THE BIDIRECTIONAL RELATIONSHIP BETWEEN L1 AND L2: EFFECTS ON EVENT CONCEPTUALIZATION AND NARRATIVE DISCOURSE

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- I am the sole author of this thesis and that I have fully acknowledged and documented in my thesis all sources of ideas and words, including digital resources, which have been produced or published by another person or institution;

- this thesis contains no material that has been submitted or accepted for a degree or a diploma in any other educational institution;

- this is a true copy of the thesis approved by my advisor and thesis committee at Boğaziçi University, including final revisions required by them.

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ABSTRACT

The Bidirectional Relationship Between L1 and L2:

Effects on Event Conceptualization and Narrative Discourse

The present study intended to answer two major research questions: 1) Whether intense exposure to a second language (L2) affects first language (L1) narrative skills of 5- and 7-year old children, and 2) whether learning a second language that is typologically different from the first affects their motion event conceptualization patterns? These questions were investigated by comparing bilingual children with their monolingual peers in terms of their narrative performance and motion event description patterns. In addition, children's executive functioning and vocabulary performance were assessed.

One-hundred and twelve 5- and 7-year- monolingual (L1, Turkish) (N=61) and bilingual (L1, Turkish; L2, English) (N=51) children participated in the study. Results showed that development of L1 narrative skills of the bilingual groups advanced at a slower pace compared to monolinguals and that there is a monolingual advantage in certain aspects including narrative quality and linguistic complexity. Motion event conceptualization patterns in both elicited L1 narratives and event descriptions showed that there is an influence of learning L2-English which is typologically different than L1-Turkish. Investigations of L2 narratives and motion event descriptions suggested a bidirectional relationship between L1 and L2. The study also confirmed bilingual advantage on inhibition and cognitive flexibility components of executive functioning. Results inform us about the early interactions between L1 and L2 for motion event conceptualization and narrative discourse.

ÖZET

Anadil ve İkinci Dil Arasında Çift Yönlü İlişki:
Olay Algısı ve Anlatı Becerileri Üzerindeki Etkileri

Bu tezde iki önemli araştırma sorusu ele alınmıştır: 1) Erken çocuklukta ikinci bir dil öğrenmenin anadildeki anlatı becerileri üzerinde bir etkisi var mıdır, ve 2) Öğrenilen ikinci dilin, 'mekanda hareket' olaylarının anlatımında anadilden farklı ögeleri vurguluyor olması anadil ve ikinci dil için nasıl bir sonuç doğurmaktadır. Bu soruları araştırmak için tek dilli ve iki dilli çocuklara anlatı becerileri, mekanda hareket olayı anlatımı, sözcük dağarcığı testi ve yönetici işlevler görevleri verilmiştir.

Beş ve 7 yaşındaki 112 tek dilli (D1: Anadil, Türkçe) (N=61) ve çift dilli (D1, Türkçe, D2: İkinci dil, İngilizce) (N=51) çocuklar araştırmaya katılmışlardır. Bulgular, anadilde anlatı becerilerinin çift dilli çocuklarda tek dilli çocuklara göre farklılık gösterdiğini, anlatı kalitesi ve dilbilgisel karmaşıklık gibi alanlarda tek dilli çocukların çift dilli çocuklardan daha iyi performans gösterdiğini ortaya koymuştur. Anadildeki mekanda hareket olayı anlatımlarına bakıldığında çift dilli çocukların tek dilli çocuklardan farklı olarak ifadelerinde ikinci dilin etkilerini gösterdikleri bulunmuştur. Anadil ve ikinci dildeki anlatımları karşılaştırıldığında iki dilin çift yönlü etkileşim içinde olduğu görülmüştür. Çift dilli çocukların bilişsel esneklik becerilerinde tek dili çocuklara nazaran avantajlı olduğu gözlenmiştir. Sonuçlar anadil ve ikinci dilin erken dönemdeki etkileşimleri açısından hem olay algısı hem de anlatı becerileri alanında bilgi vermiştir.

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CHAPTER 1

INTRODUCTION

Bilingualism is becoming a norm rather than an exception in today's world. Being able to speak in two or more languages instead of one has profound advantages. A meta-analysis that summarizes research on bilingual individuals aged under 18 indicates that bilinguals show enhanced attention control processes (Bialystok & Martin, 2004), better suppression and task switching (Green, 2011), better working memory performance (Bialystok, 2009; Bialystok, et al., 2005; Bialystok & Viswanathan, 2009; Cook, 1997; Hakuta & Diaz 1985; Ricciardelli, 1992), superior metalinguistic awareness skills (Bialystok, Majumder & Martin, 2003), higher general and mathematical reasoning, and more developed abstract and symbolic reasoning (Adesope et al. 2010). However, the consequences of bilingualism on cognitive development vary greatly depending on the context of acquisition. In disadvantageous environmental conditions as in the case of low socioeconomic status (henceforth SES) populations and immigrants (Fillmore, 1991), the first language (henceforth L1) may be at risk especially for young children. In such cases, due to lack of quality input of L1 at home and due to lack of input in the community where L2 is dominant, L1 is at risk for young children. However, this might not be the case in high SES circumstances. In cases where children live in advantageous and enriched environmental conditions, a second language (henceforth L2) is added on to the first and acquirers are called 'elite-bilinguals' (Swain & Lapkin, 1991).

It is also suggested that children will benefit in terms of ease of learning a second language if they are exposed to L2 at an earlier age than later (Pearson, 2009). The question of 'how early' is also dependent on context and conditions

through which L2 is learned. Immersion schooling context in preschool years has been investigated more often for low SES children rather than children with higher SES. Due to the fact that L1 is not yet fully stable in the preschool years, these studies often yield negative consequences for L1 especially when L1 is the minority language (Fillmore, 1991; Cummins, 2001; Ventureyra, Pallier & Yoo, 2004). Relations between L1 and L2 in preschool children from socioeconomically advantaged backgrounds in contexts where L1 is the dominant societal language, however, has not been investigated as often.

The present study aimed to investigate (1) whether intense exposure to a second language (L2) affects first language (L1) narrative skills of 5- and 7-year old children, and (2) whether learning a second language that is typologically different from the first affects their motion event conceptualization patterns? These questions were investigated by utilizing elicited narratives and motion event descriptions both in L1-Turkish and L2-English of young second language acquiring children as well as their monolingual peers. The effects of L2 on general cognitive processes of executive functioning were also examined in view of previous findings in the literature that indicate positive effects of bilingualism on general cognitive capabilities.

