference between the two is an emphasis on accuracy over fluency. Foreign language learning puts emphasis on accuracy rather than fluency, whereas in SLA the reverse is true (Ellis, 2003). On the other hand, Bley-Vroman (1989 cited in Bley-Vroman 2009) makes the distinction between foreign language learning and second language acquisition according to the setting where the L2 is learned. For him, foreign language takes place where that language is not the native language of the community that is lived in (a Turkish person learning English in

Turkey); and second language learning corresponds to the process of learning a second language in a community where that language is actually the native language (i.e. a Japanese person learning English in U.S.A). Now, the two terms are used interchangeably in the context of L2 learning.

### Reasons for Second Language Learning

Individuals become bilingual or multilingual for different reasons that have implications for the status of their L1 and L2. First, there are ‘elite bilinguals’ which refers to individuals whose dominant language is the majority language, but they choose to become bilingual either because they live abroad or travel around the world or for some other reason but not to serve their basic needs in the community (Skutnabb-Kangas, 1981). These individuals belong to upper-middle class, and their children attend schools where the language medium is not their mother tongue. Second, there are ‘children from linguistic majorities’; children going to French schools in Canada present a good example for this group. The third group is ‘children from bilingual families’. They are the ones who have parents with different mother tongues. Last but not the least, is the category formed by ‘children from linguistic minorities’. These children, typically those of immigrant groups, are the ones who are mostly at risk due to the fact that their native language is not valued as much as the other one (Skutnabb-Kangas, 1981).

### The Children of the Present Study

In terms of the factors discussed above, the children of the present study, that is, the English exposure group, can be characterized as follows. They have been attending the English-instruction preschool since age 3; therefore the AoO for them is way before 7-9 years, the upper boundary for L1 like acquisition. Meisel (2008)

defines children learning an L2 where AoO is 3, as child L2 learners. Likewise, Schwartz (2003) considers children learning an L2 after age 4 to be child L2 learners since the bulk of the grammar of L1 has been established by then. Therefore, children of the present study are sequential learners since they have started learning English after their native language, Turkish. Their context of second language learning is a natural preschool setting where children are not forced to talk in L2 with their friends but are encouraged to do so with their teachers. All of the activities such as role playing and games that involve taking turns, arts and craft, music are instructed and performed in English with their teachers who are native speakers of the language. Finally, they come from upper-middle class families whose dominant language is the majority language, but they are set to become bilingual in another prestigious language because their families believe in the advantages of a second language for them. In short, they can be considered as early second language acquirers or ‘child bilinguals’ who are expected to achieve a high level of proficiency in L2.

## CHAPTER 2

### LITERATURE REVIEW

There has been extensive research on SLA especially when children are considered. The research areas range from investigating bilingualism where the person has competence in two languages simultaneously (Bialystok, 1991) to first language attrition, where there is a decrement in first language proficiency (Fillmore, 1991). In the following sections, first the research on the relationship between the two languages of bilinguals will be considered, then, evidence on the effects of bilingualism on executive functioning will be taken up.

#### Relationship Between the Two Languages in Bilingualism

In order to investigate the effects of one language on the other, one has to understand the relationship of L1 and L2. There have been various attempts to explain how the two languages are represented in a bilingual mind by models of acquisition. Cook (2003), for example, has proposed that L2 users differ from monolinguals in their usage and knowledge of both L1 and L2. He considers several models before coming to the conclusion that “L2 users have different minds from those of monolinguals” (Cook, 2003, p.5). The “separation model” proposes that the two languages constitute separate systems. In this model, there is no point in discussing the effects of L2 on L1 since it is assumed that there are separate systems for storing and processing the two languages. The opposite possibility is the “integration model” where the L2 user is assumed to have a unitary language system for L1 and L2 with a single mental lexicon rather than two separate lexicons for each language (Cook, 2003). Caramazza & Bronckes (1980), for example, investigated whether English-Spanish bilinguals differ in their reaction times and accuracy in determining whether a word presented in English or Spanish



belonged to the category presented in English or Spanish. Words and categories were presented either in the same or mixed language condition (English word - English category vs. English word - Spanish category). If subjects did not differ in reaction times and accuracy for mixed and same conditions, then there is a possibility of a “shared storage” for each language. The results showed there was no effect of language for any condition and thus for the domain of lexicon, confirming the integration model. Cook (2003, p.7) states that total separation cannot be true due to the fact that “both of the languages are in the same mind” and total integration cannot be true since “L2 users can keep languages apart”. He discusses modifications of these two basic models which accept the possibility of reciprocal relations between L1 and L2 depending on a number of factors. His “integration continuum” refers to the status of languages with respect to one another; furthermore, this continuum does not necessarily apply to the whole language system such that one person might have integration in the lexicon but the phonology could be separate. This continuum can be applied to different stages of L2 development; for example children, as they learn an L2, may move from an integrated lexicon to a double lexicon (Cook, 2003).

Bialystok (1998) arrives at a similar conclusion regarding the nature of the bilingual mind noting that these binary models are too simplistic and that the complex nature of language and the ways in which different components of it get to be mentally represented call for models that accept a continuum of intermediate possibilities between separation and integration. As one piece of evidence among others “for the complex structure that weaves two languages and a meaning system”, she reports results from Pearson et al.’s (Pearson, Fernandez, Lewedeg & Oller 1993; Pearson & Fernandez 1994) studies of how Spanish-English bilingual

children learn two vocabularies in the early stages of language acquisition. She underlines the high amount of individual variability among children in terms of the rate and level of learning, the balance between their two languages, and their learning environments, as indicators of the complexity of this relationship.

In a similar vein Haznedar (2007, p.124) states that research (e.g. Meisel, 1989; Genesee, Nicoladis and Paradis, 1995) has established that “bilingual children differentiate between the grammatical systems they are exposed to from very early on” although this should not mean that there is no interaction between the two languages. She provides evidence for such interaction by comparing the realization of overt subjects in the Turkish speech of a Turkish/English bilingual boy, Ali-John and that of a monolingual boy, Murat, both between 2;0-3;10 years of age. Both Turkish and English have overt subjects, however, in Turkish, depending on pragmatic conditions, the subject can be dropped as it is also marked on the verb, whereas it is obligatory in English. Her findings show that the bilingual child produces pragmatically inappropriate overt subjects at a much higher rate (21%) than the monolingual child (2%) reflecting the effects of English on his Turkish.

Genesee, Nicoladis and Paradis (1995) argue that there is an early differentiation of the two languages if exposure to L2 starts before 5 years of age. Genesee et al. examined language differentiation of five bilingual children between the ages of 1;10 and 2;2 by observing them with each parent separately and together on different occasions. The results indicate that although these children displayed code mixing, they were obviously able to differentiate between both of the languages. The researchers argue that code-mixing instances could not be a sign of the existence of a single structure for both languages at stages as early as 1 year

of age, and claim that children do have an early differentiation in their minds pertaining to the languages they are exposed to. Meisel (1989) suggests that this differentiation might occur as early as 2 years of age if the child acquires both languages simultaneously.

The acquisition order of the two languages, whether simultaneous or sequential, has a bearing on the relationship between the two languages. Findings from studies of simultaneous acquisition or ‘multiple first language’ acquisition (De Houwer, 1995, Meisel, 2004) can be summarized as follows: grammatical development in the two languages is differentiated early, development proceeds through the same sequences as in monolingual acquisition but not at a same rate, and as a result grammatical knowledge in each language is no different than that of a monolingual (Meisel, 2007).

In sequential bilingualism, however, acquisition may result in partial success in terms of grammatical development when one of the languages of a bilingual is the weaker (i.e., the child talks less in) and the other the stronger language. In such cases, children’s acquisition of the L2 is argued to resemble adult L2 acquisition rather than multiple L1 acquisition (Meisel, 2007). Some properties of the weaker language include “ (1) omission of obligatory elements, (2) problems with inflectional morphology, and (3) deviant word order patterns” (Meisel, 2007, p.500).

L1 and L2 acquisition differ in many ways in different stages of attainment. For example, in the initial stage of L2 acquisition, L2 utterances are longer compared to L1 utterances in L1 acquisition (Meisel, 2007). When the course of acquisition is compared, L1 happens really fast but the rate of L2 development is slower. There is greater variability across learners of L2 while there is not much

variation for L1. As for ultimate attainment, only few L2 learners can reach native-like competence. (Meisel, 2007; White & Genesee, 1996). On the other hand, Ioup, Boustagui, Tigi and Moselle (1994) investigated Julie- an adult who has gained native-like proficiency in Egyptian Arabic in a natural learning setting. The analyses of extensive test results of Julie showed that an adult can achieve native-like proficiency of L2 in an 'untutored setting'. Long, (2000) indicates that adults and adolescents can learn L2 grammar incidentally and that focusing on meaning is sufficient to achieve full-native like competence.

The view that L2 acquisition is not the same as L1 in certain aspects has also been put forward by Bley-Vroman in the Fundamental Difference Hypothesis (Bley-Vroman, 1989) which suggests that L2 acquisition differs from L1 acquisition in terms of 'reliability' and 'convergence'. L1 acquisition is reliable since children are always successful in language learning, however L2 learning has 'unreliability property' since not all individuals end up having the same level of competence although exposure to and usage of L2 might be of the same level. As for convergence, L1 children end up with language systems similar to those of others in their speech community, whereas L2 acquirers who might be from different language backgrounds (having different grammatical structures) cannot achieve full convergence. Although L2 children, after a few years of sustained L2 exposure, reach general success, the process by which they acquire L2 may not be a replica of L1 acquisition. Child L2 acquisition resembles both L1 acquisition and adult L2 acquisition.

In a similar vein, in her Domain by Age model, Schwartz, (2003) has proposed that there are differences in terms of acquisition between different domains and suggests that for syntax, child L2 acquisition is more like adult L2

acquisition but when inflectional morphology is considered, it is more like L1 acquisition.

As can be seen, the relationship between the two languages is a complex issue determined by a multiplicity of factors such as AoO, order of acquisition, amount of exposure, status of the two languages in the community, whether one is weak and the other is dominant, and more. Since a thorough analysis of the question is beyond the scope of this study, this brief summary will serve as a background for a consideration of a sample of the large body of research on the effects of L1 on L2 and L2 on L1.

### Effects of L1 on L2

Effects of L1 on L2 have also been treated under the notion of language transfer which refers to the process whereby language systems which are active affect each other during acquisition, comprehension and production (Sharwood-Smith, 1983). Corder (1981 as cited in Sharwood-Smith, 1983) distinguishes between borrowing and structural transfer: Transfer, according to him, is borrowing when L2 resources are not adequate for communication, whereas in structural transfer, L1 grammar influences the structure of the interim grammar. An example comes from Schlyter's (1993) research on Swedish-French bilinguals whose Swedish is the weaker language. It was observed that the subject of the sentence is either left empty or replaced with lexical items from the "stronger language", that is French. In case of Turkish-German bilinguals whose L1 is Turkish, and age of onset is between 2 to 8, Pffaf (1992) draws attention to the high proportion of null articles in German compared to monolingual German, as an effect of Turkish, a language without articles. Both studies found problems in the acquisition of verb inflections in the weaker language, such as the use of verbs in uninflected forms. For example,

French – Swedish children tended to omit the present tense ending *-r* or finiteness markers on Swedish verbs (Schlyter, 1993). Evidence of L1 influence on L2 comes from a longitudinal study by Haznedar (1997) of a 4 year old Turkish (L1) boy, *Erdem*, who moved to UK and was immersed in an all English (L2) environment for the first time. His utterances as early as 2.5 months after the arrival were analyzed for the effect of Turkish word-order, which is SOV (Subject-Object-Verb) on English word order which is SVO. When the initial L2 utterances of *Erdem* were analyzed, it was found that his early productions had an SOV order, showing the effects of L1 on L2. Until the 6<sup>th</sup> month, the majority of his utterances were of this type, but after six months, majority of his utterances in the L2 were in the correct word order.

Another example for problems due to differences in word order in the weaker and stronger languages again comes from Schlyter's study (1993) with Swedish-French children. Swedish requires that finite verbs follow the subject after an initialized adverb, however, children for whom Swedish was the weaker language were not able to place the finite verbs in the second position. In a second study Schlyter and Hakansson (1994 as cited in Meisel, 2007) investigated the development of word order patterns in Swedish in (1) five monolingual children (Swedish as L1), (2) five children learning Swedish as L2 whose L1 was French (AoO between 4 to 5), and (3) six bilinguals acquiring Swedish-French since birth (half of them having Swedish as their weaker language and half of them as stronger language). The study focused on constructions where the verb either follows (SV) or precedes the subject (VS). While L1 learners used VS construction in contexts where "an element other than the subject appears in clause-initial position", L2 learners used more SV order instead. Schlyter and Hakansson conclude that

bilingual children whose weaker language is Swedish behaved more like L2 learners and the ones having Swedish as stronger language resembled Swedish L1 children.

Meisel (2007) analyzes Schlyter's data in depth for *Christophe*, the child of a German father and a French mother, growing up in Germany. At the beginning, Christophe's mother talked to him in French and his father and older brother used German. At 2;6 his mother stopped talking in French because he mostly talked in German and his utterances in French got less and less by age 3;0. At 3:10, with a visit to grandparents, he started using French again and the recordings from then on reveal that although French was dormant for a while, his mean length of utterance (MLU) had not dropped much, though it was below his MLU in German. A second example is *François*, who interacted with his mother in French and with his older sister & father in German. During the period between 2;8 - 4;3, *François* spoke little French and at 4;0 he started a German kindergarten and refused to speak French. However, at age 4;3 after a visit to France, French MLU figures remained above 3.0 consistently. For both of the cases German was the stronger/dominant language and their development in French was delayed compared to monolinguals or balanced bilinguals. However, their French showed parallelism with that of French monolinguals in the emergence of semantic notions and the availability of grammatical structures (tense and aspect agreement). Therefore, it was concluded that the weaker language (French) was actually acquired as an L1 not an L2. The above two examples show that even though the development of the weaker language seemed to be at a slower pace than the stronger one, simultaneous acquisition of both languages from birth onwards made them both L1.

Silven & Rubinov (2010) investigated the effects of exposure from birth onwards to Finnish and Russian, two typologically unrelated languages, on language proficiency during preschool years. Four year old bilingual children were compared to Finnish monolingual peers on semantic and morphological skills. Results showed no significant difference between Finnish monolingual and bilingual children except for a marginal difference for adjective and adverb inflections in favor of the monolinguals, but there was no difference for basic noun and verb inflections. The studies reviewed in this section show that AoO, order of acquisition and amount of exposure to the two languages makes a difference regarding whether L2 acquisition proceeds like L1 acquisition, and on the effects of L1 on L2.

When language competence in terms of vocabulary development is considered it is a well-documented fact that monolinguals have advantages over bilinguals (Oller & Eilers, 2002; Perani et al. 2003). Bialystok and Feng (2009 as cited in Bialystok & Feng, 2009) compared the Peabody Picture Vocabulary Test results of 971 children (5 – 9 years of age and about half of them being bilingual) and found that monolinguals performed better than bilinguals. Monolinguals were found to outperform bilinguals also in lexical decision making tasks, where subjects were asked to decide whether the word they are shown is an actual word or not in a speeded manner (Ransdell & Fischler, 1989). Such findings indicate the importance of assessing children's vocabulary size when determining the language competence of bilinguals versus monolinguals.



### Effects of L2 on L1

Pearson (2009, p.383) states that “when an elective/elite bilingual learns a second (minority language), we expect the second language to be added to the first.” In such conditions of ‘additive bilingualism’ the bilingual’s L1 is not forgotten, but the L2 is added. In cases of immigrants - especially children younger than 10 - who learn a majority language, L1, the minority language may be at risk, resulting in ‘subtractive bilingualism’. In other words, the effects of L2 on L1 could be manifest in positive and negative effects as well as neutral effects. Previous research provides evidence for all types.

For additive or positive effects, Kecskes and Papp (2000 as cited in Cook, 2003) found that Hungarian teenagers who had intensive exposure to English as an L2 in immersion programs, used more complex sentences in L1. Similarly, Yelland, Polard & Mercuri, (1993) report that English speaking children who learn Italian were better in reading than those who are not exposed to L2. There is also evidence of cross-language transfer of phonological processing. Gottardo, Yan, Siegel and Lesly. (2001) found that learning English as L2, Chinese children had gains in their L1 (Chinese) phonological skills as a function of L2 reading ability as well. Performance of phonological skills in L1 was found to be correlated with L2 reading. The effect of second language learning on phonological skills was also found by Dickinson, McCabe, Clark-Chiarelli and Wolf (2004) and Lindsey, Manis & Bailey (2003). Such findings indicate that knowing another language might benefit different aspects of L1. In two-way immersion programs, children are instructed both in their L1 and L2 (English), in this way, they are able to maintain their identity and language as well as learning English in order to adjust to the

majority society. Christian (1996) showed that minority children whose L1 is Spanish are better off both in L1 (Spanish) and L2 English when they attend two-way immersion schools. This way, they benefit from Spanish spoken at home and English instructed at school so that they might make use of the positive outcomes of being a bilingual person.

Winsler, Diaz, Espinosa and Rodriguez (1999) similarly investigated whether children who attended a Spanish-English bilingual preschool compared to those who stayed at home showed similar development in L1 (Spanish). Contrary to their hypothesis, children who attended bilingual schools had similar gains in L1 with the ones who stayed at home (L1 setting). These findings indicate that attending preschool in L2 does not have negative consequence on L1 and may even contribute to children's language development. The negative effects of L2 on L1 is mostly seen in the lexicon, with poorer verbal ability and word capacity in either language compared to monolinguals (Lee, 1996).

A study by Porte (1995) investigated long-term L2 effects on L1 in a group of native English speaker lecturers in Spain who were teaching English as a foreign language. All of the lecturers were long-term residents ranging from 15 to 24 years. The results showed that effects of L2 (Spanish) on L1 (English) were mainly on the lexicon. It was typical of participants to insert L2 nouns in their L1 sentences. Such code-mixing is a typical sign of L2 effects on L1. This is quite a common phenomenon in bilinguals, and it can also manifest itself by borrowings from L1 to L2. In fact, in bilingual communities, it is even considered the norm rather than the exception; therefore code switching or mixing is not necessarily a negative consequence but may be regarded as a neutral effect of L2 on L1. Another study demonstrating the effects of L2 on L1 lexicon is by Johnson and Newport (1989)

who asked English speakers to name objects in Spanish, the second language they were learning. Naming objects repeatedly reduced the accessibility of the same words in their native language. It was suggested that phonology of the words in English were inhibited due to usage of Spanish.

Grosjean (2001, p. 3) treats the contextual differentiation of bilinguals' use of their languages in terms of the notion of "language mode" which is defined as "the state of activation of the bilingual's languages and language processing mechanisms, at a given point in time." In this view, a bilingual has two different contexts that s/he expresses him/herself in. First one is when a bilingual person talks to a monolingual and second one is when a bilingual talks to a bilingual. An example comes from *Siri*, a Norwegian-English bilingual aged 2;0 to 2;7, whose American mother talked to her on a monolingual base, while her father accepted her switching between languages and responded accordingly (Lanza, 1992). Lanza studied the interactions between the mother-child and father-child and found that the mother's strategy forced *Siri* to express herself in English, that is, in the monolingual mode, whereas her father's strategy that allowed mixing languages made *Siri* function in the bilingual mode. The interesting outcome was that *Siri* engaged in much more content word mixing with the father than mother.

The most negative effect of L2 on L1 is the loss of L1 due to its insufficient use. This is observed when exposure to a second language is so intense and enduring that it causes difficulty in the native language (Levy, McVeigh, Marful & Anderson, 2007). Attrition is observed when people live abroad for an extensive period of time and therefore lose command of their mother tongue, particularly in

those contexts where L1 is not the valued majority language and for that reason there is limited access to it.

In a nationwide study investigating the effects of SLA on L1 with 690 minority children younger than 5 years, between 5-10 and older than 10, Fillmore (1991) found that, as children started to learn English, they tended to lose their primary language and that the loss was greater for the younger children. Her findings pointed to the danger of minority groups' loss of their native language which might worsen family communication.

There is an ongoing debate about how to integrate the use of a minority language into the context of dominant language use in societies that hold considerable body of minorities, such as the U.S. English immersion schools are one option for minority children and two-way immersion schools are another option. Children acquiring L2 in their native country, as those of the present study, are not in danger of attrition due to the fact that L1 is the majority language and an immersion in L2 is not the case.

#### Cognitive Consequences of Second Language Acquisition

Bilingualism is often associated with benefits in cognitive functioning. An important domain is that of executive functioning where bilingual children and adults are found to have an advantage over monolinguals (Bialystok, 2001; Bialystok & Martin, 2004).

Among the by now well recognized positive effects of bilingualism on cognitive functioning are metalinguistic awareness (Cook, 1997), divergent thinking which values flexibility, originality and fluency (Landry, 1974, cited in Cook, 1997) and analogical reasoning (Diaz, 1985, cited in Cook, 1997). The more recent emphasis is on executive functions, and in particular on control and

inhibitory processes (Bialystok, 1996). Metalinguistic awareness is one of the major arenas where bilingual children outperform monolingual ones, therefore the next section presents an overview of some of the findings.