In the present study, the context of acquisition of L2 is one where L1 is the majority language and exposure to L2 may start as early as 3 years-of-age in preschool. Beginning at 2006, there has been a considerable increase in the number of private preschool institutions in Turkey (National Education Statistics, 2015). Since 2009, the curriculum of private preschools has been offering as many as 40 hours of second language teaching (Özdemir, Bacanlı & Sözer, 2012). Intense L2 exposure in private preschool contexts discontinues in the primary school due to the

legislation of Ministry of Education. As a result L2 exposure drops from 40 hrs/week (max.) in preschool to 10 hrs/week (max.) in primary school. This situation necessitates an investigation of the consequences of such practice. Exploring the effects of full-time L2-English exposure on L1-Turkish, Aktan-Erciyes and Aksu-Koç (2016a) found no adverse effects of intense exposure to L2 on L1 receptive and expressive competence measured by a standardized language test (TEDİL, 2011) for 4- and 5-year-olds. A year later, we implemented a follow-up study with a subset of the same sample (N=30) with the 4-year-olds of the first study when they were 5-years old, using narrative elicitation to assess language competence. Results showed that children who attended L2 preschools displayed lower narrative skills in L1 compared to their peers who attended L1 preschools (Aktan-Erciyes & Aksu-Koç, 2016b). Early intense exposure to L2 (i.e. full-time L2 preschool) starting as early as 3 years of age, when L1 grammar has not been fully established, thus, appeared to have adverse effects on L1 as reflected in L1 narratives. The present study asked whether such effects were replicable with a larger sample and if so, whether they were long lasting. As noted above, children who attend L2-English immersion-preschools are exposed to less number of hours of L2 when they enter primary school. This poses a discontinuity in their second language exposure and raises questions regarding its consequences on L2 and L1.

The second aim of the present study was to investigate the bidirectional effects of L1 and L2 in the specific domain of motion where Turkish and English differ in how they encode the two components of motion, namely path and manner. It has been proposed by Talmy (1985) that languages fall into two main categories based on how motion events are described: (1) Verb-framed languages and (2) Satellite-framed languages. According to this categorization, Turkish is a verb-

framed language where the path or trajectory of the motion is encoded in the main verb and manner of the motion is often left implicit; however in satellite-framed languages such as English, manner is encoded in the main verb and path often in adjuncts. Therefore, comparing languages that show differences in conceptualization and encoding patterns makes capturing the effects of one language on the other possible.

The theoretical approach for the analysis of event conceptualization is provided by the Thinking-for-Speaking hypothesis (Slobin, 1996). Thinking-for-Speaking provides a framework for how language can influence thought processes. It has been proposed by Slobin (1996, 2000) and refers to the idea that speakers of different languages have language-specific ways of conceptualization. Slobin (1996) proposes that there is an online effect of language on cognition. He states that languages are not "neutral coding systems of an objective reality" (1996, p.91), and that mere translation across languages does not correspond to the same reality. In his words "there is a special kind of thinking intimately tied to language, namely, the thinking that is carried out, on-line, in the process of speaking" (1996, p.75), and therefore, acquiring a language provides the speaker with language specific ways of thinking rather than the translation of an objective reality.

Thinking-for-Speaking has been extensively studied cross-linguistically and mostly in relation to motion event conceptualization. However, there are very few studies investigating the effect for children exposed to two languages from an early age onwards. Studying children learning a second language can have a special contribution to our understanding of how thinking and speaking relate on-line in the same mind. Thinking-for-Speaking involves selecting characteristics that "(a) fit some conceptualization of the event and (b) are readily encodable in the language"

(Slobin, 1987, p.455). From very early on, children are found to pay attention to specific aspects of motion events and learn language specific ways of verbalizing them in accordance with the aspects highlighted in their language, as has been shown for L1 acquisition of Turkish (Allen et al. 2007; Aksu-Koç, 1994) as well as other languages (see Berman & Slobin, 1994; Choi & Bowerman, 1991; Yi, Hendriks & Hickmann, 2011). Slobin (1996, p.89) claims that by learning a native language, speakers learn to pay "different kinds of attention to events and experiences" when verbalizing and thinks this training, which is carried out in childhood, is "exceptionally resistant to restructuring in adult second-language acquisition." Investigating L2 acquisition at an early age for effects of a different language on children's thinking, is therefore seen to be informative about how early Thinking-for-Speaking in a particular language comes into effect.

Studies that focus on the development of narrative structure in bilingual children are not that many (Severing & Verhoeven, 2001; Verhoeven & Strömqvist, 2001; Verhoeven, 1993, 1994 among others) and in most cases the two languages are highly related (i.e. such as the genetically related, Danish, Norwegian, and Swedish) (Severing & Verhoeven, 2001, Verhoeven, 1993, 1994). Therefore, investigating the acquisition of narrative competence and in particular motion event conceptualization in Turkish and English, two typologically different languages, in bilingual populations will be highly informative. Our previous research has shown that elicited narratives provide a comprehensive means of assessment. By using narrative data for this purpose, the present study makes a methodological contribution as well.

Finally, studies that focus on narrative development in 'elite bilingual' populations are scarce. The acquisition of L2 in L1 dominant communities are studied less often in populations of high SES backgrounds. The context of L2

acquisition in the present study is one where L1 is the majority language and exposure to L2 starts as early as 3 years-of-age in a preschool context. Thus the present study differs from those where the effects of L2 on L1 are investigated in children from disadvantaged backgrounds and L1 is not the dominant and valued language.

In summary, the present study intends to highlight the consequences of such early L2 exposure on children's L1 and L2 skills as reflected in narratives and motion event descriptions in L1 and L2 as well as in executive functioning processes. Chapter 2 is devoted to the review of the literature on bilingualism, relations between L1 and L2, narrative discourse in bilinguals and motion event conceptualization. The aim of the study and hypotheses are also presented in Chapter 2. In Chapter 3, methodology of the present study is presented. Results are presented through Chapters 4 to 8. Finally, the findings are discussed in Chapter 9.

CHAPTER 2

LITERATURE REVIEW

2.1 Bilingualism: Different contexts of acquisition

According to Bialystok (2001, pp.5-9) bilingualism can be considered as a "phenomenon where an individual has competence at a certain level in both of the languages." Grosjean (2010, p.4) defines a bilingual person in a similar way: "Bilinguals are those who use two or more languages (dialects) in their everyday lives." Although, bilinguals differ in their competence level and age of acquisition, bilingualism is defined as the ability to express meaningful utterances in more than one language and have command of at least one domain (reading, writing, speaking and listening) (Grosjean, 1997, Hakuta & Diaz, 1985; Romaine, 1989).

The above definitions which are diverse and rather vague show that it is not easy to define bilingualism. The question of 'who is a bilingual?' is an important one to ask since it differentiates between individuals who have been exposed to L2 at different ages and contexts, for different purposes, as well as through different learning practices. Age of Onset (henceforth AoO) is one of the most important factors that influence the nature of bilingualism. Depending on AoO, two types of bilingualism are differentiated. The first one is 'simultaneous' bilingualism where the child is exposed to both languages from birth onwards. The second one is 'successive or sequential' bilingualism, where L2 is learned after L1 is acquired (De Houwer, 1995). The type of bilingualism at issue in the present study involves sequential/successive bilingualism.

Lambert (1975) suggested the terms of 'additive' and 'subtractive' bilingualism in differentiating different contexts of acquisition. 'Additive

bilingualism' refers to those situations where L1 is the dominant language and of high value and not at stake when L2 is learned, whereas 'subtractive bilingualism' refers to those situations where an individual's first language skills are at stake due to the acquisition of a second language (Fillmore, 1991). Pearson (2009, p. 383) similarly noted 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 at risk and L2 is added on L1. Subtractive bilingualism, on the other hand, is observed mostly in low-SES and immigrant contexts, particularly in cases of children younger than 10 learning an L2, which is the societal dominant language. In that case, L1 which is the minority language, is at risk (e.g., Backus, 2005; Christian, 1996; Cobo-Lewis et al., 2002; Fillmore, 1991; Wright, Taylor & Macarthur, 2000).

In the case of additive bilingualism, considerable amount of research comes from practices of immersion education in Canada where schooling is in French and the home language is English. Research has shown that children (ages 6 to12) attending French immersion schools gained competence in L2-French at no cost to their L1-English (Burger, Weinberg, Hall, Movassat & Hope, 2011; Cummins, 1998; Mackey, 2004). Similar outcomes are also observed in Finland, where there are two official home languages, Finnish and Swedish (Björklund and Mård-Miettinen, 2011). In some countries such as Ireland (Duibhir, 2011, L1-Irish) and Hong Kong (Hoare, 2011, L1-Cantonese) second language immersion is in practice due to the high demand from society. In these countries immersion schooling practices in L2-English yield similar outcomes compared to monolingual education and children gain competence in L2 at no cost to their L1. However, these findings mainly come from primary and secondary education contexts, not from the preschool context

which has been rarely studied (Duibhir, 2011; Hoare, 2011). Two-way immersion programs, where children are instructed both in L1 and L2, yield better outcomes for younger children especially in the case low SES. Christian (1996) found that minority children (aged 3- to -6) whose L1 is Spanish and L2 is English have greater competence in both languages when they attend two-way immersion preschools; they show similar gains in L1 (Spanish) compared to those who stay at home (Winsler, Diaz, Espinosa & Rodriguez, 1999). Similar findings of positive outcomes for young children in case of two-way immersion practices have been reported by Bamford and Mizokawa (1991), Christian, Howard and Loeb (2000) and Cobo-Lewis, Pearson, Eilers, and Umbel (2002).

Johnson and Swain (1997, p. 15) suggested that "under conditions favorable to immersion, claims based on research have gone beyond additive bilingualism to include cognitive, cultural and psychological advantages." Supporting evidence comes from studies that indicate positive consequences on both cognitive and linguistic abilities (Bialystok & Martin, 2004; Bialystok et al., 2005; Bialystok & Viswanathan, 2009; Calvo & Bialystok, 2014; Hakuta & Diaz 1985; Ricciardelli, 1992) and absence of adverse effects on academic, linguistic and cognitive development (Cummins, 1998).

Contexts of L2 acquisition differ also in terms of how learning of L2 is accomplished. Acquisition may be prompted either through formal instruction or informal processes of learning. Although most often used interchangeably, Klein (1996) marks the difference between second language and foreign language learning. Second language learning is defined to occur in a natural setting such as in a social environment much like how L1 learning takes place. On the other hand, foreign language learning involves guidance and formal teaching practices, more often in a

classroom setting. Context of L2 acquisition in the present study is similar both to 'foreign language learning' and 'second language learning' in the sense that the immersion schooling context involves both teaching and guidance within the classroom and provides a natural L2 environment for children. Context of L2 acquisition of the current study involves 'additive bilingualism' in the sense that L1 is already the dominant language and valued as much as L2.

2.2 Relations between L1 and L2

Investigating the relations between the two languages of a bilingual has raised questions about how they are represented in the bilingual mind. Whether the two languages of a bilingual are represented separately or in an integrated way have been subject to much discussion. Cook (2003) proposes reciprocal relations between L1 and L2 on an "integration continuum" where the status of the two languages changes with respect to one another at different stages of L2 development. For instance, different relationships can apply to different areas of language. Cook (2003) states that an L2 learner might have an interconnected vocabulary but separate grammars. Also, an L2 learner might use grammatical structures independently but may rely on L1 for L2 pragmatic functions (Cook, 2003).

Bialystok (1996) suggests that a continuum model would best represent the complex nature of the interplay between the two languages. She proposes this model to be a "complex structure that weaves two languages and a meaning system" together (pp. 48-49). She furthermore argues that regardless of whether their two languages are represented in a shared or a distinct system, bilinguals have different representational structures for language compared to monolinguals because they can

switch to either language while having the representations of the two linguistic systems active in mind (Bialystok, 2007).

Bilingual children can differentiate the grammatical systems of their two languages from very early on (Meisel, 1989; Genesee, Nicoladis & Paradis, 1995). Genesee, Nicoladis, & Paradis (1995) propose that there is an early differentiation of the two languages although children often mix phonological, morphological, lexical and syntactic elements from their two languages within an utterance. Genesee et al. (1995) investigated the language differentiation of five French-English simultaneous bilingual children by observing them with each parent separately and together on different occasions. The results showed that although children exhibited code-mixing (i.e. mixing two languages in speech), from very early on they were able to switch back and forth between French and English depending on which parent they were talking to. Differentiation in terms of grammar is proposed to occur as early as 2 years of age again for simultaneous bilinguals (Meisel, 1989).

Whether the two languages are acquired simultaneously or sequentially influences how development proceeds in each language. Studies that investigate simultaneous acquisition of two languages show that the grammar of the two languages is differentiated early, and later on the course of development continues in similar sequences with monolingual acquisition for both languages; however, the rate of development might not be the same depending on factors such as exposure amount and quality (De Houwer, 1995, Meisel, 2004). In sequential bilingualism, however, in terms of grammatical development, acquisition success may be different than simultaneous bilingualism. If one of the languages is weaker (i.e., the child talks less in) and the other one is stronger, then grammatical development may result in partial success in the weaker language. Meisel, (2007, p.500) points out that some of the

properties of the weaker language that reflect partial success include "(1) omission of obligatory elements, (2) problems with inflectional morphology, and (3) deviant word order patterns".