### Metalinguistic Awareness

Metalinguistic awareness refers to the “individual’s awareness of the nature of language itself [...] independently of the message that it is conveying” (Cook, 1997, p.). Research has mainly looked at effects of bilingualism on phonological awareness of the sound system of language; on the ability to judge the grammaticality of sentences as a reflection of the person’s underlying knowledge of the language; and on awareness of the arbitrariness of words showing the ability to dissociate form and meaning.

Research suggests that bilinguals are better at understanding the arbitrary nature of language compared to monolinguals. This may be because they pay attention to the abstract aspect of language at an earlier age since for any given concept they already have two corresponding expressions (Bialystok, 1999). For example, a bilingual child (Turkish-English) knows that “bird” is same as “kuş”, therefore calling an animal which flies a “bird” or “kuş” does not make a difference for them. Monolinguals, on the other hand, are unable to grasp the arbitrary nature of language as well as bilinguals. Studies that test this understanding by asking children if names of objects could be interchanged (e.g. could a dog be called *cow* and a cow called *dog*) (Ianco-Worrall, 1972), and if they could be interchanged whether they would still have the same characteristics (e.g. could the dog still bark?). Ben Zeev (1977) have found that bilingual children perform better than monolingual children (both cited in Cook, 1997). In the same vein, Bialystok (1986) and Yelland, Pollard and Mercuri (1993) tested the understanding of

arbitrariness of form and meaning by asking whether big objects have big names and observed that bilinguals were better able to keep the word size distinct from the object size.

The second type of metalinguistic knowledge, phonological awareness, refers to the ability “to reflect on and manipulate sublexical phonological units such as syllables, onsets, rimes and phonemes” (Bruck & Genesee, 1995). Bruck and Genesee administered a phonological awareness test battery (with syllable counting and same-different tasks) to kindergarten and grade 1 English-speaking children half of whom attended English schools and half French schools. The bilingual group was found to display higher performance than the monolingual group, showing that input from another language aids metalinguistic development. Bialystok, Majumder and Martin (2003) applied a range of phonological awareness and reading tasks to grade 1 bilingual and monolingual children. Spanish–English bilingual grade 1 children performed better than English-speaking monolinguals on a phoneme segmentation task, demonstrating a bilingual advantage. Earlier work with older subjects, university students (Cohen, Tucker and Lambert, 1967, cited in Cook, 1997) and third and fourth grade children (Davine, Tucker and Lambert, 1971; Rubin and Turner, 1989, cited in Cook, 1997) also showed that bilinguals are better able to reproduce sound sequences that did not occur in their first language than monolinguals.

An example for the positive effects of bilingualism on grammatical awareness is research by Galambos & Hakuta (1988). Their subjects were Spanish and English speaking children from low-income backgrounds and who were attending bilingual education programs in the United States. The study tested the abilities to correct sentences that were ungrammatical in Spanish (L1). Subjects

were also asked to find out the ambiguity in sentences and to paraphrase the different meanings in L1. The results showed that L1 proficiency as well as L2 proficiency affected grammaticality judgments. As the degree of bilingualism increased, children tended to perform better.

This brief summary shows that bilingualism contributes to the development of metalinguistic skills in different domains of language itself. The next section looks at the evidence for effects of bilingualism on aspects of executive functions, which constitutes one of the main questions of the present study.

### Second Language Acquisition, Bilingualism and Inhibitory Control

Executive functioning has been found to be related to the development of numerous abilities children possess such as attentional skills, knowledge and usage of rules, and theory of mind (Zelazo, Reznick and Frye, 1997). In Zelazo et al.'s (1997, p.219) problem-solving framework, executive function is said to involve "representing a problem flexibly, planning organized sequences, executing those sequences and evaluating the results of one's rule use." It is stated that within the age range of 2 to 5, there are dramatic changes in all four aspects of executive function stated above. Children gradually mature as they develop their abilities in representations, planning, execution and evaluation. Among the specific components of executive functioning, inhibition is one of the most widely studied construct. (Zelazo et al, 1997)

Nearly all of the research that indicates a cognitive advantage for second language learners focuses on bilinguals. Bilinguals are found to be at an advantage when the task at hand requires shifting (also called the cognitive flexibility), updating (also called the working memory) and inhibition (Bialystok &

Viswanathan, 2009; Bialystok, 2009). Inhibitory control has been documented to have a central role in cognitive tasks when young children are considered. It is defined as “suppressing a prepotent behavioral option as well as initiating and maintaining a subdominant option” (Kochanska et al. 2000 p.220; Bialystok & Martin, 2004). These processes are regarded as milestones of executive functioning (Miyake, Friedman, Emerson, Witzki & Howerter, 2000). Miyake et al. (2000) postulated differences in “mental set shifting (shifting), information updating and monitoring (updating) and inhibition of prepotent responses (inhibition).” Confirmatory factor analysis has revealed that these three functions are clearly separable under the main heading of executive functions. Findings that reveal contradictory results about bilingual advantage in executive functions should be evaluated in terms of the cognitive processes involved in the tasks used in assessment (Bialystok, Craik, Klein and Viswanathan, 2004). The tasks that have misleading perceptual information are accomplished better by bilinguals, however the ones that are based on analytical knowledge without misleading information are performed equally well by monolinguals and bilinguals. Research indicates that bilinguals have advantage over monolinguals in conflict resolution where the children have to rely on their ability to solve problems based on conflicting rules which can be seen as a component of executive control (Bialystok, 1999).

In the theory of cognitive complexity and control (CCC), Zelazo and Frye (1998) argue that preschool children lack the necessary representation and executive functioning that is required to solve problems which have conflicting rules. According to the theory there are differences between control and representational processes. Control processes involve selective attention where the individual has to attend to required aspects of a problem and at the same time



inhibit misleading information. This further allows them to switch between competing alternative routes. On the other hand, representational processes involve understanding the perceptual information, accessing the related knowledge and make necessary inferences. In other words, control processes involve regulating the information when there are conflicting cues, whereas no conflict is resident when representational processes are considered. Zelazo and Frye (1998) showed that most of the 3 year olds in DCCS (Dimensional Card Change Sort task) task, which requires both inhibition and switching, perseverate due to this lack of cognitive control. They argue that this ability begins to emerge around age 4. Bilinguals are argued to be outperforming monolinguals on tasks that involve control processes but do equally well on representational ones (Bialystok & Martin, 2004).

No one can deny that a bilingual's representation of the world is different than that of a monolingual. Constant need to encode and interpret the words from two languages under the same concepts enables bilinguals to have more advanced representation of the world and yet a richer one (Bialystok and Martin, 2004). Bialystok (2007) proposes that regardless of whether the bilinguals' two languages are represented in a shared system or in a distinct one, bilinguals have different representational structures for language than monolinguals. The difference lies in the fact that bilinguals can confine themselves to a single language system while having the representations of the two linguistic systems active in mind at the same time.

There is evidence that for bilinguals, the two representational systems are both active even when only one language is in use (van Heuven, Dijkstra & Grainger 1998). Rapid and efficient switching between representations is crucial

for a fluency in both languages. A bilingual person decides which of the two systems to activate whenever needed (Bialystok et al. 2004). Green's (1998) model of Inhibitory Control suggests that there is a mechanism that controls the joint functioning of the two languages. Whichever language is active, the bilingual person has to inhibit the other one and keep on with the one that is active. In order to have fluent expression there should be constant exertion of that inhibition. Therefore bilinguals have an advantage compared to monolinguals and this advantage remains as long as the bilingual conditions do not alter. Bialystok and Martin (2004) compared bilinguals and monolinguals on the 'switching' component of executive functions, using the DCCS and found that the ability to switch between dimensions while inhibiting the active one is an aspect of executive functioning. This ability was more developed in bilinguals than in monolinguals (Bialystok & Martin 2004; Bialystok, 2009).

Another model proposed to explain inhibitory control is the Bilingual Interactive Activation Model. In this model, representations of the words of both languages are organized in a hierarchical fashion and compete for selection when needed (van Heuven, Dijkstra & Grainger 1998). The model proposes that a bilingual goes through a competition between and within a language which is determined by lateral inhibition where representations are hierarchically organized. It is proposed that there are adjacent representations (of two languages for the same concept) which inhibit each other; therefore selection of a response decreases the probability of the adjacent response to be selected. The model is an account of semantic processing that bilinguals go through in everyday life. Bialystok et al. (2005) argue that in Bilingual Interactive Activation Model, the properties of the stimulus are the key to determine the inhibition whereas in Inhibitory Control

Model, inhibition is much more a central component which controls a bilingual's processing.

The DCCS (Zelazo, Frye and Rapus, 1996) is a task which is widely used in the assessment of executive functions. On this task children are required to sort the given card according to a given dimension. The dimension changes during the task which requires the child to both switch between dimensions and inhibit the previous dimension. For example, children are given sets of cards which have circles and triangles in two different colors. If first (pre-switch phase) sorting criteria is color, the child sorts out the cards into two sets according to the color, then the child is asked to sort the cards according to shape (post-switch phase-dimensional change). The ability to switch between dimensions while inhibiting the active one is an aspect of executive functioning. Bialystok (1999) investigated whether bilinguals possess an advantage in inhibitory control in this non-verbal task, DCCS. She proposed that analysis is necessary to understand the sorting rule in the first phase (pre-switch phase) and control is necessary to ignore the previous rule and not perseverate in the second phase (post-switch phase). Sixty children participated in the study and ages ranged from 3;2 to 4;9 for the younger group and from 5;0 to 6;3 for the older group. Half of the participants were English monolinguals and other half was Chinese-English bilinguals. They were all tested on PPVT-R, Visually-Cued Recall Task, Moving Word Task and DCCS. The results of the research showed that monolinguals and bilinguals had similar vocabulary development and also similar capacity for working memory. However, in DCCS which required conflicting rules to be inhibited, bilinguals outperformed monolinguals. These results not only reveal the ability of bilingual children to

control attention more than the monolinguals but also that representing structures and controlling them are discrete functions (Bialystok, 1999).

Whether the bilingual advantage on inhibitory control continues to be prevalent throughout the life span is an important issue and has also been investigated. Bialystok et al. (2004) propose that if the advantages associated with executive functioning in bilinguals continue in adulthood, it might also act as a protective mechanism for adults against decreased cognitive functioning due to aging. Aging is associated with decline in quality of attentional control, but not in representational knowledge. In their study, younger and older adults (mean age 42 and 70 respectively) were assigned to monolingual and bilingual groups and tested on both verbal and executive functioning tasks. The Simon task was used to test for the assumed bilingual advantage associated with inhibitory control. The Simon task is widely used to reveal the effect of stimulus-response compatibility on performance. It is used to assess attentional abilities and inhibitory control associated with bilingualism. A target stimulus (which has both position and response information) is presented in different locations of the computer screen together with a set of rules. To give an example, either blue or a brown box appeared on either left side, right side or at the center of the screen. The subjects were required to press a certain key either on left or right side of the keyboard (i.e. for brown box they pressed left shift key marked “X”, for blue box they pressed right shift key marked “O”). The location where the boxes appear is sometimes contradicted with the location of the key (incongruent trials), requiring the subjects to ignore the location of the box and attend to color only. On some trials, the location of the key subjects had to press were in line with the box position (congruent trials). The increase in response time (RT) for incongruent trials

compared to congruent ones is called the “Simon Effect”. The explanation of the effect is the stimulus-response incompatibility because of response-selection processes. The task requires both to allocate the attention selectively on the stimulus at the same time ignoring the misleading cues. The results of the study showed that monolinguals and bilinguals differed in their performance in Simon Task. Bilinguals (both younger and older age group) responded faster for both congruent and incongruent trials and they exhibited a smaller Simon effect. The results also showed that the age related increase in Simon effect was reduced for bilingual adults. As expected, bilinguals outperformed monolinguals for incongruent trials but there was also an advantage for bilinguals in terms of RT for congruent trials. The results of the task gave insight about life-long advantages of bilingualism and encouraged the investigation of the “Simon Effect” in bilingual children which is later studied by Bialystok and Viswanathan (2009) with a special task called the “Faces Task” that will further be discussed in detail.

Bilingual advantages on cognitive processing do not encompass all aspects of executive functioning. In order to differentiate the advantages, Carlson and Meltzoff (2008) carried out a comprehensive study which included executive function tasks for children. Nine executive functioning tasks, which loaded on two factors which are ‘conflict’ and ‘delay’ were applied to three groups of children: 1) native bilinguals, 2) monolinguals (English), and 3) English speakers -of low SES families- enrolled in second-language immersion kindergarten. The results showed that bilinguals had an advantage for ‘conflict’ tasks over the monolingual and the immersion group. The difference found for bilinguals in the conflict subscale was not seen in delay tasks. On the other hand, the results of the Expressive one-word Picture Vocabulary Test –showed an advantage of monolinguals over bilinguals.

Further and deeper analyses for the inhibition component came from Bialystok and Viswanathan (2009). They investigated three components of executive functioning: response suppression, inhibitory control and cognitive flexibility in order to isolate the components of executive functioning and test the previous findings of advantages associated with bilingualism. In the study, inhibition of an interfering cue was defined as “interference suppression” and inhibition of a habitual response was labeled as “response inhibition”. Another aim of the study was to compare bilinguals of different cultures to determine the generality of the differences. For this purpose, ninety 8-year-old children took part in the study. There were three groups of children (1) Monolinguals in Canada (2) Bilinguals in Canada and (3) Bilinguals in India. A special task called the “faces task” was used. Each trial of the task displayed a face on a computer screen with either green or red eye, and the eyes looked either left, right or straight. In the task, children in front of a computer screen, responded to the trials by pressing the button either on the same side of the box containing the asterix (if the eyes on the face were green) or on the other side of the box containing the asterix (if the eyes on the face was red). The eyes looked either to correct side of the button, incorrect side of the button or straight. There were two types of trials blocked or mixed. In blocked, all trials had either green or red eyes. In mixed trials they were mixed (one red eye preceding a green eye) so the order was mixed. Bilinguals performed better at trials which required inhibitory control (eyes looking in opposite direction to the correct box) and switching (mixed design trials i.e. different eye colors in single block) but not at response suppression (straight eye condition). There were differences between monolinguals and bilinguals in favor of bilinguals on trials that required inhibitory control and cognitive flexibility but there were no differences

for response suppression. The results show that contrary to earlier findings (Bialystok, 2001), bilinguals do not outperform monolinguals simply in inhibitory control but also in cognitive flexibility which underlies task switching. These results support the distinction between the two processes; inhibitory control and cognitive complexity that are studied under the term ‘inhibition’ in both adult (Miyake et al. 2000) and child (Zelazo & Frye, 1998) literature.

A recent study by Poulin-Dubois, Blaye, Coutya and Bialystok (2011) investigated whether the advantages bilingual children possess on tasks measuring executive functioning could also be observed as early as 24 months of age. A battery of executive functioning tasks including three conflict tasks: Multilocation (where child is expected to find a treat hidden in a set of drawers in her presence by the researcher at the same time inhibiting the wrong cues given verbally) , Shape Stroop (a task where in stroop condition children had to respond by pointing the designated fruit embedded in different larger fruits), Reverse Categorization (where the child is habituated to put small blocks in small bucket and large blocks in large bucket, after switching, the rule was reversed i.e. small blocks in large bucket) and two delay tasks: Gift Delay and Snack delay was administered. A total of 75 children were tested all at age around 24 months and half of them being English-French bilinguals and half of them were English monolinguals. Parents were given questionnaires (MB-Communicative Development Inventory) for vocabulary measures of their children. As expected, monolinguals were found to be ahead of bilinguals in vocabulary development. Bilingual children did not differ from monolinguals on delay tasks; however they were significantly better on Stroop task, a task which required children to make a novel response while inhibiting the prepotent one.

In summary, previous research points to positive effects of bilingualism on executive functions but the findings regarding the effects of L2 on L1 appear equivocal as they are dependent on a number of factors among which are, age of onset, conditions of exposure, level of proficiency achieved, status of the two languages, and SES characteristics of the family.

### Aim of the Study and Hypotheses

Both the literature focusing on effects of L2 on L1 and effects of L2 on executive functions show that early exposure to a second language has consequences, but there is not yet a consensus on the nature of these effects because they vary with the conditions of exposure. The growing number of bilingual (Turkish - English) and second language (English only) preschools in urban Turkey provide a unique context of exposure which has not been investigated much. Unlike most contexts where L1 is the minority language and may be at risk, the children attending these schools come from highly resourced backgrounds that are supportive of development in every respect and their L1 (Turkish) is the majority language around them.

The aim of the present study is thus to assess second language exposure effects on first language competence and executive functions in early childhood when the context of acquisition is a well resourced one and both of the languages are highly valued.

For this purpose, Turkish-speaking preschool children with different degrees of exposure to English were compared on a set of language and executive functioning tasks. The children participating in the study are speakers of Turkish as their L1 and fell into two age groups (4 year olds and 5 year olds). They were



attending two types of preschools (1) preschools where the language of instruction is English throughout the whole day (English Instruction group, and (2) preschools where the language of instruction is Turkish with maximum exposure to English being only one hour/ day (Turkish Instruction group). The age of onset of L2 was 3 years for both groups. At the time of the testing the 4-year olds had been exposed to English for one year and the 5-year olds for two years in both schools, though the number of hours/ day of exposure differed.

Given the early period of development focused on, it was expected that age would be a major predictor of both Turkish and English language competence. As age of onset of L2 is the same for both groups, the effects of L2 on L1 can be expected to be stronger for 5-year olds as exposure to L2 in the school context increases from one to two years. In view of the findings in the literature on the positive effects of bilingualism on executive functions, the English Instruction group was expected to perform better than Turkish Instruction group in their cognitive functioning. Given the equivocal findings of negative and positive effects of L2 acquisition on L1, no directional hypotheses were made regarding the effects on L1 competence.

The specific hypotheses are as follows:

1. There will be a difference in L1 and L2 competence of the children due to age in favor of the older children. Specifically, 5 year olds will outperform 4 year olds on standardized Turkish and English language tests and on a narrative production task in Turkish.

2. There will be a difference in L2 competence of children due to amount of exposure in favor of those who are attending English Instruction schools as compared to Turkish Instruction schools.

Specifically, scores on a standardized English Language test (TELD3) of the English Instruction group will be higher than the scores of the Turkish Instruction Group for both age groups.

3. Given mixed evidence, as an exploratory hypothesis, it is expected that there will be a difference in L1 competence as measured by a standardized Turkish Language test (TEDİL) between the children who attend Turkish Instruction Schools and English Instruction Schools due to amount of exposure to L2 in the preschool context.
4. There will be a difference in L1 competence of the children as assessed by their narrative productions in Turkish as a function of their level of L2 competence (scores in TELD-3 Receptive and Expressive subtests)
5. On executive functioning tasks, children with higher level of competence in L2 are expected to outperform those with lower level of competence. Those children who have higher scores on the standardized test of English will have higher scores on executive function tasks than those who have lower scores.

## CHAPTER 3

### METHOD

#### Design

A 2 x 2 (Age Group X School Type) quasi-experimental design was implemented.

The age groups were 4 years and 5 years. All of the participants attended preschool in one of the following school types:

#### 1) Full-time English preschools:

Full-time English schools offer full-time instruction in English (9:00 – 16:00, a total of 7 hours of English teaching per day). Children who attend these types of schools are either children whose mother tongue is Turkish or children whose mother tongue is a foreign one such as English, French, German. Only native Turkish-speaking children were tested in the study. All of the children's AoO to English in full-time preschool context was 3 years of age. This group is called "English instruction group".

#### 2) Turkish preschools:

These schools offer Turkish as a medium of instruction and introduce English only for 5 hours per week. Children who attend these types of schools are children whose mother tongue is Turkish. This group is called "Turkish instruction group".

#### Participants

A total of 106 children (48 female and 58 male) participated in the study. All children were native Turkish-speaking, pertaining to two age groups; 4-year-olds and 5-year-olds. Both of their parents were native Turkish-speakers. Two children were excluded from the study due to their exceptionally high English exposure at

home, thus the number of children in the sample was reduced to 104. The distribution of children to the two types of schools by age is presented in Table 1.

Since the preschools where English is given as L2 typically cater to upper middle-class families, the preschools that offer mainly Turkish were chosen among preschools of comparable quality. This way, socio-economic differences between families was minimized as much as possible. (See Table 1)

### Instruments of Assessment

Children were tested on two main dimensions: language competence and executive functions.

#### Language Competence Tasks

##### Turkish Competence Test

TEDİL (Topbaş & Güven, 2011) is an adaptation to Turkish of the English assessment instrument TELD-3 (Hresko, Reid & Hammill, 1999). The test is used to assess receptive and expressive language of children between 2;0 to 7;11 years of age. The test has two forms which has two subtests: receptive and expressive language subtests. The standardization process for TEDİL has just been completed. For the standardization study, 1171 typically developing monolingual children, 73 monolingual language impaired, 20 mentally retarded and 4 autistic children have been tested. Seven different regions of Turkey were selected to form the normative sample (Topbaş & Güven, 2011). The test consists of a total of 86 questions; 37 questions in the receptive subtest and 39 questions in the expressive subtest. Children were tested starting from their age-equivalent questions with visually

presented cards provided with the test kit. (i.e. A 4 year olds starts from the point where 4-year-old equivalent questions start ).