Overall, L1 and L2 are suggested to be in continuous interaction with each other, having effects on one another. The next two sections are devoted to specific effects of L2 on L1 and L1 on L2.

2.2.1 Effects of L2 on L1

The effects of L2 on L1 have been studied mostly in case of minorities or immigrants where L1 is not the dominant language in the society. For instance, Christian (1996) showed that minority children whose L1 is Spanish perform better both in L1 (Spanish) and L2-English in tasks that measure language competence when they attend two-way immersion schools where the medium of instruction at school is in both languages with half day of L1 (Spanish) instruction and the other half in L2 (English). The authors concluded that enhancing L1 skills of these children who otherwise would not have had quality L1 input at home resulted in positive outcomes in both L1 and L2. Similarly, Winsler, Diaz, Espinosa, and Rodriguez (1999) found that children who attended bilingual schools had gains in L1 similar to the ones who stayed at home (L1 setting). These findings indicate that attending preschool with both L1 and L2 instruction does not have negative consequences on L1 and may even contribute to children's language development. These two studies also reflect the effect of schooling (both in L1 and L2) per se on L1, as the school context and literacy activities provide an enriched quality input compared to the home context. Evidence relevant for immersion context also comes from five decades of practice of immersion education in Canada where in certain areas, schooling is in L2-French and

L1 is English. Findings show that children aged 6-to-12 who attend L2-French immersion schools gained competence in L2 French at no cost to their L1 English (Burger, Weinber, Hall, Movassat & Hope, 2011; Cummins, 1998). Similar findings are found in countries where L2 immersion schooling is adopted due to high demand for L2-English such as Ireland (Dubhir, 2011, L1-Irish) and Hong Kong (Hoare, 2011, L1-Cantonese)

For children attending L2 middle school, Kecskes and Papp (2000) found that intensive exposure to English as L2 in immersion programs resulted in usage of more complex sentences in L1 by Hungarian teenagers (aged 12 to 16). Yelland, Polard and Mercuri, (1993), similarly, observed that English (L1) speaking children (aged 12 to 16) who were learning Italian (L2) were better in reading in English than those who were not exposed to L2. For phonological skills, there is also evidence of positive effects of L2. Gottardo, Yan, Siegel and Lesly (2001) found that learning English as L2, Chinese children (aged 10 to 12) had gains in their L1 (Chinese) phonological skills where performance of phonological skills in L1 was correlated with L2 reading abilities. These findings indicate that attending school in L2 might not have negative consequences on L1 and may even contribute to children's language and literacy development. The negative effects of L2 on L1 is mostly seen in the lexicon. Bialystok, Luk, Peets, and Yang (2010) conducted a systematic review analyzing 1738 bilingual and monolingual children (aged 3-to-10) in terms of vocabulary competence. The results showed a consistent difference in receptive vocabulary in favor of monolinguals and the difference is consistent for different language pairs.

Effect of L2 on L1 is also found in the context of lexical access by adults. Pavlenko and Malt (2011) compared L1 naming patterns of common household

objects in Russian L1-English-L2 bilinguals with different AoO levels (i.e. early, childhood, late) to that of monolingual Russian speakers. Early and childhood bilinguals with L1-Russian L2-English differed in terms of typicality ratings from Russian monolinguals in their naming patterns of common objects (e.g. types of containers: cup, mug, glass). The typicality ratings bilinguals gave to common household objects were different compared to those of monolinguals indicating the effects of L2 on conceptual representation. The question of whether a speaker of L2 who has acquired the L2 linguistic system has also acquired conceptualization patterns of L2 is an important one. Pavlenko (2005, p.438) provides a number of possible outcomes for such patterns: (1) coexistence of L1 and L2 conceptual domains which suggests that bilinguals make use of distinct conceptual representations. (2) L1-based conceptual transfer which refers to L1 conceptual system guiding L2 language use, in the beginning and intermediate stages of L2 learning. (3) Internalization of new concepts refers to adoption of L2 words and concepts which are nonexistent in L1. (4) Shift from L1 to L2 conceptual domain which refers to shift of category boundaries within the process of L2 socialization (5) Convergence of L1 and L2 conceptual domains which suggests creation of a unitary concept distinct from both L1 and L2. (6) Restructuring of a conceptual domain which refers to cases when shift is not complete and certain elements in a concept may be altered. (7) Attrition of previously learned concepts refers to loss of previously learned concepts and schemas. The results of the above study is in line with the outcome that suggests shift from L1 to L2 conceptualization patterns.

Another effect of L2 on L1 is how lexical access changes due to the acquisition of L2. Ivanova and Costa (2008) found that bilingualism may result in disadvantage for lexical access where monolingual English speakers named pictures

faster than Spanish-L1-English L2 bilinguals in their dominant L1 (i.e. English speakers performed the task in English and bilinguals performed the task in Spanish).

Overall, the literature on effects of L2 on L1 indicates that findings depend on which area of language is investigated. Knowing another language might benefit some aspects of L1 (e.g. enhanced phonological processing) while having adverse effects on others (e.g. poorer vocabulary, and slower lexical access).

2.2.2 Effects of L1 on L2

Effects of L1 on L2 are studied under the topic of language transfer. Language transfer refers to a phenomenon where language systems actively affect each other during acquisition, comprehension and production (Sharwood-Smith, 1983). Corder (1981) proposes that there should be a distinction between structural transfer and borrowing. According to him, borrowing occurs when L2 resources are not adequate for effective communication, whereas in structural transfer, L1 grammar affects the structure of the interim grammar. Schlyter (1993) investigated Swedish-French bilinguals whose Swedish is the weaker language. Swedish requires that finite verbs follow the subject after an initialized adverb; however, children with weak Swedish were unable to place finite verbs in the second position; during conversation, the subject of the sentence was either left out or replaced with lexical items from French (the stronger language). Schlyter and Hakansson (1994) investigated the development of word order patterns in Swedish in (1) five monolingual children (L1-Swedish), (2) five children learning Swedish as L2 whose L1 was French (AoA between 4 and 5), and (3) six simultaneous bilinguals acquiring Swedish-French since birth (half of them having Swedish as their weaker language and half of them as stronger language). The results showed that bilingual children whose weaker

language was Swedish performed more like L2 learners and one with Swedish as a stronger language resembled Swedish L1 children in subject-verb constructions. Pffaf (1992) examined L1-Turkish- L2-German bilinguals whose AoO ranged between 2 and 8. In the L2-German discourse of L1-Turkish children, there were a high proportion of null articles indicating the effect of Turkish, a language with no articles, on German, a language with an article system. Pfaff (1992) also found that being exposed to two languages indicate a problem in acquisition of verb inflections in the weaker language, which resulted in the use of verbs in uninflected forms. In a longitudinal study of a 4-year-old L1-Turkish child who moved to UK and was immersed in an L2-English environment, the daily utterances of the child were analyzed (Haznedar, 1997). L2 utterances started to emerge as early as 2.5 months upon arrival and they were analyzed for the effect of L1-Turkish word order (Subject-Object-Verb) on L2-English word order (Subject-Verb-Object). The early L2 utterances until the 6th month, had a SOV order (an effect of L1 on L2), and after the 6th month L2 utterances were in correct word order in the majority of the utterances.