The receptive subtest included questions under the following categories: Postpositions, quantifiers, relative clauses, word-order, temporal relations, ordinal expressions, metalinguistic skills, complex vocabulary, semantic relations, grammatical awareness, conceptual relations, word meanings, syntactic knowledge, abstract words, synonyms and complex instructions, Expressive subtest included questions for the designated categories: Plurals, noun inflections, superordinate categories, logical inference, picture description, derivational suffixes, subject-verb agreement, imitation of sentences, short narrative production and sentence completion. (See Appendix A for sample questions)

#### English Competence Test

TELD-3 (Hresko et al. 1999) was administered to assess the children's level of L2. This test was originally designed to assess receptive and expressive language for children in English. The TELD-3 was standardized on 2,217 children representing 35 states. The TELD-3's normative population is accepted as representative of the U.S. population as reported in the 1997 Statistical Abstract of the United States (U.S. Bureau of the Census, 1997). The two subtests of TELD-3 included questions under categories corresponding to those listed above for TEDIL.

#### Narrative Skills Task

By age 4, children are assumed to have acquired the basic grammar of their language, have a well-developed vocabulary and to be able to produce coherent sentences (Hoff, 2003). However, their ability to produce connected discourse is as yet not fully developed. Their linguistic competence in L1 will therefore be better

reflected in more sophisticated tasks which require them to produce chunks of discourse longer than a sentence, as in accounts of a day or personal and fictional narratives. Narratives involve relatively extended pieces of discourse where the information to be communicated needs to be organized in a coherent way in accordance with a theme. Narrative production requires the ability to sequence events in a temporally and causally related way towards the achievement of a goal, also providing information about the motives and reactions of the actors that bring about those events (Berman & Slobin, 1994). In telling short picture elicited stories, while 3-year-olds give picture descriptions, 4-year-olds relate events temporally and 5-year olds start to relate events as episodes of a theme (Aksu-Koç, 2005). A narrative task to assess children's L1 competence should therefore be able to tap variability in children's developing competence in language use and shed light upon possible effects of L2 exposure on L1.

The Horse-Bunny story (Nicolopoulou, 2009, see Appendix B)

Children were shown 4-pictures in sequence of a full story where a bunny is seen resting in the field and eating carrots. The next picture depicts a horse who comes and steals the carrot basket from the bunny. In the third picture the bunny runs after the horse to have her carrots back. In the fourth picture they share the carrots. Children's narratives were videotaped and later transcribed.

The stories were analyzed for narrative structure following the story grammar proposed by Stein and Glenn (1979), for narrative quality and for linguistic form. A 'Narrative Structure Score' was based on the presence of the major plot components in the story, presented in Table 2, with definitions and an example from a child's story. (See Table 2)

The narrative structure score was the sum of all components listed above (ranging from 0 to 7 in total , with a score of 0 or 1 for each item according to their presence/absence). If there are more than one utterance for each component it is considered as 1 and counted only once. (i.e. “a horse” and “a bunny” is counted 1 for character presence). A sample from the data is given below:

A.G. (5;2)	SCORE
[Tavşan ].....character 1 '[A Bunny']	
[bahçede] çukurlardan havuç koparıp.....setting 'grabbing carrots from the holes in the [garden] [sepetine koyuyormuş]..... 'was [putting in the basket]'	1
Birden bire [at] bakıyormuş ona,.....character 'All of a sudden,[ a horse ]was looking at him'	1
sonra da at havuç [yiyormuş], ..... initiating event 'then horse[ was eating]carrots'	1
tavşan da yatıp, havuç yiyormuş .....initiating event 'bunny was lying down and eating carrots'	1
Ondan sonra da [at havuçları almış].....problem 'Then the [horse took the carrots]'	1
Tavşan da at havuçları aldığı için [kızmış ].....motivation 'Bunny[ was angry] with horse for taking the carrots'	1
[arkasından koşmuş].....complication-attempt at action 'he [ran after him]'	1

Bitti Sonra havuçları [birlikte yemişler]..... .resolution

1

‘Finished. Then they[ ate the carrots together].’

Total score : 7

(See Appendix C for some sample narratives)

‘Narrative Quality’ score was determined according to the quality of the story as whole, each story was assigned to one of the following categories (Coding sheet for the CDI-III project, 2009).

- a. Labeling : If the child only produced utterances that just label objects in the story

*“tavşan” “at” “havuç”*

- b. Picture Description The child produces utterances that describe what he sees in the pictures, relating each picture more or less independent

*“tavşan yatıyor havuç yiyor. At ona bakıyor.”*

- c. Relating events: The child tells the story explicitly in terms of temporality (utterances that link or join two or more events in the story).

*“At havuçları almış ve sonra da kaçmış.”*

- d. Motivating events: Child tells the story explicitly in terms of causality (utterances that reflect cause or motivation for an event or action). Some examples might be psychological/emotional or physical causal explanations, motivations for actions and events, especially between problem and resolution.

*“Tavşan atın çaldığı havuçları yakalamak için peşinden koşmuş”*



Examples from the data for each level of narrative quality are given below.

All participants were older than age 4 at the time of testing so Labeling category was not observed.

## 2- Picture Description

(1) A.S. (4;1)

*Tavşan bir havuç bulmuş, o havucu yiyor sonra, ve de tavşan zıplıyor ve at da ot yiyor burada.*

‘A bunny found a carrot. Then he was eating that carrot. And the bunny was hopping and horse was eating grass here.’

## 3- Relating Events

(2) B.K. (4;0)

*Tavşan bir havuç yiyormuş. Sonra evine götürüyormuş. Onun yanında da at varmış. O at da hep almış tavşanın havuçlarını. Sonra at almış havuçlarını ve tavşanla koşup yorulmuş. Sonra da at havuçlarını geri vermiş tavşana.*

‘Bunny was eating a carrot. Then he was taking it to his home. There was a horse beside him. That horse always took the bunny’s carrots. Then the horse took the carrots and ran with bunny and got tired. Then the horse gave the carrots back to the bunny’

#### 4- Motivating Events

(3) A.C.O (5;9)

*Birgün tavşan havuç toplamaya gitmişti At da onu izliyordu. O da at da tavşan havucunu yerken at da onun sepetini kaldırıyordu. Sonra onu alıp koştu. Tavşan da çok üzüldü peşinden koştu. Sonra birlikte yediler havuçları.*

‘One day, bunny went picking carrots. Horse was watching him. He was, horse was , while bunny was eating the carrots, was picking up his basket. Then he took it and ran. Bunny was upset and ran after him. Then they ate the carrots together.’

The last analysis related to narratives is that for ‘Linguistic Form’. The clause, which was defined as ‘a predicate and its related arguments’ was taken as the unit of analysis and the total number of clauses for length of narrative, total number of words in the story and total number of complex clauses were calculated.

Types of clauses considered for linguistic complexity were as follows:

**1. Infinitival Clauses:** A clause with two predicates joined by the –mak construction.

“*Koşmak istedi*”, “*yemeye başlamış*”. ‘wanted to run’, ‘started to eat’

**2. Multiclaue utterance – Coordinate:** Two single clauses joined with a coordinating conjunction” such as *and*, *but*, *and then* , as well as with sequenced verbs such as

“*yatmış havuç yiyor*” .

3. Multiclaue utterance-Subordinate: Two single clauses joined by a subordinate conjunction such as *-diği zaman* ‘when’, *çünkü* ‘because’, *-dığı için* ‘for that reason’ –*dıktan sonra* ‘after’, ‘while’, ‘so’.
4. Multiclaue utterance- Subordination with converbs: Two single clauses joined as *V+ken (koşarken)* ‘while running’, *V+ince (koşunca)* ‘when ran’, *V+ip (koşup)* ‘running’, *V+erek (koşarak)* ‘by means of running’, *V+a ...V+a (koşa koşa)* ‘in the manner of running’ etc.
5. Total Complexity score is defined as the sum of all complex clauses listed above.

Below is an example from a 5-year old’s narrative. The predicates are enclosed within square brackets.

T.D. (5;10)

*Tavşan yola [gitmiş] havuç [topluyordu]. O zamana kadar at [koşa koşa] havuçları sepetine [alarak] [koşmuştu]. Tavşan [farketmeden] at [koşmuştu]. Sonra onu [farkederek] hemen tavşan arkasına [bakıp] "hey neler [alıyorsun]" [demişti]. Sonra at da [kaçmaya] [başlamıştı]. Sonra onu [yakalayıp] "niye [aldın havuçları?]" "beraber [paylaştın]" "[sorsaydın]". Ben [sormak] [istemiyorum] ama ben yabancı bir [atım] [dedi].*

‘Bunny went on a way, picking carrots. Until then, horse ran, running and putting all the carrots in his basket. Horse ran without bunny being aware of it. Then realizing him, immediately turning back, bunny said “hey what are you taking?” Then horse began to run. Then he caught him, asked “why did you take the carrots?” “we could have shared them” “if you asked”. “I don’t want to ask but I

am a stranger horse” he said.’ The scoring of the linguistic structure of this story is given in example. See Table 3.

### Executive Function Tasks

#### Dimensional Card Change Sorting Task

DCCS (Zelazo, Frye and Rapus 1996) was administered in order to assess children’s inhibition and switching abilities. The task requires children to sort a series of test cards. Two target cards (blue rabbit and red boat) and six test cards (three red rabbits and three blue boats) were used. Target cards were attached to two separate boxes as labels and stayed there throughout the whole session. In the pre-switch phase children were asked to sort the cards either by color or by shape and put the cards to the correct box face down in order to prevent influencing the next trials. In the post-switch trials children were asked to sort the cards according to the other dimension. Order of dimensions used in pre- and post-switch sessions were counterbalanced across children. Each child was given two demonstration trials before testing trials.

#### Inhibitory Control Tasks

There were four inhibitory control tasks: two delay tasks (Snack delay, gift delay); two stroop tasks (night-day, bear-dragon) (Kochanska, Murray & Harlan, 2000).

#### Delay Tasks

These tasks aim at investigating the ability of the child to delay a desired gift or food.

### Snack – Delay Task

The children were asked to wait till the bell rings in order to eat the candy hid under a transparent cover. The task consists of 6 trials where the child is expected to wait 5, 10, 0, 20, 0, and 40 seconds respectively before eating the candy. All children were videotaped for scoring. Fidgety and latency scores were given after watching the video clips.

### Gift – Delay Task

The children were presented a gift in return for participating in the study. Before giving the present, the child was told that she should wait until it is wrapped. The child was also instructed not to turn around and peek while the gift was being wrapped. The child waited for 60 seconds for the gift to be wrapped after which s/he was left with the gift and instructed to wait for the bow and not to touch or open the gift. While the researcher was away, the child waited in the room for three minutes and was videotaped for future coding and scoring. Fidgety, touching and latency scores were given after watching the video clips.

### Stroop Tasks

#### Night- Day Task

The children were presented a night/day picture and was asked to show night when the researcher says ‘day’ and show day when researcher says ‘night’. Children were given two demonstration trials and were corrected if they made errors. After 5 trials, the rule was reminded again and 5 more trials were carried out. Total number of correct trials is taken into account.

### Bear- Dragon Task

Two puppets were introduced. The bear was presented as ‘good’ and the dragon was presented as ‘bad’. The child was asked to do what the bear says but not to do what the dragon says. Only the dragon trials are scored due to the fact that they represent inhibiting the prepotent response.

### Demographic Form

A form for basic demographic information covering family income, parental level of education, questions about the child’s health history, and child’s caregivers to attending preschool was filled out by the families. The form was adapted from demographic form used in the TiGE project (Aksu-Koç et al., 2011). There were 49 items in the form, the majority of the items were related to language preferences and practices in the home context. Parents were asked about the use of a second language at home and about the frequencies of Book Reading and Story Telling, Singing and Listening to Songs, Watching TV-DVD in Turkish and English. Frequencies were equated to represent number of times of occurrence per month. Families were also asked to estimate the percentage of time their children spoke English at home. They were asked the percentage of time their children spoke English at home on a 5-point likert scale such as (1) 0% (2) 25% (3) 50% (4) 75% and (5) 100%

Information about the income level of the family estimated in terms of monthly expenditures, and mother’s years of education constituted the demographic variables used as predictors. Income represented total household expenses declared in a 5 point likert scale. (1=less than 1000 TL, 2= 2000-3000 TL, 3= 3000-4000TL, 4=4000-5000 TL 5=over 5000TL). Although schools cater

to upper middle class families, there was a significant difference in terms of income between the two schools in favor of English Instruction group, ( $t(89)=3.19, p<.05$ ). Mother's education was asked in the form of the last school graduated from (i.e. primary, secondary, high school, university, etc.) and was converted into years in order to enter into the regression model.

Frequency of Story activities in English, Frequency of Singing activities in English, Frequency of watching TV in English and % of English spoken at home were extracted from the demographic form to determine the degree of exposure to second language for each child. Frequency of activities in English were converted into number of times those activities took place in a month. A summary of the demographic characteristics of the sample is presented in Table 4. (See Table 4)

Table 5 shows the aggregate mean and SD for the same demographic variables broken down into school types. Chi-Square statistics showed that families in the two types of schools differed in terms of Income, Frequency of Story and Singing activities in English. It was found that children in English Instruction group engaged in those activities more than the Turkish Instruction group. The Income level of English Instruction group was higher than Turkish Instruction group, the two types of schools did not differ in terms of maternal education. Distribution of Mother's Education level according to school type is presented in Figure 1. demographic form is presented in Appendix D. (See Table 5 and Figure 1).

## Procedure

Permission was obtained from the Boğaziçi University Ethics Committee for the tasks and testing procedure. Informed consent was obtained from the schools and the parents.

Children were tested in their schools during school hours. Each child was tested individually in a quiet room. The researcher spent an hour with the class of the participants in order to get acquainted with them. Warm-up sessions were carried out a day prior to testing.

Testing was implemented in three sessions. Snack-delay, TEDİL, Bear- Dragon and Narrative skills task (Horse-Bunny) were implemented in the first session (total of 30-45 minutes), Night- Day, DCCS and Gift – Delay tasks were implemented in the second session (total of 15 minutes). In the third session, TELD-3, was administered in English. A native speaker of English did the testing in order to create a natural context for the child and prevent language bias of the researcher who already tested them in Turkish language tests. Since TEDİL (Turkish version) and TELD-3 (English version) had two different parallel forms, each child was administered different forms for each language test. The order of sessions was kept constant for all subjects. There were a maximum of 10 days in between the first two sessions implemented, the third session (TELD-3 English version) was implemented about one to two weeks after the first two sessions. Such intervals were unavoidable since testing was carried out in winter and children got sick and were often absent due to when their turn for the second session came. Those children were tested when they returned school which resulted in a delay of the second session up to 10 days.



## CHAPTER 4

### RESULTS

Of the 104 children included in the analyses, 13 did not provide the demographic forms, therefore regression analyses were run with the remaining 91 children.

#### Bivariate Relations

Correlation coefficients were computed among the dependent and predictor variables. The results of the Pearson correlation coefficients presented in Table 6 show that 31 out of 78 correlations were significant. Language scores in Receptive and Expressive subtests on the standardized tests, both Turkish (TEDİL) and English (TELD-3), were positively correlated with one another ( $r=.55$  for Turkish - TEDİL Receptive/TEDİL Expressive- and  $r=.79$  for English - TELD3-Receptive/TELD-3-Expressive subtest). Narrative Quality scores were also found to be correlated with Turkish receptive ( $r=.28$ ) and expressive language scores ( $r=.25$ ) (TEDİL Receptive and TEDİL Expressive scores, respectively). Narrative Structure scores were also correlated with TEDİL Receptive ( $r=.34$ ) and TEDİL Expressive scores ( $r=.41$ ). TEDİL Receptive scores were correlated with multiclaue utterance –subordinate clauses ( $r=.30$ ) and total complexity scores ( $r=.29$ ). TEDİL Expressive scores were correlated with multiclaue utterances-subordination with converbs scores ( $r=.21$ ) as well. Of the linguistic form scores, infinitival clauses were correlated with Narrative Structure ( $r=.22$ ) and Narrative Quality scores ( $r=.21$ ). Infinitival clauses were also correlated with multiclaue utterance –subordinate scores ( $r=.25$ ), multiclaue utterance –subordination with converbs ( $r=.19$ ) and total complexity scores ( $r=.58$ ). Total complexity scores correlated with all of the linguistic form scores as the score was sum of all

linguistic form scores. Executive function measures did not correlate with any of the Turkish Language scores (TEDİL). Wait score was found to be positively correlated with Narrative Quality score ( $r=.28$ ). DCCS Scores were positively correlated with English Language Scores (TELD3 Expressive Scores) ( $r=.29$ ). Executive function scores correlated with one another. Wait and Bear/Dragon scores were positively correlated with DCCS scores ( $r=.28$  and  $r=.27$  respectively). They did not correlate with each other. Of the variables extracted from the demographic form, mother's education in years was positively correlated with TEDİL-Receptive scores. ( $r=.25$ ). Frequency of activities in English were correlated with TELD Receptive, Expressive, and TEDİL Receptive scores. Frequency of story activities in English was positively correlated with TELD-3 Receptive and Expressive scores ( $r=.25$ ,  $r=.33$ ) but negatively correlated with TEDİL Receptive scores ( $r=-.22$ ). It was also positively correlated with wait score ( $r=.24$ ). Frequency of singing activities in English was positively correlated with TELD-3 Receptive and Expressive scores ( $r=.25$ ,  $r=.26$ ) but negatively correlated with TEDİL Receptive scores ( $r=-.22$ ). Frequency of TV in English was positively correlated with TELD-3 Receptive and Expressive scores ( $r=.27$ ,  $r=.31$ ) but negatively correlated with TEDİL Receptive scores ( $r=-.25$ ). Percentage of English spoken at home was positively correlated with wait score ( $r=.31$ ) and other activities in English story, singing, and TV ( $r=.41$ ,  $r=.21$  and  $r=.25$  respectively). (See Table 6).

### Regression Analyses for Language Tests TELD-3 and TEDİL

The means and standard deviations obtained on the TELD3 and TEDİL for the two groups of children are presented in Table 6. Raw scores from Receptive and Expressive subtests were used in the analyses. (See Table 7)

Hierarchical regression analyses were run for each dependent variable by entering the following predictors in the designated order: 1) Gender, Income, Mother's Education 2) Age in months 3) Frequency of story activities, singing activities and watching TV in English at home and % of English spoken at home, and 4) TELD-3 Receptive Score, TELD-3 Expressive Score. For predicting TEDİL and TELD3 scores, School type is entered in the fourth step. Collinearity statistics provided by regression analyses showed that there was not a danger of multicollinearity as the tolerance index for none of the predictors were below 0.1.