In a longitudinal study, Silven and Rubinov (2010) investigated how exposure to Finnish and Russian, two typologically different languages which are both richly inflected, affects language proficiency and preliteracy skills during preschool years. Four-year-old Finnish –Russian simultaneous bilingual children were compared to Finnish monolingual peers based on tasks that measure semantic and morphological skills. In terms of verb and noun inflections, bilingual children performed as well as Finnish monolinguals except for a marginal difference for adjective and adverb inflections where monolinguals outperformed bilinguals, but for noun and verb inflections there were no differences. The proficiency in Finnish for

bilingual children was found to be related to the amount of exposure to the target language at home.

Overall, the studies reviewed in the last two sections show that AoO, order of acquisition, typology of languages acquired and the amount of exposure to both languages are crucial variables in determining the consequences of L2 exposure on L1 and vice versa.

2.3 Narrative discourse and bilingualism

2.3.1 The role of narrative competence in language and cognitive development

Narrative competence plays a crucial role in the development of children's linguistic and cognitive skills in many respects. Therefore, investigating children's narrative skills provides enriched information on both domains.

Narrative competence involves an integration of multiple systems of language as it requires the simultaneous planning of a meaningful content in terms of a coherent structure, a cohesive language use and a concern for the listeners' informational needs (Johnston, 2008).

For successful narrative comprehension, the listener needs to keep track of the characters, their mental states and the temporal sequence of events they are engaged in, and update this information as the story unfolds in order to integrate them into globally coherent representations. (Arnold & Griffin, 2007; Johnston, 2008; Wong & Johnston, 2004; Montgomery, Polunenko & Marinellie, 2009). Producing narratives, on the other hand, requires a coherent organization of the events making up the story around a goal in a way that renders them meaningful in terms of the intentional states of the characters and to express them by use of

complex syntactic structures and appropriate lexical items. (Berman & Slobin, 1994; Johnston, 2008). Furthermore, in conveying the conceptual content the narrator has to be monitoring and updating the listener's changing informational needs and respond with adequate linguistic expression (Arnold & Griffin, 2007; Wong & Johnston, 2004).

Stein and Glenn (1979) have proposed an analysis of narrative texts in terms of a "story grammar" which identifies the crucial elements of a complete story. These elements include "setting", "initiating event", "internal response", "internal plan", "and attempt at action", "consequence", "resolution and ending". Children's knowledge schemes for the above mentioned areas (content, structure, cohesive language and listeners' needs) play a crucial role in the challenging process of producing narrative discourse. If schemes in any of these areas are not well developed then the quality of the story will suffer.

The basis for investigating children's narratives in language and cognitive development is the fact that narratives require the use of decontextualized language skills, which is further linked to literacy development (Cummins, 1991; Curenton & Justice, 2004; Dickinson & Snow, 1987; Peterson, Jesso & McCabe, 1999). Decontextualized language necessitates the message about events or objects to be conveyed through linguistic devices only, unlike contextualized language which relies heavily on contextual cues present in the immediate environment (Curenton & Justice, 2004; Cummins, 1991; Watson & Shapiro, 1988). Children gain the experience of using decontextualized language by listening to and telling narratives and engaging in book reading practices which helps them build linguistic as well as cognitive skills. The decontextualized nature of narratives makes storytelling cognitively complex in that children need to be able to represent and recreate the

situation depicted in the story in terms of its aspects beyond the immediate context (Terry, Mills, Bingham, Mansour & Marencin, 2013) and engage in processes such as updating and retrieval which tax effort on attentional resource capacity, processing speed, long-term memory and working memory (Gerrig & O'Brien, 2005; Montgomery, Polunenko & Marinellie, 2009; Singer, Graesser & Trabasso, 1994; Zwaan & Radvansky, 1998). In short, cognitive constructs such as working memory and attentional capacity have a bearing upon narrative competence both at the local and the global levels and should be taken into consideration when evaluating children's narrative competence in the context of both monolingual and bilingual development.

This brief overview shows that narrative production involves coordination of three cognitive domains: (1) the use of linguistic devices across sentences, episodes and settings (McCabe & Peterson, 1990), (2) the correct use of pragmatic knowledge which implies the awareness of the listener's point of view and information needs (Hudson & Shapiro, 1991), and (3) cognitive abilities including working memory and information processing skills for making meaning of large amounts of information. Therefore eliciting narratives in both L1 and L2 in the context of the proposed study is one of most suitable forms of language assessment.

2.3.2 Narrative development in bilingual contexts

Narrative skills have been proposed to play a crucial role both in literacy development and academic achievement of monolingual and bilingual children (Feagans & Applebaum, 1986; Hemphill & Snow, 1996; Snow, 1983; Snow & Dickinson, 1991; Pearson, 2002). Research on bilingual children's narrative development is often limited to specific language-pairings (i.e. Spanish/English) and

minority contexts where low-SES is another variable playing a key role. Miller et al. (2006) investigated oral language proficiency (assessed in narrative elicitation, passage comprehension and reading efficiency tasks) in L1-Spanish-speaking L2-English language learners aged 5 to 9 years, who have been exposed to English. The results showed that oral language in Spanish was closely related to reading proficiency in Spanish, and English oral language skills were related to reading proficiency in English. There was also a cross-language effect, English oral language measures predicted Spanish reading and oral language competence and Spanish oral language predicted English reading scores after controlling for age. The results indicated that oral language skills improved reading skills both within and across languages.

Pearson (2002) compared narrative performance of second and fifth graders in a Spanish-English bilingual and English monolingual sample by using *Frog, Where are you?* (Mayer, 1969). Narrative quality was examined at two levels comprising 1) Language level (local level): lexical and grammatical elements, 2) Story level (global level): organization of the story, story sequence and narrators' perspectives. Results were in favor of high-SES, older children and monolingual children. Monolingual children performed better than bilinguals at the story level and the differences at the linguistic level were larger than differences at the story organization level. An interesting finding was that there were cross-language correlations for story-level as well as syntactic complexity but not for lexicon or syntactic accuracy. Pearson (2002, p.149) interpreted the finding as indicative of "carry-over across languages".

Muñoz et al. (2003) investigated English narratives from 4-and-5 year old English-speaking low-SES Latino children again using the picture book *Frog, Where*

are you? (Mayer, 1969). Older children displayed relatively more sophisticated stories compared to younger ones as reflected in their inclusion of more than one complete episode in their narratives. On the other hand, the majority of younger children did not mention an initiating event and often lacked a resolution. Although total number of words and total number of different words did not differ across age groups, 5-year-olds performed better in syntactic accuracy and elicited more complete episodes within the story compared to 4-year-olds. Muñoz et al. (2003) due to lack of difference for total number of words and total number of different words suggested that some measures of narrative competence used with monolingual children might not be sensitive for low-SES bilingual ones.

Gutiérrez-Clellen (2002) investigated narrative performance of bilingual children (aged 7 to 8) both in L1-Spanish and L2-English using a story recall, a story comprehension and a story production task in L2-English and in L1-Spanish. Children performed significantly better in narrative production where contextualized pictures were provided facilitating production, compared to story retelling and story comprehension. When performance in L1 and L2 was compared, most children performed enhanced story recall as well as story comprehension in their L2-English. On the other hand, in narrative production, majority of children performed better in L1, and some bilingual children performed better in L2. It was concluded that narrative assessment tasks in L1 and L2, may not make equivalent demands on a bilingual speaker. Uccelli and Paez (2007) investigated narrative and vocabulary development of 24 low-SES Spanish-English bilingual children testing them once at the end of kindergarten and once at the end of first grade. Narrative skills were assessed with a picture-story elicitation task and expressive vocabulary was assessed via Peabody Picture Vocabulary Test in both English and Spanish. Narrative

competence was measured by total number of words and total number of different words. Narratives were also evaluated for narrative quality following Pearson (2002). Although results showed gains in English vocabulary from kindergarten to first grade, majority of bilingual children performed worse than monolingual peers. The results indicated that the story structure for Spanish at the kindergarten level predicted English narrative performance as measured by narrative quality for first-grade, even after controlling for English vocabulary and narrative productivity. These results suggest that narrative data not only give information about lexical or syntactic ability but also is a good measure of general capacity of language use.

Narrative competence is shown to be a good and valid measure of linguistic competence, as it often provides richer data than standardized language tests. Constructing a narrative can be said to pose higher demands on a bilingual's available cognitive resources than a monolingual's in childhood. A bilingual narrator child has to come up with appropriate vocabulary and sentence structure for comprehensibility in addition to keeping the story schema in mind for a coherent organization and to considering the listener's informational needs. Using narrative production tasks instead of some standardized tests both in L1 and L2 may therefore be a more valid measure of linguistic competence. In the context of the present study narratives will also provide information regarding event conceptualization patterns as well as linguistic competence.

2.4 Motion event conceptualization and bilingualism

One of the domains that bilingualism might have projections on, is the specific area of motion event conceptualization. Language is assumed to be a system for converting our thinking into communicable forms such as sounds, gestures or written

symbols in order to pass the information to others. It was proposed by Whorf (1956) that language is not a mere medium of transmission of thought but also plays a crucial role in shaping thought itself. A reinterpretation of this view by Slobin (1996) maintains that languages are not "neutral coding systems of an objective reality" (p.91), and that mere translation across languages does not correspond to the same reality. Slobin (1996) proposes that the effect of language on cognition shows itself when language is in use. Slobin proposes that this special kind of thinking that is carried out online provides the speaker with a language specific way of thinking. This phenomenon is called the Thinking-for-Speaking effect in the literature. The present study will be investigating the effects of early L2 exposure on cognition within Slobin's view of Thinking-for-Speaking.

2.4.1 Cross-linguistic differences in motion event conceptualization

A formal definition of an event is "a segment of time at a given location that is perceived by an observer to have a beginning and an end" (Zacks & Tversky, 2001, p.29). Motion events share common features or structures such as: Figure, Ground, Path and Manner. A typology for how motion events are represented across different languages has been proposed by Talmy (1985) whose starting point was the two main features people use in representing a scene: figure and ground. To illustrate, in *the boy is walking across the road*, *the boy* is the figure and *the road* is the ground. Most of the time, these two main features are in the context of a motion event which is described as a "situation that involves displacement of an object in relation to a reference point" (Bylund, 2011, p.109). Although motion events are universally central to human life across cultures, languages vary greatly in how they represent and express information regarding motion and encode path (the trajectory of the

motion/action with respect to the ground such as over, under etc.) and manner (the way the motion/action takes place, such as jumping, rolling etc.). Talmy's typology (1985, 2000) offers a categorization of languages based on mappings of these universal meaning components onto common surface elements such as verbs, adverbials etc. Accordingly, languages fall into two main types based on how motion events can be described: (1) Verb-framed languages and (2) Satellite-framed languages. In verb-framed languages such as Turkish, the path or trajectory of the motion is readily encoded in the main verb *çık-* 'exit' (e.g., *çocuk bahçeye çıktı* 'the boy exited to the garden'), and the manner of the motion is often left implicit; however in satellite-framed languages such as English, manner is encoded in the main verb but path is encoded outside the main verb (often in adjuncts). For example, in Talmy's (1985, p.102) prototypical example *the bottle floated out of the cave*, the verb *float* expresses the manner of movement; and the path is expressed in *out of* which is depicted in the prepositional phrase. The primary differences between these two types are syntactic frames where manner and path are encoded and the fact that encoding of manner is optional in verb-framed languages.

This typology has been investigated in studies covering a wide range of languages including Turkish, Spanish and English in both written and oral narratives (e.g. Özçalışkan & Slobin, 2003; Slobin, 1996, 2006, among others), in elicited narratives (Berman & Slobin, 1994; Naigles et al., 1998; Özçalışkan & Slobin 1999; Slobin, 1991, 2004) and in translations of novels (e.g. Slobin, 2005), within the thinking-for speaking framework. These studies have revealed interesting differences between languages. Cross-linguistic studies conducted by Slobin and associates show that individuals whose native language is satellite-framed (such as English) represent manner and directed motion as a single concept whereas the users of verb-framed

languages (such as Turkish) put little emphasis on manner (often left implicit) but focus on path (Berman & Slobin, 1994; Slobin, 1996, 2000). For example, Özçalışkan and Slobin (1999) have found that 3-year-old children learning a verb-framed language such as Turkish or Spanish used more path verbs (e.g. exit), compared to children learning English (a satellite-framed language) who used more manner verbs (e.g. *fly*) in narratives they produced for a picture storybook (*Frog, Where are you?,* Mayer, 1969). The same pattern was also found for 3-year-old children in Korean versus English (Oh, 2003) and adult speakers of English and Greek (Papafragou, Massey, & Gleitman, 2002).