#### Regression Analysis for TEDİL Receptive Scores as Dependent Variable

Table 8 shows the results of hierarchical regression analysis with TEDİL Receptive Score as the dependent variable. In the first step of the regression, Mother's Education and Income were significant predictors of TEDİL Receptive Scores. Total variance explained in the first step is 12%,  $F\text{-change}(3,87) = 3.94, p < 0.05$ . Next, age accounted for most of the variance in TEDİL Receptive Scores. There was 32% increase in the explained variance,  $\beta = 0.59, t(91) = 7.07, p < 0.001, F\text{-change}(4,82) = 49.98, p < 0.001$ . Older children performed better than younger ones. In the third step of the analysis, Frequency of Activities in English and % English spoken at home accounted for an additional 12% increase in the explained variance,  $F\text{-change}(4,82) = 5.51, p = 0.001$ . The change was due to Frequency of Story telling/ listening activities in English at home,  $t(91) = -2.34, p < 0.05$  and % English spoken at home,  $t(91) = 2.99, p < 0.01$ . Finally when school type was

entered into the model, mother's education, age, frequency of story activities in English and % of English spoken at home remained as significant predictors; school-type did not explain any additional variance. The final model explained 57% of the variance. As mother's education, age and % of English spoken at home increased TEDİL Receptive Scores also increased. Frequency of English activities at home affected TEDİL Receptive scores negatively, as these increased in frequency, TEDİL Receptive scores decreased. (See Table 7)

#### Regression Analysis: TEDİL Turkish Expressive Scores as Dependent Variable

None of the predictor variables in the first step was significant in explaining the variance associated with TEDİL Expressive Scores.  $F(3,87) = .714, p = .55$ . The model became significant when Age was entered in the model. In this step, the explained variance was 27%,  $F\text{-change}(1,86) = 30.23, p < 0.001, \Delta R^2 = 0.27$ . Older subjects performed better than younger ones. The explained variance did not change significantly with the entrance of Frequency of activities in English and % of English spoken at home ( $\Delta R^2 = 0.05$ , for step 3). In the final step when School type was entered, there was no significant change in the total variance explained ( $F\text{-Change}(1,81) = .075, p = .785$ ). Only age accounted for the variance in TEDİL Expressive scores in the final model. ( $F(9,81) = 13.34, p < .001$ ). Total variance explained was 33%. (See Table 9)

#### Regression Analysis: TELD3- English Receptive Scores as Dependent Variable

In the first step of regression, gender was a significant predictor ( $\beta = -0.23, t(91) = -2.13, p < .05$ ) however, the model was not significant in explaining any variance ( $F(3,87) = 1.54, p = .211$ ). In the second step, when age was entered, the model became significant in explaining 25% of the total variance,  $F(4,86) = 7, p < .001$ . In the third step, when frequencies of English activities were entered, the model was

again significant; gender no longer predicted the variance in scores ( $\beta=-0.15$ ,  $t(91)=-1.59$ ,  $p=.115$ ), instead frequency of TV watching in English became a significant predictor ( $\beta=.21$ ,  $t(91)=2.16$ ,  $p<.05$ ). Total variance explained increased to 37% from 25%. Introduction of school type ( $\beta=-8.18$ ,  $t(91)=-7.34$ ,  $p<.001$ ) into the model ended up in 25% increase in the explained variance and total variance explained is 63% ( $F\text{-Change}(1,81)=53.35$ ,  $p<.001$ ). Children in English Instruction group performed better than the ones in Turkish Instruction group. (See Table 10)

#### Regression Analysis: TELD3 English Expressive Scores as Dependent Variable

None of the variables in the first step were significant in explaining the variance, thus the model was not a significant one. In the second step, age accounted for 12% of the variance ( $\beta=.36$ ,  $t(91)=3.49$ ,  $p<.001$ ). There was an additional 16% of variance explained in the third step when frequency of activities in English were introduced; among these, only Frequency of TV in English was marginally significant ( $\beta=.20$ ,  $t(91)=1.97$ ,  $p=.052$ ). When school type was entered the model, frequency of TV in English became a significant variable in explaining the variance in TELD3- Expressive scores, as the frequency increased TELD3- Expressive scores also increased ( $\beta=.16$ ,  $t(91)=2.34$ ,  $p<.05$ ). In the final model, 67% of the variance was explained by Age, Frequency of TV in English and School type. School type explained 38% of the total variance. Older children performed better than younger ones and children who attend to English instruction preschools outperformed the ones who attend Turkish instruction preschools. (See Table 11)

## Narrative Task Analyses

Summary of narrative task scores for Narrative Quality, Narrative Structure and components of Linguistic Form can be found in Tables 11 & 12. (See Table 12 and Table 13)

### Regression Analysis: Narrative Quality Scores as Dependent Variable

Gender and Income variables were significant predictors of 10% of the variance in the scores in step 1. Higher Income and being male was associated with higher scores  $\beta = 0.24$ ,  $t(91) = 2.30$ ,  $p < 0.05$ ,  $\beta = 0.25$ ,  $t(91) = 2.40$ ,  $p < 0.05$ , respectively. When Age was entered in the model, it accounted for an additional 9% of the variance and Income was no longer was a significant predictor, *F-Change* (1,86) = 9.17,  $p < 0.01$ ,  $\beta = 0.31$ ,  $t(91) = 3.02$ ,  $p < 0.01$ . Older children performed better than younger ones. It was seen in the third step that Frequency of activities in English and % of English spoken at home did not play a role in explaining additional variance. *F-Change* (4,81) = .29,  $p = .88$ . In the final step of regression when TELD-3 Receptive and Expressive scores were entered into the model, there was no significant change in the variance explained. *F-Change* (2,80) = .91,  $p = .41$ . Gender and Age continued to be significant predictors, with boys performing better than girls and older children performing better than younger ones. (See Table 14)

### Regression Analysis: Narrative Structure Scores as Dependent Variable

The predictors in the first step (Gender, Income and Mother's Education) did not yield any significant results in explaining Narrative Structure scores  $F(3,88)=1.32$ ,  $p=.27$ . Only Age was a significant predictor; older children performed better than younger children. It accounted for 24% of the variance after all the other predictors entered the model,  $\beta = 0.47$ ,  $t(91) = 3.92$ ,  $p < 0.001$ . The final model is a

significant one in explaining the variance,  $F(10,80) = 2.44, p < 0.01$ . TELD-3 Receptive and Expressive scores were not significant predictors in explaining the variance. ( $\beta = -0.08, t(91) = -.49, p = .63, \beta = 0.009, t(91) = .054, p = .96$  respectively). (See Table 15)

### Regression Analyses : Components of Linguistic Form as Dependent Variables

#### Infinitival Clause as Dependent Variable

In the first step of regression where gender, income and mother's education were entered as predictors, only income ( $\beta = 0.33, t(91) = 3.23, p < 0.05, F\text{-change}(3,87) = 3.92, p < .05$ ) was a significant predictor of the variance in infinitival clauses. Higher income was associated with higher number of infinitival clauses and the model was significant ( $F(3,86) = 3.94, p < .05$ ), with total variance explained being 12% ( $R^2 = .12$ ). Age was entered the model in the second step, however there was no significant change in the variance explained ( $F\text{-change}(1,85) = .01, p = .91$ ). Neither of the variables of Activities performed in English at home resulted in a significant explanatory power. Income continued to be significant variable, explaining 17% of the variance accounted for. However, after entering activities in English, the model became marginally significant in explaining the total variance. ( $F(8,81) = 2.02, p = .055$ ). The final step where TELD-3-Receptive and Expressive scores were introduced to the model did not yield a significant result. ( $\beta = .07, t(91) = .43, p = .67$  and  $\beta = .07, t(91) = .42, p = .68$  respectively). The model was a marginally significant one in explaining the variance in Infinitival Clauses,  $F(10,79) = 1.70, p = .09$ , with income being the only predictor. (See Table 16)

#### Multiclaue Utterance – Coordinate as Dependent Variable

None of the variables in the first step predicted the variance in Multiclaue utterance – coordinate scores, and the model was not a significant one.

( $F(3,87)=1.86, p=.142$ ). In the second step when age was introduced to the model, income became a significant variable in explaining 9% of the variance ( $\beta = 0.23, t(91) = 2.06, p < 0.05$ ). The model was marginally significant. ( $F(4,85)=2.02, p=.09$ ). The third step where activities in English was entered did not result in a significant model. ( $F(8,81)=1.27, p=.27$ ) and income became a marginally significant predictor,  $\beta = .22, t(91) = 1.93, p = .057$ . When TELD-3-Receptive and Expressive scores were entered as predictors, the model again was not significant, and income was a marginally significant predictor of the variance.

( $F(10,79)=1.23, p=.29$ ) and ,  $\beta = .19, t(91) = 1.71, p = .091$ ). (See Table 17).

#### Multiclaue Utterance – Subordinate as Dependent Variable

All of the models in the first four steps were significant in explaining the variance in multiclaue utterance –subordinate scores. Income was a significant predictor in the first step where higher income was associated with higher scores ( $\beta = .27, t(91) = 2.83, p < .01$ ). Total variance explained was 11% in this step. When age was introduced to the model, it accounted for an additional 9% ( $\Delta R^2 = .09, \beta = .04, t(91) = 3.09, p < .01$ ) of the variance and total variance explained was 20%. Older children had higher scores than younger ones. Income became a marginally significant predictor with age included in the model ( $\beta = .19, t(91) = 1.96, p = .053$ ). When activities in English at home were introduced to the model, income again became a significant predictor and age also accounted for the variance ( $\beta = .21, t(91) = 2.12, p < .05, \beta = .04, t(91) = 2.87, p < .01$ , respectively). Total variance explained in this step was 24%. In the final step TELD-3 Receptive and Expressive



scores were entered in the model, none of the scores accounted for an additional explained variance. Income and age continued to be significant predictors of mult clause utterance –subordinate scores. Total variance explained ended up in 25% in the final step. (See Table 18)

#### Mult clause Utterance –Subordination with Converbs as Dependent Variable

None of the variables in the first and second step were significant predictors of the variance in mult clause utterance – subordination with converbs scores. The models were not significant either ( $F(3,86)=.093$ ,  $p=.96$  and  $F(4,85)=.25$ ,  $p=.91$ ). In the third step % of English spoken at home was a significant variable ( $\beta = .02$ ,  $t(91) = 2.53$ ,  $p <.05$ ) in predicting the scores, however the model was not a significant one ( $F(8,81)=1.26$ ,  $p=.28$ ). In the final step, % of English spoken at home continued to be a significant variable ( $\beta = .02$ ,  $t(91) = 2.58$ ,  $p <.05$ ) in predicting the scores but again the model was not a significant one. ( $F(10,79)=1.14$ ,  $p=.36$ ), TELD3 Receptive and Expressive scores did not account for any variance. (See Table 19)

#### Total Linguistic Complexity Score as Dependent Variable

None of the variables in the first step were significant predictors in predicting total linguistic complexity scores of narratives. In the second step age accounted for 5% of the variance with older children performing better than younger ones ( $\beta = .07$ ,  $t(91) = 2.21$ ,  $p <.05$ ). Total variance explained was 9%. However, model was a marginally significant one in explaining the total variance,  $F(4,85)=2.28$ ,  $p=.06$ . In the third step age continued to be significant predictor, ( $\beta = .02$ ,  $t(91) = 2.16$ ,  $p <.05$ ), however model was not a significant one in explaining the variance  $F(8,81)=1.66$ ,  $p=.12$ . In the final step, neither the model nor the variables were significant in explaining the total variance associated with total complexity. (See Table 20)

In summary, the analyses of the narrative linguistic variables have shown that income has been a common predictor of complexity scores, as it was a significant predictor for multiclausal-utterances subordinate scores as well as infinitival clauses. For total complexity age was a primary predictor of scores where it was also a predictor for multiclausal- utterances – subordinate scores

#### Executive Function Scores:

For the two delay tasks (Gift Delay and Snack Delay), a composite z-score, the wait score was calculated. For inhibition no composite score could be obtained because z- score of Day/Night Score did not correlate with z- score of Bear/Dragon,  $r(104) = 0.05, p = 0.58$ . Children performed at almost a perfect level in the Day/Night task (Mean = 28.28 and SD =3.9, maximum possible score =30). Day/Night scores of the subjects were not used in further analyses because of the lack of variation due to a ceiling effect. Z scores were computed for both Wait and Bear-Dragon scores.

DCCS Score can be either 0 or 1 (0 = fail, 1 = pass) for a child. The task is implemented in two phases, pre-switch and post-switch phase. The results of the post-switch phase is taken into account in scoring. If the child correctly sorts a minimum 4 out of 6 trials, s/he is considered to have passed the test, any scores below 4 (0, 1, 2 or 3 correct sorting) results in a 0 = fail score for the test. Summary of executive function scores are given in Table 20.(See Table 21)

#### Regression Analysis: DCCS Task (Dimensional Card Change Sort Task) scores as

##### Dependent Variable

As Table 21 shows, Gender was a significant predictor of DCCS Scores in the first step of the model, and explained 5% of the variance,  $F\text{-Change}(3,87) = 1.66, p < 0.01, \beta = -0.23, t(91) = -2.17, p < 0.05$ . Boys performed better than girls,  $t(91) = -$

2.17,  $p < .05$ . However, the model was not a significant one  $F(3,87)=1.66, p=.18$ ). In the next step age was not a significant predictor while gender continued to be significant,  $\beta = -.18, t(91) = -2.08, p < .05$ . In third step, where activities in English at home were entered, neither the predictors nor the model was significant. Gender was marginally significant ( $\beta = -.16, t(91) = -1.84, p = .07$ ). The final model was a marginally significant one ( $F(10,79)=1.73, p=.08$ ). TELD-3 Expressive scores accounted for 5% of the variance associated with DCCS scores ( $\beta = .02, t(91) = 2.03, p < .05$ ). Higher scores in TELD-3 Expressive scores were associated with higher scores in DCCS. (See Table 22)

#### Regression Analysis: Bear/Dragon Scores as Dependent Variable

None of the predictors were significant in explaining the variance in childrens' performance on this task. None of the models were significant in explaining the relationship between predictors and the scores on Bear/Dragon. (See Table 23)

#### Regression Analysis: Wait Score (Snack Delay + Gift Delay) as Dependent Variable

Up until step 3, none of the predictors contributed in explaining the variance in Wait Scores. Introducing % English spoken at home in the model resulted in 11% of variance accounted for ( $F\text{-Change } (4,80) = 2.82, p < 0.05, \beta = .26, t(91) = 2.34, p < 0.05$ ). Higher % English spoken at home was associated with higher scores. The final model which included TELD-3 Receptive and Expressive scores as predictors was significant in explaining the variance in Wait scores ( $F(10,79) = 2.19, p < .05$ ). However, TELD-3 Receptive and Expressive scores were not significant predictors in explaining the variance. Only % of English spoken at home was a significant predictor,  $\beta = .25, t(91) = 2.22, p < 0.05$ . Total variance explained in the final step was 22 %. (See Table 24)

### Further Analyses

In order to investigate the relationship between second language activities and executive functions, correlation analyses was carried out for 4-year-olds and 5-year-olds separately for both types of schools. The results for Pearson correlation coefficients showed no significant correlations for English Instruction School. For Turkish Instruction School, for 4 year olds, Frequency of Story activities in English was positively correlated with Wait Score,  $r(26) = 0.39, p < 0.05$  and Frequency of watching TV in English was negatively correlated with Bear/Dragon score  $r(26) = -0.54, p < 0.05$ . Story activities in English was associated with higher Wait score, however watching TV in English was associated with lower Bear/Dragon score. For 5 year olds, % of English Spoken at home was correlated positively with Wait score  $r(25) = 0.52, p < 0.01$ .

The regression analyses for executive functioning tasks showed that some L2 variables measured such as expressive scores in English or % of English spoken at home might be predictors of scores derived from these tasks. In DCCS, TELD-3 Expressive scores was significant predictor of the scores. For Wait scores, % of English spoken at home was a predictor of scores. For bear/dargon task, no model could explain the variance due to the ceiling effect and lack of variability associated with the scores so in fact there was no variance to explained. Hence, L2 related variables seem to be related to executive functioning scores measured.

## CHAPTER 5

### DISCUSSION

The aim of the present study was to investigate the effects of second language exposure in the preschool context on children's language competence both for L1 (Turkish) and L2 (English) and on executive functions. For this purpose, preschool children aged 4 and 5, attending preschools with full-time English instruction and full time Turkish instruction with one hour English /day were compared. The following discussion is organized around the predictions made in the hypotheses.

It was hypothesized that there would be a difference in L1 and L2 competence of the children due to age in favor of older children. The results showed that language competence both in English and Turkish improved significantly with age, supporting the hypothesis. Older children displayed higher levels of both receptive and expressive Turkish language competence compared to younger ones regardless of the type of school they attend. TEDİL is a new instrument of which the standardization process has just been completed. Therefore, the results of the test also stand as a validation for this new instrument of assessment. The increase in scores with age shows that the test can capture the development due to age, in this case between 4-year-olds and 5-year-olds. The fact that both age groups surpassed their age-equivalent questions can be explained in terms of the enriched environment they have both at home and in preschool context.

For receptive competence in Turkish, mother's education, income as well as age were key determinants; as mother's education, income and age increased children's receptive skills in Turkish also increased. Previous research shows that SES is a demographic factor related to language competence of children for both

L1 and L2 (Aksu-Koç, 2005; Hart & Risley, 1995; Hoff, 2003). Among the indicators of SES, mother's education and the home context as a stimulating environment are most important determinants (Kuşcul, 1993). Studies on the early period between 2;0-3;0 years report higher increase in productive vocabulary of high-SES children compared to low-SES peers (Hoff, 2003; Sofu, 1995), with maternal language accounting for the difference in development (Hoff, 2006). Pan, Rowe, Singer and Snow (2005) investigated maternal correlates of vocabulary production growth in children aged between 1- to 3-years belonging to low-income families. The results showed that maternal language, literacy skills and lexical input were positively related to variation in vocabulary growth in children. It is suggested in the literature that social contexts that children are engaged in include culture, SES and ethnicity. Those systems actually form the basis of a child's "proximal systems" where school, friendship and all related social interactions are included. The quality and quantity of interaction the children are up to act as "engines of development" (Bronfenbrenner & Morris, 1998, p. 996 cited in Hoff, 2006). Therefore, whether those interactions are of high quality or not has particular importance. Research also points to the role of environmental support as a significant influence on children's language development. Enriched environments and support result in children having a higher level of language proficiency, both monolingual and bilingual children. (Hoff, 2006; Bekman, Aksu-Koç, Taylan, in press ). The quality of input has also been addressed in the literature. Dickinson, St. Pierre, & Pettengill (2004) state that a program that advocates the training of preschool teachers for language and literacy practices increases the quality of classroom learning and results in an increase in vocabulary at the end of the school year when compared to a control group. Raviv, Kessenich and Morrison

(2004) found that SES factors measured by income and maternal education were important mediators for determining both receptive and expressive measures of language for children at 3 years of age. The data came from a longitudinal study of children aged between 1 to 11. Maternal sensitivity as well as maternal education was found to account for children's language competence. Story reading in English was found to have a negative effect on TEDiL receptive scores. DeBaryshe (1993) found that joint picture-book reading was a significant predictor of language competence, more strongly related to receptive than expressive skills. In the current study, as the frequency of story reading in English increased receptive skills in Turkish has decreased, this might be due to the fact that as those activities were not performed in the target language -Turkish but in English. One interesting finding is that the children's usage of English at home increased their Turkish Receptive scores. Keckess and Papp (2000 cited in Cook, 2003) found that Hungarian teenagers had gains in their L1 when exposed to English. Likewise, Yelland et al. (1993) show that only an hour of L2 training a week might benefit the learners' reading skills in L1. Minority children were found to display a level of competence for both L1 (Spanish) and L2 (English) when they attend bilingual immersion schools where Spanish and English are instructed in a balanced curriculum (Christian, 1996).

Although it was found in the literature that expressive language skills are related to language activities carried out in the home context (Hoff, 2003, 2006), in the present study for expressive skills in Turkish, only age was a determinant factor. None of the demographic variables were found to be related to variability. Whitehurst et al. (1988) found that picture book reading was influential for expressive language skills measured at 3 years of age. However, in their research,

parents in the experimental group were instructed to increase their open-ended questions, make expansions, and avoid straight reading. It was found that after a month of practice, there were significantly more gains in experimental group children when compared to control group children whose parents did not receive such instruction. Therefore, the quality of input was found to be more important than just the frequency. Information gathered via demographic forms in the present study involve only frequencies of those types of activities but do not show any qualitative aspect of that input. Future studies should therefore take into account quality as well as frequency.

The second hypothesis predicted a difference in L2 competence of children due to amount of exposure in favor of those who are attending English Instruction schools as compared to Turkish Instruction schools. Older children performed better than younger ones in English receptive and expressive scores. As hypothesized, the English instruction group scored considerably higher than their peers in the Turkish Instruction group. Standard scores on the English language test of the 5-year olds who had been exposed to English for two years at the time of assessment shows that their performance is very close to the mean performance (standard score of 100) of native speakers of English at comparable ages. This allows us to define those children as bilinguals in terms of their L2 competence. The results are in line with Matsumura's (2003) findings that for English (L1) students learning Japanese (L2) the amount of exposure to L2 was the most important factor determining proficiency in L2. Frequency of watching TV in English was associated with higher scores in TELD-3 Receptive scores, which is in line with the literature reporting vocabulary gains in L2 as a result of watching TV in L2. Koolstra & Beentjies (1999) found that Dutch children in Grade 4 and 6 had



more gains in English (L2) vocabulary as a result of watching English documentary with captions on TV compared to watching the same documentary on TV without caption and listening to it in classroom in English.

Activities carried out at home in L2 also had an effect on L2 skills.

Watching more TV in English was associated with higher scores in English for both Expressive and Receptive subtests. For receptive skills, girls were found to outperform boys inline with previous research. Frequency of watching TV in English also aided children's L2 competence regardless of school type. Neuman and Koskinen (1992) found that watching captioned TV and TV for incidental word learning in L2 (English) were found to be more influential compared to reading only. Seventh and 8th grader minority (Spanish) students were shown either TV clips or given book reading episodes and tested on vocabulary taught. Captioned TV was found to be most influential instrument for incidental word learning from context.

The participants in the current study had AoO at 3 years, which is an early start for a second language. This might be the reason for English competence scores, measured by TELD-3, showing that the older age group performed almost as average native speaker children. Flege et al. (1999) found that the younger the AoO, the better is the proficiency of the L2 learner. Likewise, Perani et al. (1998) investigated fMRI results of L2 learners and found that both AoO and level of proficiency attained mattered when L2 acquisition is considered. The brain regions that are activated while listening to stories in L1 are activated for participants who listen to stories in L2 when they have high proficiency in L2, but not for the ones who have young AoO but low proficiency.