2.4.2 Motion event conceptualization in second language learners

The cross-linguistic differences in motion event conceptualization is evident in the literature, however the effects of learning a second language, which frames motion events differently than the first language is another important issue. In explaining the relationship between two languages and concepts in the same mind, Cook (2015) proposes that L1 affects L2 in all aspects of language but the effects of L2 on L1 is also evident (Cook, 2003).

Recent studies on event conceptualization in second language learners point to bidirectional effects of L1 and L2. Pavlenko and Volynsky (2015) investigated effects of L2-English on L1-Russian with Russian monolingual, English monolingual and Russian-English bilingual adults with a narrative elicitation task. Both languages are satellite-framed, however have differences in motion event conceptualizations; encoding manner in English is optional compared to Russian where it is obligatory in most contexts (e.g. certain verbs have specific adverbials that are used together). Therefore, it was suggested that even though both languages are satellite-framed; the

degree of emphasis put on manner encoding might have an effect on L2 learners' event conceptualization. Bilingual undergraduate participants displayed language specific patterns in both languages for path, one-segment clauses (path is expressed in one linguistic unit such as a verb) in L2-English and two-segment path clauses (path is expressed in two linguistic units such as preposition used in form of a prefix like "up-lifting") in L1-Russian. L1-Russian speakers segmented motion events in a more fine-grained fashion compared to L1 English speakers. In Russian narratives of L1-Russian- L2-English bilinguals, there were less manner verbs compared to L1-Russian monolinguals' narratives. Thus, having been exposed to a language that puts less emphasis on manner had an effect on L1 event conceptualization. In the same vein, Hasko (2009) compared L1-Russian and L1-English -L2-Russian speakers' "Frog story" narratives and found that in L2 learners' narratives, there was a high percentage of errors in path encoding and insufficient encoding of manner compared to L1 Russian speakers' narratives. For languages that are different in terms of Talmy's categorization, findings of bilingual motion event conceptualization also support Thinking-for-Speaking effect. For instance, Brown and Gullberg (2008) found fewer mentions of manner in L2-English (satellite-framed) discourse by L1 Japanese (verb-framed) bilingual adults compared to L1 English monolingual narratives and suggested that this was due to L1 transfer. Flecken, Weimar, Carroll and Von Stutterheim (2015) investigated differences in spatial conceptualization in French (verb-framed) and German (satellite-framed). In French when expressing direction of movement, specific relations such as alignment and distance toward are given in the path verbs which lexically convey this information, however in German, this is not the case. German has mainly manner verbs in the lexicon. L1-French, L1-German and L2-German speakers were tested in a paradigm where their attention

allocation was measured via eye tracking. Participants viewed an event description task where moving entities and endpoints in motion scenes were displayed. The results showed that L1-French participants allocated more attention to entities in motion and endpoints (before onset of utterance) compared to L1-German speakers. The L2-German speakers' pattern was similar to L1-German speakers in the use of manner verbs but since they had not fully acquired spatial language (due to AoO which is greater than 10) and ways to structure path of the motion, their pre-articulatory attention allocation patterns were similar to L1-French speakers. In a recent study, Brown (2015) investigated bilingual versus monolingual construal of manner in speech and gesture across three languages, Mandarin (equipollent –neither verb nor satellite-framed), Japanese (verb-framed) and English (satellite-framed), which are proposed to be typologically distinct in speech and co-speech gesture (Brown & Chen, 2013, Slobin, 2004). According to Talmy's categorization, Japanese is a verb-framed language (encoding manner outside the verb) and English is a satellite-framed language (encoding manner within the verb); Mandarin on the other hand, is considered to be in between where path and manner are expressed by "equipollent" (equal in linguistic forms) elements. Participants viewed a Sylvester and Tweety Bird cartoon and were asked to orally describe scene-by-scene presentation of the cartoon as they watched. Bilingual L1-Japanese- L2-English speakers displayed fewer mentions of manner in L2-English compared L1-English monolingual speakers and more mentions of manner than L1-Japanese speakers as a consequence of L2-English. Furthermore, they did not differ in their two languages for manner descriptions. For L1-Mandarin-L2-English bilinguals, there were fewer manner mentions in their L2 than monolingual speakers of both Mandarin and English. Results concerning differences in gesture use accompanying manner

mentions showed that bilingual Mandarin-English speakers marked manner in gestures more than monolingual speakers of each language. As a result, Brown (2015) claims that L2 users have a unique pattern (neither like L1 nor like L2) of gestures revealed both in their L1 and L2.

The age of onset also had an influence, indicating that early bilinguals showed an L2 to L1 effect; Hohenstein, Eisenberg and Naigles (2006), investigated how L1-Spanish (verb-framed) – L2-English (satellite-framed) adult bilinguals (nearly half were early bilinguals AoO being less than 10 years and others were late bilinguals) described motion events that they watched compared to English and Spanish monolinguals. It was found that bilinguals used more manner verbs than path verbs in their descriptions of events both in Spanish and English. When L2-English event descriptions of L1-Spanish – L2-English bilinguals were compared to L1-English monolinguals' descriptions, fewer mentions of manner was observed. The age of acquisition also had an effect indicating that early bilinguals showed an L2 to L1 effect. The results showed that early bilinguals used fewer path verbs in Spanish (effect of L2-English). In a recent study, Lai, Rodriguez and Narasimhan (2013) tested early and late bilingual (L1-Spanish – L2-English) adults on description of motion events. In that paradigm, bilinguals were first asked to describe events in the video clips they watched in one language, which intends to prime the participant that language's mode of thinking. After they described the events, an event classification task was administered. In this task the initial video, which was shown for description, was altered. The new event either was manner-consistent or path-consistent with the previous clip. A similarity judgment task was administered; participants decided how similar the new clip was to the previous one. The results revealed that the language used to encode motion events had an effect on

participants' event classification. Bilinguals when tested in Spanish classified events according to path of the motion more, compared to when they were tested in English, therefore showing a Thinking-for-Speaking effect. Late bilinguals relied more on path information to classify events when tested in Spanish compared to English, however early bilinguals had a path preference regardless of the language. Path preference regardless of language exhibited by early bilinguals was explained by the fact that path of the motion is the 'core schema' for motion (Talmy, 1985).