The third hypothesis which stated that Turkish language competence of children attending the Turkish Instruction school would be higher than those attending the English Instruction school was not supported. School type did not account for the difference in L1 competence of the children. For children's expressive competence in Turkish only age was a determining factor. Older children performed better than younger ones, regardless of the type of school they attend. The results show that children immersed in a full day English program at preschool display the same level of linguistic competence in their mother tongue as their peers attending a full day Turkish instruction program, as measured by a standardized language tests. School type did not account for any difference for either receptive or expressive subtests. This finding is explained by the fact that Turkish is the dominant language in children's lives and this allows them to develop their first language abilities outside the school context although they are exposed to English from 8:30 to 15:00. Appel and Muysken (1987) highlight the importance of the dominant language in children's lives and state that no significant problems are associated with acquisition of the dominant language.

#### Narrative Competence

As another indicator of children's competence in the use of L1, their narrative abilities were measured. The results showed that age was the only factor that predicted variation in terms of narrative structure. Older children's narratives incorporated more of narrative components than those of younger children (Aksu-Koç, 2005; Berman & Slobin, 1994). For narrative quality scores, gender as well as age explained the difference. Boys performed better than girls, indicating that in their narrative utterances they were more inclined to make relational comments about the picture story they have seen.

As for the complexity of the linguistic structures used in narratives, no differences were found in terms of L2 competence level, the factor hypothesized to have an effect. Pearson (2002) compared bilingual and monolingual first graders' narrative skills using the Frog Story book. Monolingual English children outperformed Spanish L1- English L2 bilinguals, on global measures of narrative ability where measures were taken in English. However, in the present study, since interest was on the effects of L2 acquisition on L1 competence, narrative abilities were assessed in Turkish. Although the older group of English Instruction group could qualify as 'bilinguals', the narrative skills measured in their L1 was not effected in any way. The fact that participant children are from high SES families puts them in an advantageous position in terms of resources such as books, DVD, games etc. which give them a head start experience compared to their peers. Aksu-Koç (2005) states that for narrative skills, the prevailing conditions in the home context play a crucial role. In literate home environments, the enrichment preschool aged children get from the family is much more than others. Therefore, aside from age, SES factors should not be overlooked. Elardo, Bradley and Caldwell (1977) found in their longitudinal study that three year old children had gains in their L1 as a function of maternal involvement with the child which further was a function of maternal education.

For linguistic form analysis, the use of infinitival clauses was explained by the level of income of the family. Higher income was associated with higher usage of infinitival clauses. For multiclaue utterances with subordination, age and income were important factors. There is evidence that SES variables have considerable effect on language competence of young children (Aksu-Koç et al., 2011, Hoff, 2003, 2006). For multiclaue utterances with subordination –converbs,

amount of English spoken at home was also influential. Higher percentages were associated with the production of higher scores in terms of linguistic complexity. These results are in line with Kecskes and Papp (2000 as cited in Cook, 2003) who report that Hungarian children who speak English as L2 use more complex sentences in L1.

The overall linguistic complexity level of the narratives (evaluated in terms of total complexity score) was found to be a function of age; narratives of older children displayed more complex linguistic structures than those of younger children. Such change by age in the linguistic complexity of the forms used has been reported by almost all studies of young children's narratives (Berman & Slobin, 1994; Aksu-Koç, 1994, 2005).

#### Executive Functioning and Level of Competence in English (L2)

It was hypothesized that children's level of competence in L2 would predict their level of executive functioning such that the ones who have a higher level of competence in English (L2) would perform at a higher level on executive functioning tasks. There has been extensive research on the advantages of bilingualism on executive functions both in childhood and adulthood. (Feng & Bialystok, 2009, Bialystok, 2006, 2004, 1996, & 1991). It has been proposed that this advantage starts as early as two years of age (Poulin-Dubois, Blaye, Coutya & Bialystok, 2011). In the present study, although all of the participants were native Turkish-speaking children of Turkish-speaking parents, it was expected that second language learned at preschool would make a difference to children's executive functioning. The results support the hypothesis such that children's language competence in L2 predicted their performance on an executive functioning task (DCCS ) which requires inhibition and switching, in line with the previous studies.

The fact that most 5-year-olds performed near ceiling suggests that the standard version of DCCS was too easy for them which may explain why the predictive power was at marginal levels. Even the age differences could not exert itself in the results due to the relative simplicity of this version. If the border version of DCCS appropriate for 6-year olds and above (Zelazo et al. 1997) was implemented, more variance could have been accounted for. Border version of DCCS should be kept in mind for future considerations.

Although there is no clear evidence in the literature that second language input benefits the inhibition component of executive functions as assessed by delay tasks (Carlson & Meltzoff, 2008), the present results showed that the percentage of English spoken at home was a factor that accounted for differences in children's performance, although no such effect of the level of L2 competence measured by TELD-3 was found. Bivariate analyses revealed that frequency of activities in English are negatively correlated with School type, which means that children who attend English Instruction preschools tend to involve more in those activities in English at home than the ones who attend Turkish Instruction schools. Higher percentages of speaking English at home were associated with higher level of performance on delay tasks of inhibition. This suggests that second language acquisition goes on at home context, either with siblings ,with parents or nannies. These findings are interesting and may suggest that those children who benefit the most from learning a second language in preschool are those who get exposed to it at home as well and this enhances their capacity to delay or inhibit unwanted action. It might therefore be concluded that second language exposure contributes to the inhibition component of executive functioning.

On inhibition tasks, children performed at nearly perfect levels.

Performance on the Day/night task was at a ceiling level and the task was discarded from the analyses. On the Bear/Dragon task, children again performed well regardless of their age and school type and the task fell short of differentiating them. One reason for this could be that children from affluent backgrounds have home environments with rich stimulation, and have the opportunity to attend high-quality preschools. Therefore they function beyond their age levels in most of the standard tasks of assessment. Therefore, in future studies an executive function battery with tasks designed to measure executive functions such as spatial conflict (Gerardi-Caulton, 2000), count and label (Gordon and Olson, 1998 as cited in Carlson, Moses & Breton, 2002), backward digit span (Davis and Pratt, 1996 as cited in Carlson et al. 2002) should be considered.

The results of further analyses regarding the effect of English activities in the home context reveal that there are implications of those activities especially for children who attend the Turkish Instruction school. High frequency of story activities in English and amount of English spoken at home meant corresponding high level of performance on delay tasks for those children. This is a sign that enables us to talk about beneficial effects of L2 on executive functions where input from the home context makes a difference. This suggests that it is exposure and experience with a second language that is contributing to children's executive functioning regardless of the type of educational practices of the school attended.

#### Limitations and Contributions

There are a number of shortcomings of the present study. One is the number of schools that the subjects were drawn from. There were only three schools that participated and majority of the data came from only two schools. Therefore, the

difference between the two groups which is associated with knowing a second language at near native level, might also be a result of the school curriculum and practices that might boost the potential of the children. If more number schools of similar language policies were tested, a more stronger generalization could be made. Income levels of children were carefully tried to be matched for each school. Although both schools represent samples from upper-middle class Turkish families, there was a significant difference in income where English Instruction group represented families who were more affluent.

Another shortcoming is related to the executive function tasks used. Due to exposure to enriched social environments and belonging to high SES families, nearly all tests including language competence and executive function tasks fell short of evaluating the participant children. Different set of executive function tasks that would allow for more variability in scores should be used with such populations in future research. As mentioned above, the limited number of schools participating in the study makes it difficult to generalize the results as they might also be signs of an effective curriculum.

The reason that Turkish competence were not effected by the school the children were attending can be explained by the fact that Turkish is the dominant language and also valued language in the children's daily lives.

Another limitation due to testing is again related to Language Competence tests, namely TELD-3 and TEDİL. Although the tests covered items both for receptive and expressive skills of language, a vocabulary related test such as Peabody Picture Vocabulary Test might have given more insights related to vocabulary development of the participant children. Since there has been extensive literature (Bialystok, 2009; Oller and Eilers; 2002; Perani et al, 1998) on

monolinguals' advantage in vocabulary size over bilinguals, results of PPVT could have given much more information about this fact. In fact for one item in TEDİL Receptive Subscale, more than half of the children in English Instruction group failed to recognize the picture of a corresponding word "taşıt" ("vehicle"), due to the fact that, for a preschooler the word is actually taught in school context but rarely used in daily language.

#### Contributions and Future Directions

The results of the current study have practical implications related to the type of bilingualism which is increasingly valued in today's world. Children of high SES families are considered to be 'elite bilinguals' (Skutnabb-Kangas, 1981) who learn a highly valued L2 in addition to their L1- without having a negative effect on L1-. In this way, these children gain access to prestigious languages, and become 'world citizens' (Bingham, 1998 as cited in De Mejia, 2002) which will further benefit them when they grow up and seek employment in the globalized world market. The participants in the current study displayed equal levels of L1 performance, indicating that there were no adverse effects of L2 exposure on L1 skills within a high SES group. Long-term effects of such exposure should also be investigated in detail. These long-term effects both include bilingual advantage in executive functions (Bialystok et al. 2004) and also effects on both L1 and L2. At this point in Turkey, in elementary school there is no immersion education where children are immersed in L2 as a language medium of education, therefore the exposure intensity for those who attend English instruction preschools will drop drastically. There have been investigation of longitudinal effects of immersion and bilingual programs on L1. Reeder, Buntain and Takakuwa (1999) investigated the effect of French instruction in immersion program on both French (L2) and English



(L1). The quasi-experimental 3-year longitudinal study showed that there were no significant differences between the two groups in English narrative or descriptive writing. They concluded that intensive instruction in French did not hinder the English literacy skills. Marsh, Hau and Kong. (2000) investigated longitudinal effects of immersion education in Hong Kong (Chinese (L1)- English (L2) ). The case involved a late immersion (in grade 7) in English. The results showed that intensive exposure to L2 (English) which is of high value in Hong Kong did not hinder the development of L1, on the contrary, it improved L1's development. The results showed that achievement in L1 and L2 were enhanced by immersion in English.

The results of the present study also shed light on some positive outcomes of being a bilingual child. First, the results indicated that there were no negative effects on L1 of starting to learn a second language by being immersed in L2 classrooms as early as age 3. Second, it was found that exposure to L2 has positive effects on the executive functions of preschool children, even though this exposure is much less than that experienced by a bilingual child. This is an exciting outcome, as it shows that not only children who are bilinguals from birth benefit from advantages associated with bilingualism, but also children who acquire L2 during early preschool years can benefit from it. The growing number of L2 instruction preschools in Turkey makes it necessary to investigate both positive and negative aspects of early bilingualism when it is not a normal condition of the family. For a future consideration, a follow-up study of the subjects of the present study with more measures that can tap different aspects of executive functioning would be informative regarding full impact and the long-term effects of second language

learning on executive functioning. Future studies should also investigate the effects of bilingualism on metalinguistic and preliteracy skills.

## APPENDICES

## APPENDIX A. SAMPLE QUESTIONS TEDİL/TELD-3

## TEDİL/TELD-3 Sample Questions

### Receptive Subtest

Sample Question 1:- Üstdil becerileri: cümlelerdeki anlam ve/veya dilbilgisi hatalarını anlar ve düzeltir; doğru veya yanlış olduğunu belirtir. *Metalinguistic skills: Understands semantic and/or grammar flaws in a sentence, indicates whether right or wrong.*

Prosedür : “Beni dikkatle dinle. Sana iki cümle söyleyeceğim. Bunlardan bir tanesi saçma. Bana doğru olan cümleyi söylemeni istiyorum. *Listen to me. I will rephrase two sentences. One of them is illogical/nonsense. I want you to tell me the right one.*

Örnek: “Gece gökyüzünde güneş parlar. / Gece gökyüzünde ay parlar. Evet, gece gökyüzünde ay parlar. Şimdi devam edelim.” “*Sun shines in the sky at night /Moon shines in the sky at night. Yes, Moon shines in the sky at night. Let’s go on.*”

1. Çamurda yüzerim. - Denizde yüzerim.\* \_\_\_\_ (*Swim in mud/in sea*)

2. Caddenin ortasından yürünür. - Caddenin ortasından yürünmez.\* \_\_\_\_

*walk in the middle of street /not walk in the middle of the street.*

3. Kuşlar havada uçar.\* - Kuşlar havada koşar. \_\_\_\_

*Birds fly in the air /Birds run in the air.*

Sample Question 2:- Giderek karmaşıklaşan sözcükleri anlar. *Understands complex vocabulary.*

Prosedür: “Bu resimlere bak ve söylediğimin resmini göster.” “*Look at the pictures and show me what I say*”

1. Taşıt \_\_\_\_ *Vehicle*
2. Gölgelek \_\_\_\_ *Shadow*
3. Salyangoz \_\_\_\_ *Snail*
- 4 Koşu \_\_\_\_ *Race*

Expressive Subtest:

Sample Question 1- Özne-yüklem uyumunu doğru olarak ifade eder. *Expresses subject-verb agreement correctly.*

Prosedür : “Beni dikkatle dinle. Birkaç cümle söyleyeceğim ama bu cümlelerin bazı sözcükleri eksik, senden cümlenin eksik olan kısmını tamamlamanı istiyorum“ “*Listen to me carefully, I will read you a few sentences but some sentences lack some words, I want you to complete these missing words.*”

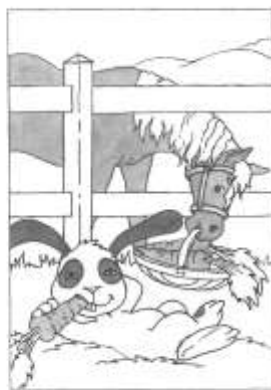
1. Çocuklar oynuyorlar. Ben de ..... *Children are playing, I am...*
2. Ayşe koşmayı seviyor. Birazdan koşacak. Kardeşi de onunla ..... *Ayşe likes to run. She will run little later. Her brother will...*
3. Babaannem masal anlatmayı sever ama dedem ..... *My grandmother likes to tell stories but my grandfather.....*

Sample Question 2:- Resimdeki olayları belirli bir sıraya koyarak doğru cümlelerle betimler. *Puts the story cards in a temporal order and depicts them with relevant sentences.*

Prosedür: ”Resimlere bak, onları istediğin gibi sırala ve onlardan bana bir hikaye oluştur. “İstedığın resimden başlayıp bir hikâye anlatabilirsin” deyin.

*Look at the pictures, you can arrange them in an order such that they form a story. You can start and tell a story whenever you want.*

## APPENDIX B. HORSE-BUNNY STORY PICTURES





## APPENDIX C. SAMPLE NARRATIVE SCORES

A.İ.B. (4;10)

Bir tavşan var [There is a bunny]	1....character
şey havuç topluyormuş, [he was grabbing carrots]	1....initiating event
Sonra bir yere gitmiş [he went somewhere]	
Yatmış [lied down]	
bir tane havuc görmüş [he saw a carrot]	
çok acıkmış karnı [he was very hungry]	
O yerken [while he was eating]	
tavşan farketmemiş [bunny did not realize]	
o sırada at almış gitmiş [a horse took and went]	1....problem
Sonra tavşan farketmemiş [then bunny did not realize]	
At onun havuçlarını yemiş [horse ate his carrots]	

Narrative Structure Score:

3

Narrative Quality Score:

3 (Relating Events)

A.E. (4;8)

Birgun bir tavşan havuç yiyormuş [One day a bunny was eating carrot]	1....character
az sonra at gelmiş [then a horse came]	1....character
havuçları götürmüş [he took the carrots away]	1....problem
Tavşan da peşinden gelmiş [Bunny came after him]	1....complication
sonra da tavşana vermiş havuçları [then he gave carrots to the bunny]	1....resolution

Narrative Structure Score:

4 (1 for two characters)

Narrative Quality Score:

3 (Relating Events)

A.Ş. (5;1)At havuç taşıyormuş [Horse was carrying carrots]	1....character
tavşan da yiyormuş [Bunny was eating them]	1....character
At koşuyormuş [Horse was running]	
tavşan da havuç yiyormuş [Bunny was eating carrots]	
At tavşanın yanına havuçları koymuş [Horse put carrots beside the bunny]	
At havuçları alıp koşmuş [horse took away the carrots and ran]	1...problem
Köpek de koşmuş. [Dog ran,too]	

Narrative Structure Score:

2

Narrative Quality Score:

3 (Picture Description)

## APPENDIX D. DEMOGRAPHIC FORM

## DEMOGRAFİK FORM

Merhaba,

Boğaziçi Üniversitesi Gelişim Psikolojisi Yüksek Lisans Programı çerçevesinde, 4- 6 yaş arası çocuklarda dil gelişimiyle ilgili bir araştırma yapıyoruz. .Araştırma Boğaziçi Üniveristesi Psikoloji Bölümü öğretim üyesi Doç. Dr. Feyza Çorapçı başkanlığında yüksek lisans öğrencisi Aslı Aktan Erciyes tarafından yürütülmektedir. Bu araştırmanın amacı, 4-6 yaş arasındaki çocukların dil ve iletişim becerilerini incelemektir.

Araştırma okul saatleri içinde çocuğunuzla birebir oyun-/ aktivite şeklinde yapılacak ve elde edilen veriler bilimsel bir araştırmada istatistiksel analize tabi tutulacaktır. Çocuğunuzun tüm bilgileri ve verileri gizli olarak tutulacak ve üçüncü kişilerle paylaşılmayacaktır.

Çocuğunuzun araştırmaya katılmasını kabul ediyor musunuz?

1> Evet

2>Hayır

**Ad, Soyad:**

**Tarih:**

Çocuğun adı, soyadı	:
Cinsiyeti	KIZ <input type="checkbox"/> ERKEK <input type="checkbox"/>
Doğum Tarihi	

Soru						
1	Nerede doğdunuz?	2> Yurtiçi (yazınız)..... 5> Yurtdışı (yazınız) ..... .....				
2	Bugüne kadar en uzun yaşadığınız yer? Ne süreyle burada yaşadınız??	1>Yurtiçi (yazınız)..... 5>Yurtdışı (yazınız) ..... .....				
3	Şu an oturduğunuz şehirde kaç yıldır yaşıyorsunuz?	.....				
4	Toplam kaç tane çocuğunuz var?					
		İsim	Doğum tarihi Gün/Ay/Yıl veya Yaş	Cinsiyet	Okula gidiyor mu?	Kaçıncı sınıfa devam ediyor?
1. çocuk	Yazınız	___/___/___	1> Kız 2> Erkek	1>Evet 2>Hayır	Yazınız	
2. çocuk	Yazınız	___/___/___	1> Kız 2> Erkek	1>Evet 2>Hayır	Yazınız	
3. çocuk	Yazınız	___/___/___	1> Kız 2> Erkek	1>Evet 2>Hayır	Yazınız	
4. çocuk	Yazınız	___/___/___	1> Kız 2> Erkek	1>Evet 2>Hayır	Yazınız	
	Bundan sonraki soruları lütfen anketin başında ismini yazdığınız çocuğunuz için cevaplayınız					
5	Hamileliğiniz sırasında veya doğum anında bebekle ilgili herhangi bir problem				1> Evet	

	yaşadınız mı? Evet ise "Nedir?"	_____ - _____ - 2> Hayır			
6	Çocuğunuz zamanında mı doğdu??	1> Zamanında 2> Erken 3> Geç			
7	Doğduğunda kilosu normale göre nasıldı?	1> Düşük 2> Yüksek 3> Normal			
8	Çocuğunuzun soğuk algınlığı gibi geçici hastalıklar hariç, günlük yaşamını etkileyen herhangi bir sağlık problemi var mı?	1> Evet 2> Hayır ise <b>soru 6</b> ya geçiniz			
9	Bu problemin ne olduğunu kısaca belirtiniz.	_____ -			
10	Bazı anneler iş, okul, kurs ya da başka sebeplerle çocukları ile sürekli olarak beraber olamazlar. Bu durumda çocuklara anneleri dışında düzenli bir şekilde bakan başka birisi ya da birileri vardır. Bazı çocuklar da düzenli bir şekilde yuvaya ya da kreşe giderler. Şimdi soracağım sorular çocuğunuzun siz yokken birlikte vakit geçirdiği kişiler ve yerler hakkında.				
1 yaşından beri çocuğunuza sizden başka bakmış olan kişileri düşünün. Çocuğunuza en az birkaç ay boyunca <b>düzenli olarak</b> (yani birkaç ay boyunca en az haftada birkaç gün ve günde 2 saatten fazla) bakan kimse oldu mu?		1>Evet 2>Hayır <b>Soru 11e geçin.</b>			
Çocuğunuza bugünden başlayarak 1 yaşına kadar (en yakın tarihtekinden en eski tarihtekine doğru) kadar bakmış olan kişileri sırası ile düşünüp bu soruyu ona göre cevaplamanızı istiyoruz. Eğer çocuğunuza aynı anda birden fazla kişi baktıysa, lütfen çocuğunuz en çok kiminle vakit geçirdiyse onu belirtin.					
	<b>Çocuğunuzun Bakım Sağlayan Kişi/ Yuva</b>	<b>Bu kişinin/ yuvanın bakma süresi</b>	<b>Kişi ise</b>	<b>Bu kişinin bakma yeri</b>	<b>Ağırlıklı Konuştu ğu Dil (Daire içine alınız)</b>
1	1>Kişi 2>Yuva	_____ Toplam süre:	1>Akraba (Yakınlık derecesini yazınız) _____ 2>Bakıcı	1>Çocuğun evinde 2>Bakan kişinin evinde 3>Diğer_____	1>Türkçe

		Yıl ..... Ay.....		—	2>İngilizce 3>Diğer .....
2	1>Kişi 2>Yuva	Toplam süre: Yıl ..... Ay.....	1>Akraba (Yakınlık derecesini yazınız) 2>Bakıcı	1>Çocuğun evinde 2>Bakan kişinin evinde 3>Diğer .....	1>Türkçe 2>İngilizce 3>Diğer .....
3	1>Kişi 2>Yuva	Toplam süre: Yıl ..... Ay.....	1>Akraba (Yakınlık derecesini yazınız) 2>Bakıcı	1>Çocuğun evinde 2>Bakan kişinin evinde 3>Diğer .....	1>Türkçe 2>İngilizce 3>Diğer .....
4	1>Kişi 2>Yuva	Toplam süre: Yıl ..... Ay.....	1>Akraba (Yakınlık derecesini yazınız) 2>Bakıcı	1>Çocuğun evinde 2>Bakan kişinin evinde 3>Diğer .....	1>Türkçe 2>İngilizce 3>Diğer .....
5	1>Kişi 2>Yuva	Toplam süre: Yıl ..... Ay.....	1>Akraba (Yakınlık derecesini yazınız) 2>Bakıcı	1>Çocuğun evinde 2>Bakan kişinin evinde 3>Diğer .....	1>Türkçe 2>İngilizce 3>Diğer .....
11	Evde çocuğunuz ile Türkçeden başka bir dil kullanılıyor mu? Lütfen işaretleyiniz “Hayır ise 24.. Soruya geçiniz		Evet ise “hangi dil? 1> İngilizce..... 4>Arapça..... 2> Fransızca ..... 5>Diğer ..... 3> Almanca.....		
12	Evde kim(ler) çocuğunuzla Türkçeden başka dilleri konuşuyor? (yanlarına çarpı koyunuz, konuştukları dili yanına yazınız))		Konuştuğu ikinci dil Anne-----/----- Baba-----/----- Kardeş-----/----- Bakıcı-----/----- Anneanne, Babaanne-----/----- Dede, Büyükbaba-----/-----		

13	Siz çocuğunuzla en çok hangi dilde konuşuyorsunuz?	1>Türkçe..... 2> İngilizce..... 3> ..... 4> Almanca..... 5> Arapça ..... 6> Diğer ..... Fransızca .....
14	Çocuğunuzla konuştüğunuz ikinci dili ne kadar iyi konuşuyorsunuz?	1)Az derecede..... 2) Orta derecede..... 3) İyi derecede..... 4) Çok iyi derecede.....
15	Sizin dışınızda çocuğunuzun bakımıyla ilgilenen kişi varsa, bu kişinin (büyükanne-teyze-bakıcı) kullandığı ikinci dildeki yetkinliğini ne seviyededir?	1)Az derecede..... 2) Orta derecede..... 3) İyi derecede..... 4) Çok iyi derecede.....
16	Evde Türkçeden sonra en çok kullanılan dil nedir?	1> İngilizce..... 2> ..... 3> Almanca..... 4>Arapça..... 5>Diğer ..... Fransızca.....
Lütfen aşağıdaki 17.-23. Soruları bu ikinci dili düşünerek yanıtlayınız		
17	Çocuğunuz <u>evde</u> Türkçe dışındaki dile ortalama <u>günde</u> kaç saat maruz kalıyor?	1) 0-1 saat 2) 1-2 saat 3) 2-3 saat 4) 3-4 saat 5) 4 saatten fazla
18	Çocuğunuz evde Türkçe dışındaki dili ortalama kaç saat konuşuyor?	1) 0-1 saat 2) 1-2 saat 3) 2-3 saat 4) 3-4 saat 5) 4 saatten fazla
19	Çocuğunuz yandaki aktiviteleri,Türkçe dışındaki dilde, günde ne kadar süreyle yapıyor?	Müzik dinleme 1)Hiç 2)30 dak.dan az 3)1 saatten az 4) 2 saatten az 5) 3 saat ve üstü  TV/DVD seyretme 1)Hiç 2)1 saatten az 3) 2 saatten az 4) 3 saatten az 5) 4 saat ve üstü  Kitap Okunması 1)Hiç 2)30 dak.dan az 3)1 saatten az 4) 2 saatten az 5) 3 saat ve üstü  Kardeş/ Abla-Abiyle konuşma 1)Hiç 2)1 saatten az 3) 2 saatten az 4) 3 saatten az 5) 4 saat ve üstü



		Büyükanne/Büyükbabayla konuşma 1) Hiç 2) 1 saatten az 3) 2 saatten az 4) 3 saatten az 5) 4 saat ve üstü							
20	Çocuğunuz evde yabancı bakıcıyla ise, bu kişiyle hangi dili konuşuyor?	1> İngilizce 2> 5> Diğer _____ 3> Almanca				4> Arapça Fransızca			
21	Çocuğunuz evde yabancı bakıcıyla ise, Türkçe dışındaki bu dili ne kadar süreyle konuşuyor?	1) 0-1 saat 2) 1-2 saat 3) 2-3 saat				4) 3-4 saat 5) 4 saatten fazla			
22	Hangi durumlarda çocuğunuz Türkçe dışındaki dilde konuşur?	Yazınız.....							
23	Siz hangi durumlarda çocuğunuzla Türkçe dışındaki dilde konuşursunuz?	Yazınız.....							
24	Çocuğunuz okulda İngilizceyi ne kadar anlıyor?	%0 / %25 / %50 / %75 / %100							
25	Çocuğunuz okulda ne kadar İngilizce konuşuyor?	%0 / %25 / %50 / %75 / %100							
26	Çocuğunuz okulda ne kadar Türkçe konuşuyor?	%0 / %25 / %50 / %75 / %100							
27	Çocuğunuz evde ne kadar İngilizce konuşuyor?	%0 / %25 / %50 / %75 / %100							
28	Çocuğunuz evde ne kadar Türkçe konuşuyor?	%0 / %25 / %50 / %75 / %100							
29	Çocuğunuzun bu dili ne kadar öğreneceğini düşünüyorsunuz?	Türkçe kadar iyi..... Türkçe'den iyi.....							
		Türkçe				İngilizce			
	Lütfen aşağıdaki aktivitelerin çocuğunuzla yanda belirtilen dillerde ne sıklıkla yapıldığını işaretleyiniz (Anne/Baba veya başkasıyla)	Hiç	Ayda iki kere	Haftada 1-2 kere	Hemen her gün	Hiç	Ayda iki kere	Haftada 1-2 kere	Hemen her gün
30	Hikaye Anlatma	0	1	2	3	0	1	2	3
31	Kitap Okuma	0	1	2	3	0	1	2	3

32	Şarkı Söyleme	0	1	2	3	0	1	2	3
33	Şarkı Dinleme	0	1	2	3	0	1	2	3
34	TV izleme	0	1	2	3	0	1	2	3
35	DVD izleme	0	1	2	3	0	1	2	3
36	Anne baba birlikte mi?		Evet----- Hayır-----						
37	Eğitim durumunuz nedir?		İlkokul.....Üniversite..... Ortaokul.....Yüksek Lisans..... Lise.....Doktora.....						
38	Eşinizin eğitim durumu nedir?		İlkokul.....Üniversite..... Ortaokul.....Yüksek Lisans..... Lise.....Doktora.....						
39	Evinizde çocuklar dahil kaç kişi yaşıyor?		(Yazınız) .....						
40	Evinizde siz, eşiniz ve çocuklarınız dışında başka bireyler var mı? (Bakıcı dahil)		1>Evet    2>Hayır						
41	Bu kişinin/kişilerin çocuğa göre akrabalık ilişkisi nedir?		1> Dayı                      5>Anneanne/babaanne 2> Teyze                    6>Dede 3> Amca                    7>Bakıcı 4> Hala                     8>Diğer_____						
42	Mesleğiniz?		(Yazınız) ..... .....						
43	Çalışıyor musunuz? EVET            HAYIR, evet se haftada kaç saat çalışıyor sunuz?		(Yazınız) ..... ..... ..						
44	İş hayatınızla ilgili yandaki seçeneklerden hangisi sizi en iyi tanımlar?		1>Bir kurumda çalışıyor 2>Emekli 3>Ev kadını 4>Öğrenci veya kursa gidiyor 5>İş arıyor, bulsa çalışmak istiyor 6>Gönüllü çalışıyor						

45	Eşinizin mesleği nedir?	(Yazınız) ..... .....
46	İş hayatınızla ilgili yandaki seçeneklerden hangisi eşinizi en iyi tanımlar?	1>Bir kurumda çalışıyor 2>Emekli 3>Öğrenci veya kursa gidiyor 4>İş arıyor, bulsa çalışmak istiyor 5>Gönüllü çalışıyor .....
47	Oturduğunuz ev size mi ait?	1>Evet → 2>Hayır
48	Oturduğunuz eve kira ödüyor musunuz?	1>Evet 2>Hayır
49	Evinizde yaşayan tüm kişilerin yiyecek, içecek, kira, gaz, elektrik, ulaşım, okul, taksitler, doktor, veya ilaç gibi pek çok masrafları olabilir. Bunların hepsini toplayacak olursak evinizde yaşayan kişilerin aylık toplam masrafları ne kadardır? ----- TL	1. 2000 TL den az 2. 2000 TL -3000 TL arası 3. 3000 TL-4000 TL arası 4. 4000 TL- 5000 TL arası 5. 5000 TL den fazla

## TABLES

Table 1. Mean age and standard deviations by age-group, school type and gender

	English Instruction Group				Turkish Instruction Group			
	Female		Male		Female		Male	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age 4	55.90	4.36	54.08	4.23	56.20	2.04	55.06	3.28
Age 5	67.06	3.34	68.80	3.49	67.27	3.41	67.53	3.50
N	27		23		21		33	

Table 2. Story Components, Definitions and an Example

Story Components	Definition	Example
Setting:	Information of time and place at the beginning of the story.	<i>[bahcede] çukurlardan havuç koparıp</i> 'grabbing carrots from the holes in the [garden]
Character	Introduction of main characters	<i>[Tavşan ]</i> 'A Bunny'
Initiating Event	A situation or an event from which the problem can emerge	<i>sonra da[ at havuç yiyormuş]</i> 'then the [horse was eating the carrots]'
Problem	An action or happening that sets up a problem for the story	<i>Ondan sonra da [at havuçları almış]</i> 'Then the [horse took the carrots]'
Complication – Attempt at action:	An action or plan of the protagonist to solve the problem	<i>[arkasından koşmuş]</i> 'ran after him'
Resolution	The result of the protagonist's actions that solves the problem	<i>Sonra havuçları [birlikte yemişler]</i>
Motivation or Internal Response	The motives, reasons for action or emotional response of the protagonist	<i>Tavşan da at havuçları aldığı için [kızmış]</i> 'Bunny [was angry with horse] for taking the carrots'

Table 3. Linguistic structure coding for story by T.D. (5;10) given in example

	Infinitival Clause	Multiclaue utterance- Coordinate	Multiclaue utterance- Subordinate	Multiclaue utterance- Subordination with converbs
Tavşan yola [gitmiş]		1		
havuç [topluyordu]				
O zamana kadar at [koşa koşa]				1
havuçları sepetine [alarak]				1
[koşmuştu]				
ama tavşan [farketmeden]		1		1
at [koşmuştu]				
Sonra onu [farkederek ]		1		1
hemen tavşan arkasına [bakıp]				1
hey neler [alıyorsun] [demişti]				
Sonra at da [kaçmıştı]		1		
sonra onu [yakalayıp ]		1		1
niye [aldın] havuçları				
beraber [paylaştırdın]				
[sorsaydın]				
Ben [sormak]	1			
[ istemiyorum ]				
ben yabancı bir[atım] [dedi]				
Total	1	3	2	6
Total Complexity Score	13			

Table 4. Means and Standard Deviations for Frequency of Activities in English at Home, Mother's Years of Education and Family's Income

	English Instruction Group				Turkish Instruction Group			
	Age 4		Age 5		Age 4		Age 5	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Frequency of Story activities - English	8.55	8.26	11.20	8.41	4.50	7.59	2.58	6.11
Frequency of Singing activities - English	15.65	11.03	20.20	9.70	10.00	11.03	7.31	7.65
Frequency of TV-DVD - English	8.00	8.16	9.40	10.16	7.46	8.12	2.92	3.87
% of English Spoken at home	12.50	12.82	24.00	14.74	14.83	14.36	12.12	15.89
Mother's Education	14.80	2.67	15.19	2.27	14.40	3.24	15.23	2.67
Income	5.00	0.00	4.65	0.93	4.54	0.83	4.04	1.00
N	20		26		24		26	

Table 5. Means and Standard Deviations for Frequency of Activities in English at Home, Mother's Years of Education and Family's Income, Chi-square analysis

	English Instruction Group		Turkish Instruction Group		$X^2$	$p$
	Mean	SD	Mean	SD		
Frequency_Story_E	9.88	8.33	3.43	6.81	45.61	0.001
Frequency_Sing_E	17.93	10.51	8.43	9.41	25.45	0.001
Frequency_TV_E	8.70	9.13	5.00	6.59	13.49	0.140
Speak_E	18.25	14.83	13.16	15.05	4.38	0.496
Mother's Education (5-point likert scale)	4.83	.68	4.25	.96	7.01	0.135
Income	4.08	.76	4.04	.92	17.79	0.001



Table 6. Correlations among Dependent and Predictor Variables ( $n=104$ )

	TELD- English Recepti ve score	TELD- English Expressiv e score	TELD- Turkish Recepti ve score	TELD- Turkish Express ive score	Narrative Quality	Narrative Structure	Infinitival_ Clause	Multiclaue _utterance_ Coordinate	Multiclaue _utterance_ Subordinate	Multiclaue _utterance_ on_ converbs	Total Complexity	DCCS Score	wait score (snack+ gift)	Bear/ Dragon	Age in mont hs	Gende r (1=fem ale, 2=male )	Mother's Education	Frequency Story English	Frequency Singing English	Freque ncy TV English
TELD-English Expressive score	.778***																			
TELD-Turkish Receptive score	.323***	.288**																		
TELD-Turkish Expressive score	.209*	.276**	.554***																	
Narrative Quality	.126	.007	.275**	.252*																
Narrative Structure	.155	.131	.336***	.407***	.592***															
Infinitival_ Clause	.033	.039	.128	-.028	.206*	.219*														
Multiclaue_ utterance_ Coordinate	.085	.139	.061	.003	.116	.010	.064													
Multiclaue_ utterance_ Subordinate	.121	.124	.301**	.147	.317**	.391***	.248*	.180												
Multiclaue_ utterance_ Subordination_ converbs	-.022	-.019	.177	.208*	.239*	.274**	.195*	.038	.047											
Total Complexity Score	.082	.109	.286**	.166	.376***	.386***	.571***	.518***	.580***	.657***										
DCCS score	.191	.290**	.148	.129	.057	.025	.039	.028	.132	.100	.133									
wait score (snack+gift)	.081	.176	.070	.106	.285**	.141	-.005	.085	.136	.018	.097	.273**								
Bear/Dragon	.122	.156	.071	.082	-.059	-.048	-.094	-.038	-.081	-.084	-.126	.239*	.224*							
Age in months	.455***	.384***	.629***	.501***	.261**	.452***	.104	-.014	.261**	.174	.230*	.158	.115	.119						
Gender (1=female, 2=male)	-.218*	-.247*	-.123	-.120	-.165	-.104	-.107	-.056	.005	-.011	-.063	-.225*	-.073	-.210*	-.102					

Table 6. Continued

Mother's education (years)	.022	.038	.246*	.075	-.007	.031	-.070	.115	.159	.006	.088	-.036	-.201	-.066	.122	-.014			
Frequency Story English	.246*	.325**	-.221*	-.007	-.017	-.029	-.155	-.073	.030	-.134	-.144	.190	.243*	.080	.003	-.139	-.096		
Frequency Singing English	.251*	.261*	-.225*	-.134	-.010	-.006	-.102	.060	-.034	-.118	-.088	.068	.044	.051	-.052	-.239*	-.087	.457***	
Frequency TV English	.272**	.307**	-.250*	-.177	-.088	-.008	-.122	.065	-.097	-.085	-.100	-.053	.007	-.050	-.074	-.002	-.006	.387***	.275**
% of English Spoken	.068	.020	.126	.190	.054	.090	-.164	-.012	-.960	.180	.055	.177	.308*	.048	-.007	-.029	-.178	.407**	.210* .254*

Table 7. Means and Standard Deviations of TEDİL/TELD-3 Language Competence Test Scores by Instruction Group, Age and Gender

	Turkish Instruction Group								English Instruction Group							
	4 year olds				5 year olds				4 year olds				5 year olds			
	Female N=10		Male N=16		Female N=17		Male N=11		Female N=10		Male N=13		Female N=11		Male N=16	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
TEDİL Receptive Score	28.90	3.44	28.00	4.07	32.64	2.58	32.47	2.90	27.70	3.97	26.92	3.45	32.82	3.28	32.50	2.01
TEDİL Expressive Score	29.00	3.62	29.13	4.06	33.45	2.84	33.18	3.30	29.60	4.35	28.58	3.37	33.59	4.17	32.40	2.95
TELD3- Receptive Score	11.70	2.00	10.50	2.61	13.91	3.39	15.47	4.81	19.60	6.87	16.00	6.63	25.76	4.46	24.50	3.41
TELD3-Expressive Score	10.40	1.64	10.31	2.12	12.27	5.60	12.35	3.12	18.80	5.71	16.92	5.28	27.76	4.80	24.10	6.50
TELD3- Receptive Std Score	63.70	7.61	62.19	5.49	62.91	7.60	66.59	12.48	86.60	21.45	76.92	17.42	93.65	14.65	86.70	8.97
TELD3-Expressive Std Score	61.00	3.43	61.69	3.55	57.18	20.59	60.35	6.08	83.40	19.42	61.00	3.43	102.71	16.76	89.70	18.54

Table 8. Hierarchical Regression Analyses for TEDiL Receptive Scores as Dependent Variable

Step	$\Delta R^2$	DF	<i>F-Change</i>	<i>B</i>	SE	$\beta$	
1	0.12	3, 87	3.94*				
				-1.04	0.84	-0.13	
				1.02	0.47	0.22	*
				0.42	0.16	0.27	**
2	0.32	1,86	49.98***				
				-0.66	0.67	-0.08	
				0.30	0.39	0.06	
				0.32	0.13	0.21	*
				0.35	0.05	0.59	***
3	0.12	4, 82	5.51***				
				-1.02	0.63	-0.12	
				0.13	0.37	0.03	
				0.33	0.12	0.21	**
				0.34	0.05	0.58	***
				-0.11	0.05	-0.22	*
				-0.05	0.03	-0.13	
				-0.06	0.04	-0.12	
				0.07	0.02	0.25	**
4	0.06	2,80	5.73 <sup>ns</sup>				
				-0.66	0.61	-0.08	
				0.24	0.35	0.05	
				0.34	0.11	0.22	**
				0.27	0.05	0.45	***
				-0.13	0.04	-0.25	**
				-0.07	0.03	-0.18	*
				-0.10	0.04	-0.18	*
				0.06	0.02	0.23	**
				-0.93	0.72	-0.11	

Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 9. Hierarchical regression analyses for TEDiL Expressive Scores as Dependent Variable

Step	$\Delta R^2$	DF	<i>F-Change</i>	<i>B</i>	SE	$\beta$
1	0.02	3, 87	0.71 <sup>ns</sup>			
Gender				-0.91	0.91	-0.11
Income				-0.41	0.51	-0.09
Mother's Education				0.15	0.17	0.10
2	0.25	1,86	30.22***			
Gender				-0.56	0.79	-0.07
Income				0.25	0.46	0.05
Mother's Education				0.07	0.15	0.04
Age in months				0.32	0.06	0.52 ***
3	0.05	4, 82	1.45 <sup>ns</sup>			
Gender				-0.76	0.80	-0.09
Income				0.45	0.47	0.09
Mother's Education				0.05	0.15	0.03
Age in months				0.31	0.06	0.51 ***
Frequency-Story-English				0.05	0.06	0.10
Frequency-Singing-English				-0.07	0.04	-0.18
Frequency-TV-English				-0.08	0.05	-0.14
% of English spoken at home				0.00	0.03	0.01
4	0.00	2,80	.07 <sup>ns</sup>			
Gender				-0.74	0.81	-0.09
Income				0.42	0.49	0.09
Mother's Education				0.05	0.15	0.03
Age in months				0.31	0.06	0.51 ***
Frequency-Story-English				0.05	0.06	0.09
Frequency-Singing-English				-0.07	0.04	-0.19
Frequency-TV-English				-0.08	0.05	-0.15
% of English spoken at home				0.00	0.03	0.01
School Type				-0.25	0.92	-0.03

Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 10. Hierarchical regression analyses for TELD3- (English) Receptive Scores as Dependent Variable

Step		$\Delta R^2$	DF	F- Change	B	SE	$\beta$	
1		0.05	3, 87	1.54				
	Gender				-3.09	1.45	-0.23	*
	Income				-0.26	0.82	-0.03	
	Mother's Education				-0.05	0.27	-0.02	
2		0.20	1,86	22.26				
	Gender				-2.60	1.30	-0.19	*
	Income				0.68	0.76	0.09	
	Mother's Education				-0.18	0.24	-0.07	
	Age in months				0.46	0.10	0.46	***
3		0.13	4, 82	4.07				
	Gender				-2.00	1.25	-0.15	
	Income				0.20	0.74	0.03	
	Mother's Education				-0.09	0.23	-0.04	
	Age in months				0.47	0.09	0.47	***
	Frequency-Story-English				0.05	0.09	0.06	
	Frequency-Singing-English				0.11	0.07	0.18	
	Frequency-TV-English				0.18	0.08	0.21	*
	% of English spoken at home				0.01	0.04	0.03	
4		0.25	2,80	53.35				
	Gender				-1.44	0.98	-0.11	
	Income				-0.88	0.59	-0.11	
	Mother's Education				-0.12	0.18	-0.05	
	Age in months				0.44	0.07	0.44	***
	Frequency-Story-English				-0.07	0.07	-0.08	
	Frequency-Singing-English				0.03	0.05	0.04	
	Frequency-TV-English				0.15	0.07	0.18	*
	% of English spoken at home				0.01	0.03	0.03	
	School Type				-8.18	1.12	-0.60	***

Note: \*p < .05, \*\*p < .01, \*\*\*p < .001

Table 11. Hierarchical regression analyses TELD3- (English) Expressive Scores as Dependent Variable

Step	$\Delta R^2$	DF	F-Change	B	SE	$\beta$	
1	0.05	3, 87	1.60ns				
				Gender	-2.92	1.54	-0.20
				Income	0.63	0.87	0.08
				Mother's Education	-0.08	0.29	-0.03
2	0.12	1,86	12.19**				
				Gender	-2.52	1.45	-0.17
				Income	1.40	0.85	0.17
				Mother's Education	-0.18	0.27	-0.07
				Age in months	0.38	0.11	0.36 ***
3	0.16	4, 82	4.87***				
				Gender	-1.85	1.38	-0.13
				Income	0.90	0.81	0.11
				Mother's Education	-0.05	0.25	-0.02
				Age in months	0.38	0.10	0.36 ***
				Frequency-Story-English	0.13	0.10	0.15
				Frequency-Singing-English	0.09	0.07	0.13
				Frequency-TV-English	0.18	0.09	0.20
				% of English spoken at home	0.04	0.05	0.09
4	0.38	2,80	103.78***				
				Gender	-1.12	0.92	-0.08
				Income	-0.50	0.55	-0.06
				Mother's Education	-0.09	0.17	-0.03
				Age in months	0.34	0.07	0.32 ***
				Frequency-Story-English	-0.02	0.07	-0.03
				Frequency-Singing-English	-0.03	0.05	-0.04
				Frequency-TV-English	0.14	0.06	0.16 *
				% of English spoken at home	0.04	0.03	0.09
				School Type	-10.66	1.05	-0.73 ***

Table 12. Total number of narrative clauses, words, words/clauses by School type and Age.

	Turkish Instruction Group				English Instruction Group			
	4 year olds		5 year olds		4 year olds		5 year olds	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Total Clauses	6.76	2.70	10.18	5.76	8.30	4.99	7.11	2.83
Total Words	22.28	8.16	32.43	16.43	28.61	19.48	24.41	9.42
Words/Clauses	3.41	.99	3.44	.90	3.37	.64	3.42	.86



Table 13. Means and SDs for the Narrative Task Variables by School type, Age and Gender

	Turkish Instruction Group								English Instruction Group							
	4 year olds				5 year olds				4 year olds				5 year olds			
	Female N=10		Male N=15		Female N=17		Male N=11		Female N=10		Male N=13		Female N=11		Male N=16	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Narrative Quality	2.70	0.68	2.60	0.63	3.55	0.52	2.94	0.43	2.80	0.79	2.62	0.77	2.94	0.56	3.00	0.67
Narrative Structure	3.10	1.37	3.67	1.40	5.82	1.17	4.24	1.39	3.20	1.81	3.15	1.40	4.53	0.87	4.80	1.39
Linguistic Form																
Infinitival Clause	0.60	1.58	0.20	0.41	0.73	0.79	0.47	0.72	0.30	0.48	0.38	0.51	0.47	0.62	0.40	0.52
Multiclaue Utterance-Coordinate	0.60	0.97	0.27	0.46	0.36	0.67	0.35	0.79	0.30	0.48	1.23	1.01	1.00	1.06	0.30	0.48
Multiclaue Utterance-Subordinate	0.60	0.70	0.33	0.72	1.18	0.98	1.06	0.97	0.40	0.70	0.92	0.95	0.88	0.78	0.90	0.88
Multiclaue Utterance-Subordination with Converbs	0.50	0.70	0.80	1.46	2.27	1.42	0.94	1.29	0.60	0.70	1.15	1.21	0.88	1.32	1.40	1.35
Total Complexity Score	2.30	2.16	1.60	1.50	4.55	2.25	2.82	2.40	1.60	1.65	3.69	2.66	3.24	1.82	3.00	1.49

Table 14. Hierarchical Regression Analyses for Narrative Quality Scores as Dependent Variable

Step		$\Delta R^2$	DF	F-Change	B	SE	$\beta$	
1		0.10	3, 87	3.19*				
	Gender				0.32	0.14	0.24	*
	Income				0.19	0.08	0.25	*
	Mother's Education				0.00	0.03	0.01	
2		0.09	1,86	12.19**				
	Gender				0.30	0.13	0.22	*
	Income				0.12	0.08	0.16	
	Mother's Education				-0.01	0.02	-0.03	
	Age in months				0.03	0.01	0.31	**
3		0.01	4, 82	0.29ns				
	Gender				0.28	0.14	0.21	*
	Income				0.13	0.08	0.17	
	Mother's Education				0.00	0.03	-0.02	
	Age in months				0.03	0.01	0.30	**
	Frequency-Story-English				0.00	0.01	-0.04	
	Frequency-Singing-English				0.00	0.01	0.05	
	Frequency-TV-English				-0.01	0.01	-0.09	
	% of English spoken at home				0.00	0.00	0.07	
4		0.02	2,80	.91ns				
	Gender				0.30	0.14	0.22	*
	Income				0.12	0.08	0.15	
	Mother's Education				0.00	0.03	-0.02	
	Age in months				0.03	0.01	0.33	**
	Frequency-Story-English				0.00	0.01	-0.01	
	Frequency-Singing-English				0.00	0.01	0.06	
	Frequency-TV-English				-0.01	0.01	-0.07	
	% of English spoken at home				0.00	0.01	0.09	
	TELD3-Receptive Score				0.01	0.02	0.09	
	TELD3-Expressive Score				-0.02	0.02	-0.21	

Note: \*p < .05, \*\*p < .01, \*\*\*p < .001

Table 15. Hierarchical Regression Analyses for Narrative Structure Scores as Dependent Variable

Step		$\Delta R^2$	DF	F-Change	B	SE	$\beta$
1		0.04	3, 87	1.32			
	Gender				-0.26	0.34	-0.08
	Income				-0.37	0.19	-0.21
	Mother's Education				0.02	0.06	0.03
2		0.17	1,86				
	Gender				-0.17	0.31	-0.05
	Income				-0.15	0.18	-0.08
	Mother's Education				-0.01	0.06	-0.02
	Age in months				0.10	0.02	0.44 ***
3		0.02	4, 82	0.40			
	Gender				-0.14	0.32	-0.05
	Income				-0.18	0.19	-0.10
	Mother's Education				0.00	0.06	0.00
	Age in months				0.10	0.02	0.43 ***
	Frequency-Story-English				-0.02	0.02	-0.10
	Frequency-Singing-English				0.01	0.02	0.08
	Frequency-TV-English				0.00	0.02	0.00
	% of English spoken at home				0.01	0.01	0.11
4		0.00	2,80	.18			
	Gender				-0.18	0.33	-0.06
	Income				-0.17	0.19	-0.10
	Mother's Education				0.00	0.06	0.00
	Age in months				0.11	0.03	0.47 ***
	Frequency-Story-English				-0.02	0.02	-0.09
	Frequency-Singing-English				0.01	0.02	0.09
	Frequency-TV-English				0.00	0.02	0.01
	% of English spoken at home				0.01	0.01	0.11
	TELD3-Receptive Score				-0.02	0.04	-0.08
	TELD3-Expressive Score				0.00	0.03	0.01

Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 16. Hierarchical regression analyses for Infinitival Clauses as Dependent Variable

Step		$\Delta R^2$	DF	F-Change	B	SE	$\beta$	
1		0.12	3, 87	3.92*				
	Gender				-0.22	0.15	-0.15	
	Income				0.28	0.09	0.33	**
	Mother's Education				-0.01	0.03	-0.03	
2		0.00	1,86	.15ns				
	Gender				-0.22	0.15	-0.15	
	Income				0.28	0.09	0.34	**
	Mother's Education				-0.01	0.03	-0.03	
	Age in months				0.00	0.01	-0.01	
3		0.05	4, 82	1.10ns				
	Gender				-0.25	0.16	-0.17	
	Income				0.27	0.09	0.32	**
	Mother's Education				-0.02	0.03	-0.07	
	Age in months				0.00	0.01	-0.01	
	Frequency-Story-English				-0.01	0.01	-0.10	
	Frequency-Singing-English				0.00	0.01	-0.02	
	Frequency-TV-English				0.00	0.01	-0.02	
	% of English spoken at home				-0.01	0.01	-0.14	
4		0.01	2,80	.54ns				
	Gender				-0.22	0.16	-0.15	
	Income				0.27	0.09	0.33	**
	Mother's Education				-0.02	0.03	-0.06	
	Age in months				-0.01	0.01	-0.07	
	Frequency-Story-English				-0.01	0.01	-0.11	
	Frequency-Singing-English				0.00	0.01	-0.04	
	Frequency-TV-English				0.00	0.01	-0.05	
	% of English spoken at home				-0.01	0.01	-0.15	
	TELD3-Receptive Score				0.01	0.02	0.07	
	TELD3-Expressive Score				0.01	0.02	0.07	

Note: \*p < .05, \*\*p < .01, \*\*\*p < .001

Table 17. Hierarchical Regression Analyses for Multiclausal Utterance –Coordinate as Dependent Variable

Step		$\Delta R^2$	DF	F-Change	B	SE	$\beta$
1		0.06	3, 87	1.86ns			
	Gender				-0.14	0.18	-0.08
	Income				0.17	0.10	0.18
	Mother's Education				0.04	0.03	0.12
2		0.03	1,86	2.40ns			
	Gender				-0.12	0.18	-0.07
	Income				0.22	0.11	0.23 *
	Mother's Education				0.03	0.03	0.11
	Age in months				0.02	0.01	0.17
3		0.02	4, 82	0.56ns			
	Gender				-0.14	0.19	-0.08
	Income				0.22	0.11	0.22
	Mother's Education				0.03	0.03	0.10
	Age in months				0.02	0.01	0.18
	Frequency-Story-English				-0.02	0.01	-0.17
	Frequency-Singing-English				0.00	0.01	0.05
	Frequency-TV-English				0.01	0.01	0.12
	% of English spoken at home				0.00	0.01	0.01
4		0.02	2,80	1.06ns			
	Gender				-0.12	0.19	-0.07
	Income				0.19	0.11	0.20
	Mother's Education				0.03	0.03	0.10
	Age in months				0.02	0.02	0.16
	Frequency-Story-English				-0.02	0.01	-0.19
	Frequency-Singing-English				0.00	0.01	0.05
	Frequency-TV-English				0.01	0.01	0.10
	% of English spoken at home				0.00	0.01	-0.01
	TELD3-Receptive Score				-0.02	0.02	-0.13
	TELD3-Expressive Score				0.03	0.02	0.24

Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 18 . Hierarchical Regression Analyses Multiclausal Utterance – Subordinate as Dependent Variable

Step		$\Delta R^2$	DF	F-Change	B	SE	$\beta$	
1		0.11	3, 87	3.57*				
	Gender				0.02	0.17	0.01	
	Income				0.27	0.10	0.29	**
	Mother's Education				0.05	0.03	0.18	
2		0.09	1,86	9.56**				
	Gender				0.05	0.16	0.03	
	Income				0.19	0.10	0.20	
	Mother's Education				0.04	0.03	0.14	
	Age in months				0.04	0.01	0.31	**
3		0.04	4, 82	1.09ns				
	Gender				0.11	0.17	0.06	
	Income				0.21	0.10	0.22	*
	Mother's Education				0.05	0.03	0.17	
	Age in months				0.04	0.01	0.29	**
	Frequency-Story-English				0.01	0.01	0.07	
	Frequency-Singing-English				0.01	0.01	0.08	
	Frequency-TV-English				-0.02	0.01	-0.19	
	% of English spoken at home				0.01	0.01	0.10	
4		0.01	2,80	.39ns				
	Gender				0.13	0.17	0.08	
	Income				0.22	0.10	0.24	*
	Mother's Education				0.05	0.03	0.17	
	Age in months				0.03	0.01	0.26	*
	Frequency-Story-English				0.01	0.01	0.06	
	Frequency-Singing-English				0.01	0.01	0.07	
	Frequency-TV-English				-0.02	0.01	-0.21	
	% of English spoken at home				0.01	0.01	0.09	
	TELD3-Receptive Score				0.00	0.02	-0.03	
	TELD3-Expressive Score				0.01	0.02	0.12	

Note: \*p < .05, \*\*p < .01, \*\*\*p < .001

Table 19 . Hierarchical Regression Analyses for Multiclausal Utterance –Subordination with Converbs as Dependent Variable

Step		$\Delta R^2$	DF	F- Change	B	SE	$\beta$	
1		0.00	3, 87	0.09				
	Gender				-0.01	0.25	-0.01	
	Income				-0.07	0.14	-0.06	
	Mother's Education				-0.01	0.05	-0.01	
2		0.01	1,86	0.72				
	Gender				0.00	0.25	0.00	
	Income				-0.04	0.15	-0.03	
	Mother's Education				-0.01	0.05	-0.02	
	Age in months				0.02	0.02	0.10	
3		0.10	4, 82	2.25				
	Gender				-0.07	0.25	-0.03	
	Income				-0.01	0.15	-0.01	
	Mother's Education				0.00	0.05	0.00	
	Age in months				0.01	0.02	0.08	
	Frequency-Story-English				-0.03	0.02	-0.20	
	Frequency-Singing-English				-0.01	0.01	-0.08	
	Frequency-TV-English				-0.01	0.02	-0.07	
	% of English spoken at home				0.02	0.01	0.29	*
4		0.01	2,80	.59				
	Gender				-0.12	0.25	-0.05	
	Income				0.00	0.15	0.00	
	Mother's Education				0.00	0.05	-0.01	
	Age in months				0.02	0.02	0.15	
	Frequency-Story-English				-0.03	0.02	-0.19	
	Frequency-Singing-English				-0.01	0.01	-0.05	
	Frequency-TV-English				-0.01	0.02	-0.04	
	% of English spoken at home				0.02	0.01	0.30	*
	TELD3-Receptive Score				-0.01	0.03	-0.08	
	TELD3-Expressive Score				-0.01	0.03	-0.07	

Note: \*p < .05, \*\*p < .01, \*\*\*p < .001

Table 20 . Hierarchical Regression Analyses for Total Linguistic Complexity Score As Dependent Variable

Step		$\Delta R^2$	DF	F-Change	B	SE	$\beta$
1		0.04	3, 87	1.35ns			
	Gender				-0.36	0.45	-0.08
	Income				0.45	0.26	0.19
	Mother's Education				0.08	0.08	0.10
2		0.05	1,86	4.89*			
	Gender				-0.29	0.44	-0.07
	Income				0.28	0.26	0.12
	Mother's Education				0.06	0.08	0.08
	Age in months				0.07	0.03	0.24 *
3		0.04	4, 82	1.03ns			
	Gender				-0.35	0.45	-0.08
	Income				0.27	0.27	0.11
	Mother's Education				0.06	0.08	0.08
	Age in months				0.07	0.03	0.23 *
	Frequency-Story-English				-0.05	0.03	-0.18
	Frequency-Singing-English				0.00	0.02	0.00
	Frequency-TV-English				-0.02	0.03	-0.07
	% of English spoken at home				0.02	0.02	0.15
4		0.01	2,80	.30ns			
	Gender				-0.34	0.46	-0.08
	Income				0.30	0.27	0.13
	Mother's Education				0.06	0.08	0.08
	Age in months				0.07	0.04	0.22
	Frequency-Story-English				-0.05	0.03	-0.20
	Frequency-Singing-English				0.00	0.02	0.00
	Frequency-TV-English				-0.02	0.03	-0.08
	% of English spoken at home				0.02	0.02	0.15
	TELD3-Receptive Score				-0.03	0.05	-0.08
	TELD3-Expressive Score				0.04	0.05	0.13

Note: \*p < .05, \*\*p < .01, \*\*\*p < .001



Table 21. Means and SDs of Executive Function Scores by School Type and Age

	English Instruction Group				Turkish Instruction Group			
	4 year olds		5 year olds		4 year olds		5 year olds	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
DCCS score	0.86	0.35	0.93	0.27	0.54	0.51	0.83	0.49
Wait score (snack+gift)	-0.03	0.43	0.07	0.46	-0.2	0.64	0.09	0.36
Bear/dragon score	0.18	0.38	0.25	0.28	0.1	0.63	0.14	0.43
N	22		27		24		27	

Table 22. Hierarchical Regression Analyses for DCCS Task Scores (Dimensional Card Change Sort Task Scores)

Step		$\Delta R^2$	DF	F-Change	B	SE	$\beta$	
1		0.05	3, 87	1.66				
	Gender				-0.19	0.09	-0.23	*
	Income				-0.02	0.05	-0.03	
	Mother's Education				-0.01	0.02	-0.05	
2		0.02	1,86	1.48				
	Gender				-0.18	0.09	-0.22	*
	Income				0.00	0.05	0.00	
	Mother's Education				-0.01	0.02	-0.06	
	Age in months				0.01	0.01	0.13	
3		0.06	4, 82	1.41				
	Gender				-0.16	0.09	-0.20	
	Income				0.00	0.05	0.00	
	Mother's Education				0.00	0.02	-0.03	
	Age in months				0.01	0.01	0.11	
	Frequency-Story-English				0.01	0.01	0.19	
	Frequency-Singing-English				0.00	0.00	-0.04	
	Frequency-TV-English				-0.01	0.01	-0.17	
	% of English spoken at home				0.00	0.00	0.13	
4		0.05	2,80	2.31				
	Gender				-0.15	0.09	-0.18	
	Income				-0.02	0.05	-0.04	
	Mother's Education				0.00	0.02	-0.03	
	Age in months				0.00	0.01	0.05	
	Frequency-Story-English				0.01	0.01	0.15	
	Frequency-Singing-English				0.00	0.00	-0.06	
	Frequency-TV-English				-0.01	0.01	-0.21	
	% of English spoken at home				0.00	0.00	0.10	
	TELD3-Receptive Score				-0.01	0.01	-0.14	
	TELD3-Expressive Score				0.02	0.01	0.34	*

Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 23. Hierarchical Regression Analyses for Bear/Dragon Scores as Dependent Variable

Step		$\Delta R^2$	DF	F-Change	B	SE	$\beta$
1		0.05	3, 87	1.46			
	Gender				-0.42	0.22	-0.21
	Income				-0.04	0.12	-0.03
	Mother's Education				-0.03	0.04	-0.07
2		0.00	1,86	0.33			
	Gender				-0.42	0.22	-0.20
	Income				-0.02	0.13	-0.01
	Mother's Education				-0.03	0.04	-0.08
	Age in months				0.01	0.02	0.06
3		0.01	4, 82	0.22			
	Gender				-0.39	0.23	-0.19
	Income				-0.02	0.13	-0.02
	Mother's Education				-0.03	0.04	-0.07
	Age in months				0.01	0.02	0.05
	Frequency-Story-English				0.01	0.02	0.08
	Frequency-Singing-English				0.00	0.01	0.01
	Frequency-TV-English				-0.01	0.02	-0.09
	% of English spoken at home				0.00	0.01	0.03
4		0.01	2,80	.55			
	Gender				-0.36	0.23	-0.18
	Income				-0.04	0.14	-0.04
	Mother's Education				-0.03	0.04	-0.07
	Age in months				0.00	0.02	0.02
	Frequency-Story-English				0.01	0.02	0.06
	Frequency-Singing-English				0.00	0.01	0.00
	Frequency-TV-English				-0.01	0.02	-0.11
	% of English spoken at home				0.00	0.01	0.01
	TELD3-Receptive Score				-0.01	0.03	-0.06
	TELD3-Expressive Score				0.02	0.02	0.17

Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 24. Hierarchical Regression Analyses for Composite Wait Score for Delay Tasks (Snack Delay + Gift Delay) as Dependent Variable

Step	$\Delta R^2$	DF	<i>F</i> - Change	<i>B</i>	SE	$\beta$	
1	0.06	3, 87	1.68 <sup>ns</sup>				
				-0.05	0.11	-0.05	
				-0.07	0.06	-0.13	
				-0.04	0.02	-0.19	
2	0.03	1,86	2.43 <sup>ns</sup>				
				-0.04	0.11	-0.04	
				-0.05	0.06	-0.09	
				-0.04	0.02	-0.21	
				0.01	0.01	0.17	
3	0.11	4, 82	2.82*				
				-0.01	0.11	-0.01	
				-0.06	0.06	-0.10	
				-0.03	0.02	-0.14	
				0.01	0.01	0.14	
				0.01	0.01	0.19	
				0.00	0.01	-0.03	
				-0.01	0.01	-0.09	
				0.01	0.00	0.26	*
4	0.02	2,80	1.15 <sup>ns</sup>				
				-0.01	0.11	-0.01	
				-0.07	0.06	-0.12	
				-0.03	0.02	-0.15	
				0.01	0.01	0.15	
				0.01	0.01	0.16	
				0.00	0.01	-0.02	
				-0.01	0.01	-0.10	
				0.01	0.00	0.25	*
				-0.02	0.01	-0.20	
				0.02	0.01	0.25	

Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

## FIGURES

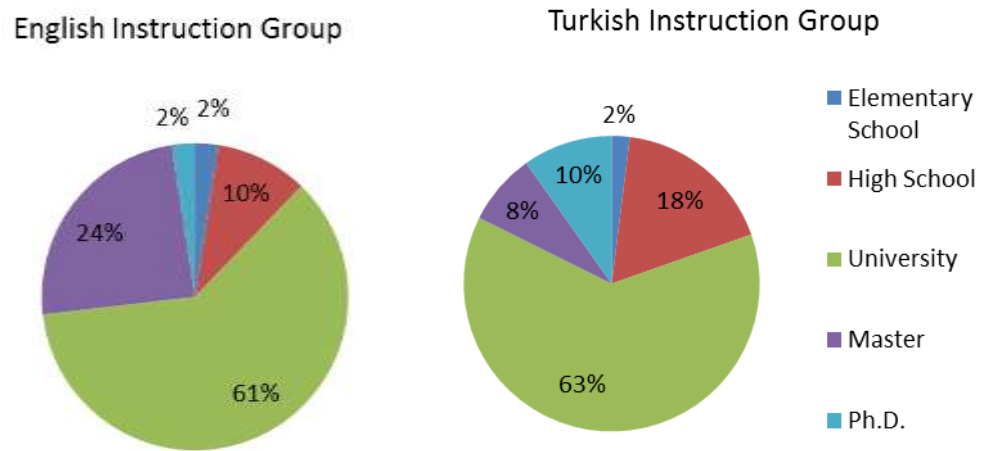


Figure 1: Comparison of Mother's Education according to School Type.

## REFERENCES

- Aksu-Koç, A. (1994) Development of linguistic forms: Turkish. In Berman, R. & Slobin D.I. (Eds). *Relating events in narrative: A Crosslinguistic Developmental Study*. New Jersey: Lawrence Erlbaum Associates, Publishers. 329-385.
- Aksu-Koç, A. (2005). Role of the home-context in the relations between narrative abilities and literacy practices. In D. Ravid & H. Bat-Zeev Shyldkrot (Eds.), *Perspectives on language and language development* (pp.257-274). Dordrecht: Kluwer.
- Aksu-Koç, A. ,Küntay, A.C.,Acarlar, F., F., Maviş, İ., Sofu, H., Topbaş, S., Turan, F. (2011). Türkçe’de Erken Sözcük ve Dilbilgisi Gelişimini Ölçme ve Değerlendirme Çalışması. Türkçe İletişim Gelişimi Envanterleri: TİGE-I ve TİGE-II, TUBITAK, Proje No: 107K058.
- Appel, R. & Muysken, P. (1987). *Language Contact and Bilingualism*. London: Edward Arnold.
- Berman, R., & Slobin, D. I. (1994). Relating events in narrative: *A crosslinguistic developmental study*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Bialystok, E. (Ed.). (1991). *Language processing in bilingual children*. Cambridge: Cambridge University Press, 39-45.
- Bialystok, E. (1996). Cognitive Complexity and Attentional Control in the Bilingual Mind. *Child Development*, 70(3), 636-644.
- Bialystok, E. (1998). *Beyond binary options: Effects of two languages on the bilingual mind*.  
<http://www.thefreelibrary.com/Beyond+binary+options%3a+effects+of+two+l+languages+on+the+bilingual+mind.-a093027774>.
- Bialystok, E. (2001). *Bilingualism in development: Language, Literacy and Cognition*. Cambridge University Press : Cambridge.

- Bialystok, E. (2007). Cognitive effects of bilingualism: How linguistic experience leads to cognitive change. *International Journal of Bilingual Education and Bilingualism*, 10, 210–223.
- Bialystok, E. (2009). Bilingualism: The good, the bad, and the indifferent. *Bilingualism: Language and Cognition*, 12(01), 3-11.
- Bialystok, E., Craik, F.I.M., Grady, C., Chau, W., Ishii, R., Gunji, A., Pantev, C.(2005). Effect of bilingualism on cognitive control in the Simon task:evidence from MEG. *Neuroimage*, 24: 40-49.
- Bialystok, E., Craik, F.I.M., Klein, R., & Viswanathan, M. (2004). Bilingualism, aging, and cognitive control: Evidence from the Simon task. *Psychology and Aging*, 19: 290-303.
- Bialystok, E., Craik, F. I. M., & Ryan, J. (2006). Executive control in a modified anti-saccade task: Effects of aging and bilingualism. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 32, 1341–1354.
- Bialystok, E., Majumder, S.,& Martin, M. (2003). Developing phonological awareness: Is there a bilingual advantage? *Applied Psycholinguistics*, 24, 27–44.
- Bialystok, E., & Martin, M. (2004). Attention and inhibition in bilingual children: evidence from the dimensional change card sorting task. *Developmental Science*, 7, 325–339.
- Bialystok, E. & Viswanathan, M. (2009). Components of executive control with advantages for bilingual children in two cultures. *Cognition*, 112, 494-500.
- Bley-Vroman, R. (2009). The evolving context of fundamental difference hypothesis, *Studies in Second Language Acquisition*, 31, 175-198.
- Bruck, M. & Genesee, F. (1995). Phonological awareness in young second language learners. *Journal of Child Language*, 22, 307-324.

- Caramazza, A. & Brones, I. (1980). Semantic classification by bilinguals, *Canadian Journal of Psychology*, 34 (1), 77-81.
- Carlson, S. M., & Meltzoff, A. N. (2008). Bilingual experience and executive functioning in young children. *Developmental Science*, 11, 282–298.
- Carlson, M.S., Moses, L.J. and Breton, C. (2002). How Specific is the Relation between Executive Function and Theory of Mind? Contributions of Inhibitory Control and Working Memory. *Infant and Child Development* 11, 73–92.
- Christian, D. (1996). Two-way immersion education : Student learning through two languages, *The Modern Language Journal*, 80(1), 66-76.
- Cook, V. (1997) The consequences of bilingualism for cognitive processing. In A. de Groot & J.F. Kroll (eds.), *Tutorials in Bilingualism: Psycholinguistic Perspectives*, Lawrence Erlbaum, 279-300.  
<http://homepage.ntlworld.com/vivian.c/Writings/Papers/BilTUT.htm>, accessed July 1, 2011).
- Cook, V. (2003). *Effects of second language on first*. Great Britain: Cronwell Press Ltd.
- De Houwer, A. (1995). Bilingual language acquisition. In (Eds.) Fletcher, P. & MacWhinner, B. *Handbook of child language*. London: Basil Blackwell.
- DeBaryshe, B.D. (1993). Joint picture-book reading correlates of early language skill. *Journal of Child Language*, 20, 455-461.
- De Mejia, A.M. (2002). *Power, prestige and bilingualism. International perspectives on elite bilingual education*. Clevedon, UK: Multilingual Matters.
- Dickinson, D. K., St. Pierre, R. B., & Pettengill, J. (2004). High-quality classrooms: A key ingredient to family literacy programs' support for children's literacy. In B. Wasik (Eds.), *Handbook of family literacy* (pp. 137–154). Mahwah, NJ: Lawrence Erlbaum Associates.



- Dickinson, D., McCabe, A., Clark-Chiarelli, N. & Wolf, A. (2004). Cross-language transfer of phonological awareness in low-income Spanish & English bilingual preschool children, *Applied Psycholinguistics*, 25, 323-347.
- Elardo, R., Bradley, R.M.C., Caldwell, B.M. A longitudinal study of the relation of infant home environments to language development at age three. *Child Development*. 1977, 48, 595-603
- Ellis, R. (2003). *Task-based language learning and teaching*. Oxford : Oxford University Press.
- Feng, X. & Bialystok, E. (2009) Language Proficiency and Executive Control in Proactive Interference: Evidence from Monolingual and Bilingual Children and Adults. *Brain and Language*; 109 (2-3).
- Fillmore, L.W. (1991). When learning a second language means losing the first. *Early Child Research Quarterly*, 6, 323-346.
- Flege, J. E., Yeni-Komshian, G. H. & Liu, S. (1999). Age constraints on second-language acquisition. *Journal of Memory and Language*. 41, 78–104.
- Francis, N. (2005). Research findings on early first language attrition: Implications for the discussion on critical periods in language acquisition, *Language Learning*, 55 (3), 491-531.
- Galambos, S. J., & Hakuta, K. (1988). Subject-specific and task specific characteristics of metalinguistic awareness in bilingual children. *Applied Psycholinguistics*, 9, 141-162.
- Gerardi-Caulton, G. (2000). Sensitivity to spatial conflict and the development of self-regulation in children 24–36 months of age. *Developmental Science*.3(4), 397-400.
- Genesee, F., Nicoladis, N. & Paradis, J. (1995). Language differentiation in early bilingual development. *Journal of Child Language*, 22, 611-631.
- Gottardo, A., Yan, B., Siegel, L. & Lesly, W. (2001). Factors related to English reading performance in Chinese children with Chinese as first language. More

- evidence of cross-language transfer of phonological processing, *Journal of Educational Psychology*, 93(3), 530-542.
- Green, D. W. (1998). Mental control of the bilingual lexico-semantic system. *Bilingualism: Language and Cognition*, 1, 67–81.
- Grosjean, F. (2001). The bilinguals' language modes. In Nicol, J.L. (ed). *One Mind, Two Languages : Bilingual Language Processing*, Oxford : Blackwell.
- Grosjean, F.(1989) Neurolinguists, beware! The bilingual is not two monolinguals in one person. *Brain and Language*, 36(1), 3-15.
- Haznedar, B. (1997). L2 acquisition by a Turkish-speaking child: Evidence for L1 influence. In Hughes, E., Hughes, M. and Greenhill, A.(Eds.) *Proceedings of the 21<sup>st</sup> Annual Boston University Conference on Language Development*: Sommerville: Cascadilla Press.
- Haznedar, B. (2007). The acquisition of tense–aspect in child second language English. *Second Language Research*, 23, 383–417.
- Hoff, E. (2003). The specificity of environmental influence: Ses affects early vocabulary development via maternal speech. *Child Development*, 74 (5), 1368-1378.
- Hoff, E. (2006). How social contexts support and shape language development. *Developmental Review*, 26, 55-88.
- Hresko, W.P., Reid, D.K. & Hammill, D.D. (1999). The test of early language development -3 (TELD-3), Austin TX : Pro-Ed.
- Ioup, G., Boustagui, E., El Tigi, M., & Moselle, M. (1994). Reexamining the critical period hypothesis: A case study of successful adult SLA in a naturalistic environment. *Studies in Second Language Acquisition*, 16, 73–98.
- Johnson, J.S., & Newport, E.L. (1989). Critical period effects in second language learning : The influence of maturational stage on the acquisition of English as a second language, *Cognitive Psychology*, 21, 60-99.

- Klein, W. (1996). *Language Acquisition at different ages*. In Magnussan D. (Eds.) *Individual development over Lifespan : Biological and Psychosocial Perspectives*. Cambridge : Cambridge University Press,
- Kochanska, G., Murray, K., & Harlan, E. T. (2000). Effortful control in early childhood: Continuity and change, antecedents, and implications for social development. *Developmental Psychology*, 36, 220–232
- Kohnert, K. J, & Bates, E. (1999). Balancing bilinguals: Lexical-semantic production and cognitive processing in children learning Spanish and English. *Journal of Speech Language and Hearing Research*; 42: 1400-1413.
- Koolstra, C. M. & Beentjies, J (1999). Children's vocabulary acquisition in a foreign language through watching subtitled television programs at home. *Educational Technology Research and Development*, 47(1), 51-60.
- Kuşçul, H. O. (1993). *Home context and the development of pre-literacy skills in the child*. Unpublished master's thesis. Institute for Graduate Studies in Social Sciences, Bogazici University, Istanbul.
- Lanza, E. (1992). Can bilingual two-year-olds code-switch?. *Journal of Child Language*, 19, 633-658.
- Lee, P., (1996). Cognitive development in bilingual children: A case for bilingual instruction in early childhood education. *The Bilingual Research Journal*, 20 (3), 499-522.
- Lenneberg, E. (1969) *Biological Foundations of Language*. JohnWiley & Sons Press: New York.
- Levy, B. J., McVeigh, N. D., Marful, A., & Anderson, M. C. (2007). Inhibiting your native language: The role of retrieval-induced forgetting during second language acquisition. *Psychological Science*, 18, 29–34.
- Lindsey, K.A., Manis, F.R. & Bailey, C.E. (2003). Prediction of first-grade reading in Spanish speaking English language learners, *Journal of Educational Psychology*, 95(3), 482-494.

- Long, M. (2000). Focus on form in task-based language teaching. In R. D. Lambert & E. Shohamy (Eds.), *Language policy and pedagogy: Essays in honor of A. Ronald Walton* (pp. 179–192). Philadelphia: Benjamins.
- Marsh, H., Hau, K. T., & Kong, C. K. (2000). Late immersion and language instruction in Hong Kong high schools: Achievement growth in language and nonlanguage subjects. *Harvard Educational Review*, 70(3), 302–346.
- Matsumura, S. (2003). Modelling the relationship among interlanguage pragmatic development, L2 proficiency, and exposure to L2. *Applied Linguistics*, 24(4), 465–491.
- Meisel, J. (1989). Early differentiation of languages in bilingual children. In Hyldenstam, K. & Obler (Eds.), *Bilingualism across the lifespan*. Cambridge, England: C.U.P.
- Meisel, J. M. (2004). The bilingual child. In T. K. Bhatia & W. C. Ritchie (Eds.), *The handbook of bilingualism* (pp. 91–113). Oxford: Blackwell Amsterdam: Benjamins.
- Meisel, J.M. (2007). The weaker language in early child bilingualism: Acquiring a first language as a second language?, *Applied Psycholinguistics*, 28, 495-514.
- Meisel, J.M. (2008). Child Second Language Acquisition or Successive First Language Acquisition. In Haznedar, B. & Gavruseva, E. (Eds.) *Current Trends in Child Second Language Acquisition: A Generative Perspective*. Philadelphia. Benjamins.
- Miyake, A., Friedman, N. P., Emerson, M. J., Witzki, A.H. & Howertet, A. (2000). The unity and diversity of executive functions and their contributions to complex ‘frontal lobe’ tasks: a latent variable analysis. *Cognitive Psychology*, 41, 49–100.
- Neuman, S.B & Koskinen (1992). Captioned television as comprehensible input: effects of incidental word learning from context for language minority students. *Reading Research Quarterly*, 27 (1), 94-106.
- Nicolopoulou, A. (2009). The horse and bunny story. Picture sequence stories to be used in the development of MB-CDI III.

- Oller, D. K., & Eilers, R. E. (2002). *Language and literacy in bilingual children*. Clevedon: Multilingual Matters.
- Pan, B. A., Rowe, M. L., Singer, J. D., & Snow, C. E. (2005). Maternal correlates of growth in toddler vocabulary production in low-income families. *Child Development*, 76, 763–782.
- Pearson, B. Z. (2009). Children with two languages. In E. Bavin (Ed.), *Handbook of child language*. Cambridge: Cambridge University Press.
- Pearson, B.Z. (2002). Narrative competence among monolingual and bilingual school children in Miami. In Oller, K.D. & Eilers, R.E. (Eds.) *Language and Literacy in Bilingual Children*, Great Britain: Cromwell Press.
- Pearson, B.Z & Fernandez, S.C. (1994). Patterns of interaction in the lexical growth in two languages of bilingual infants and toddlers. *Language Learning*, 44(4), 617-653.
- Pearson, B.Z., Fernandez, S.C., Lewedeg, V., Oller, D.K. (1993). The relation of input factors to lexical learning by bilingual infants, *Applied Psycholinguistics*, 18, 41-58.
- Perani, D., Paulesu, E., Galles, N.S., Dupoux, E., Dehaene, S., Bettinardi, V., Cappa, S.F., Fazio, F. & Mehler, J. (1998). The bilingual brain, proficiency and age of acquisition of second language, *Brain*, 121-1841-1852.
- Perani, D, Wartenburger, I., Heekeren, H.R., Abutalebi, J., Cappa, S.F. & Villringer, A.(2003). Early setting of grammatical processing in the bilingual brain. *Neuron*, 37, 159-170.
- Porte, G. (1995). English as forgotten language, *ELT Journal*, 53(1), 28-35.
- Poulin-Dubois, D., Blaye, A., Coutya, J., & Bialystok, E. (2011). The effects of bilingualism on toddlers' executive functioning. *Journal of Experimental Child Psychology*, 108, 567-579.
- Raviv, T, Kessenich, M. & Morrison, F.J. (2004). A mediational model of the association between socioeconomic status and three-year-old language

abilities: the role of parenting factors. *Early Childhood Research Quarterly*, 19, 528–547.

Ransdell, S. E., & Fischler, I. (1989). Effects of concreteness and task context on recall of prose among bilingual and monolingual speakers. *Journal of Memory and Language*, 28, 278–291.

Reeder, K., Buntain, J., & Takakuwa, M. (1999). Intensity of L2 instruction and biliterate proficiency in the intermediate years of a French immersion program. *The Canadian Modern Language Review*, 56(1), 49-72.

Schlyter, S. (1993). The weaker language in bilingual Swedish–French children. In K. Hyldenstam & A. Viberg (Eds.), *Progression and regression in language: Sociocultural, neuropsychological and linguistic perspectives* (pp. 289–308). Cambridge: Cambridge University Press.

Schwartz, B.D. (2003). Why Child L2 acquisition? Proceedings of GALA.

Sharwood-Smith, M. (1983). Cross-linguistic aspects of second language acquisition, *Applied Linguistics*, 4, 192-207.

Silven, M. & Rubinov, E. (2010). Language and preliteracy skills in bilinguals and monolinguals at preschool age: effects of exposure to richly inflected speech from birth, *Reading and Writing*, 23, 385-414.

Skutnabb-Kangas, T. 1981. *Bilingualism or not: The education of minorities*. Clevedon, England: Multilingual Matters.

Stein, N. & Glenn, C. (1979). *An analysis of story comprehension in elementary school children*. In R. D. Freedle (Ed.), *Advances in discourse processes: Vol. 2. New directions in discourse processing* (pp. 53-119). Norwood, NJ: Albex.

Sofu, H. (1995). “Acquisition of lexicon in Turkish” *Unpublished doctoral dissertation*. Çukurova University, Institute of Social Sciences, Adana.

Topbaş, S., Güven, S. (2011), *Türkçe Erken Dil Gelişimi Testi (TEDİL)*, Ankara: Detay Yayıncılık.

van Heuven, W.J.B., Dijkstra, T. and Grainger, J. (1998) Orthographic neighborhood

- effects in bilingual word production. *Journal of Memory and Language* 39, 458-483.
- Wakefield, J.A., Bradley, P. E., Yom, B.L. & Doughtie, E.B. (1975). *Language Switching and Constituent Structure*. *Language and Speech*, 18, 14-19.
- White, L. & Genesee, F. (1996) How native is near-native? The issue of ultimate attainment in adult second language acquisition. *Second Language Research*, 12:233–265.
- Whitehurst, G.J., Arnold, D.H., Epstein, J.N., Angell, A.L., Smith, M., & Fischel, J.E. (1994) A picture book reading intervention in daycare and home for children from low-income families. *Developmental Psychology*, 30, 679-689.
- Winsler, A., Diaz, R. M., Espinosa, L., & Rodrigez, J. L. (1999). When learning a second language does not mean losing the first: Bilingual language development in low-income, Spanish-speaking children attending Bilingual preschool. *Child Development*, 70 (2), 349-362.
- Yelland, G., Pollard, J. & Mercuri, A. (1993). The metalinguistic benefits of limited contact with second language, *Applied Psycholinguistics*, 14, 423-444.
- Zelazo PD, Carter A, Reznick JS, Frye D. (1997). Early development of executive function: A problem-solving framework. *Review of General Psychology* 1: 1–29.
- Zelazo, P., & Frye, D. (1998). Cognitive complexity and control: II. The development of executive function in childhood. *Current Directions in Psychological Science*, 7, 121–125.