Overall, studies investigating bilingual motion event conceptualization in adults show that there are bidirectional effects of L1 and L2 which may further differ depending on timing of L2 acquisition, that is, whether the individual is early or late bilingual. In this respect, the proposed study in comparing L1 and L2 narratives and event conceptualization patterns both within and between subjects, will contribute to the current literature where, to our knowledge, Turkish-English bilingual studies are non-existent.

2.4.3 Encoding of motion events in Turkish and English

Languages have different means to encode spatial information and fall into two main categories according to how motion events are encoded lexically and syntactically (Talmy, 1985). According to this categorization, English and Turkish fall into two distinct categories. English is a satellite-framed language (e.g. English, German and Russian), which conflates motion with manner expressed in the main verb (e.g. roll) and path in a non-verbal element, namely a "satellite" (e.g. *roll in*). In contrast, Turkish is a verb-framed language (e.g. Japanese, Spanish, Turkish and Semitic languages) which conflates motion with path in the main verb (e.g. *in* 'descend') and expresses manner in a subordinated verb (e.g. *koş* 'run') therefore using two verbal

clauses to represent the motion event (e.g., *adam koşarak tepeden indi* 'the man descended the hill while running'; Allen et al. 2007). When speakers of English and Turkish have to encode manner and path of motion, differences arise. In English path is encoded in a verb particle but not in the verb, so the verb is free to encode manner; therefore an English speaker can encode both path and manner in one-verbal clause; where manner is encoded in the main verb and path in the satellite. On the other hand for Turkish, since the main verb is allocated to encode path, manner is encoded as subordinated to the main verb. As a result, Turkish speakers have to use two clauses to express both manner and path of the motion event.

Özçalışkan and Slobin (1999) compared cross-linguistic narrations of the wordless picture book *Frog, Where are you?* by children aged between 3-to-9 and adults in three languages including Turkish, Spanish and English. The results showed that at all ages Turkish speakers used more path verbs compared to English speakers whereas English speakers used more manner verbs. When they analyzed the diversity of manner and path verbs, it was found that the lexicon of manner verbs used by English speakers was more diverse for manner verbs than for path verbs compared to Turkish and Spanish speakers, confirming the expectations. The pattern was the reverse for path verbs; English speakers used less diverse lexicon of path verbs compared to Turkish and Spanish speakers.

The important issue is the extent to which children acquiring different languages use universal mappings of semantic elements on syntactic structures and the extent to which they show effects of language-specific patterns. Bowerman's (1982) linguistic approach to universals hypothesis proposes that children across languages have similar syntactic preferences in their early utterances (Bowerman & Levinson, 2001). According to her approach, children initially go through a stage

where they map each semantic element onto a different lexical element. In the course of development they follow language-specific ways in encoding semantic elements onto syntactic structures.

In order to investigate the extent to which children go through universal and language-specific patterns in encoding motion events, Allen et al. (2007) tested English, Japanese and Turkish speaking children and adults. In their study, participants were shown short animated clips and asked to narrate them. The video clips were motion events in which both Manner and Path were salient and therefore would elicit both elements to be encoded as much as possible. Three-year-old children were included in the study due to the fact that at that age children do not have advanced syntax to express path and manner in one utterance. Allen et al. had two predictions: One is that children may show universal linguistic patterns at the age of 3 and therefore across three languages they may share a particular way of mapping semantic elements on syntactic structures which might differ from adult patterns. The other possibility is that children at the age of 3 might be sensitive to language-specific conceptualization and do not show universal pattern. In the second case, English-speaking children were expected to use one-clause constructions (Manner verb + satellite) and Turkish and Japanese children to use two-clause constructions (Manner verb + Path verb). The results revealed the use of three types of expressions in order to convey manner and path. The first one is tight packaging which refers to expressing path and manner in mono-clausal sentences (*Yeşil adam tik tik tik döndü etrafında ağacın*, 'green man turned tik tik tik around the tree'); the second one is semi-tight packaging which refers to expressing path in the verb but manner in a subordinated form (*Domates adam yuvarlanarak yokuşu indi*, 'Tomato man descended the hill rolling'), and the third one is loose-packaging which refers to

expressing manner and path in two separate sentences; resulting in manner only or path only sentences. (*And red guy twirled,* 'kırmızı adam kıvrıldı'-manner-only, *Sonra yukarı çıktı*, 'Then went up'- path-only) (for examples see Allen et al. 2007, pp. 30-31). The results were analyzed based on the percentages of the three categories of packaging the participants used. The results showed that 3-year-old English-speaking children used tight-packaging more often than their Turkish-speaking peers. Turkish-speaking children used semi-tight packaging more often than English-speaking children, a cross-linguistic difference which is also observed in adult participants. However, when Turkish speaking adults and children were compared, it was seen that children preferred to use tight-packaging significantly more often than adults. The results were discussed to be in line with Slobin's (1985) cognitive prerequisites hypothesis, which proposes that children do not only acquire the structures provided by their language but also this acquisition is accompanied with universal perceptual and cognitive categories. Later, grammatical forms are mapped on to these cognitive categories. More specifically, the authors pointed out that the language specific patterns had not yet been consolidated by age 3, contrary to claims in the literature, and that some remnants of universal tendencies for "compact syntactic constructions such as packaging both elements in one clause rather than two" were still observed (Allen et al, 2007, p. 45).

The present study where motion event conceptualization is studied in bilingual children is important in four ways. First, if evidence shows that there is an effect of L2 on L1 while speaking L1 (as well as an effect of L1 on L2), this would suggests that acquiring L2 at an early age has an effect on children's motion event conceptualization and provide stronger evidence for the Thinking-for-Speaking account. Second, investigating event conceptualization using both a narrative task

and a motion event perception task in a within subject design, a methodological approach not used before, enables gathering converging evidence on the issue. Third, Turkish and English have been studied cross-linguistically comparing monolingual subjects, not bilingual, and to our knowledge, there is no study investigating the effects of these two typologically different languages on the bilingual mind at the preschool level. Finally, data from 5-year-olds will yield further insight regarding the age when language-specific effects in this domain get consolidated.

2.5 Cognitive consequences of bilingualism

2.5.1 Executive functioning: Cognitive flexibility, inhibition and working memory

Executive functioning refers to top-down mental processes that are needed when someone needs to control, plan and monitor thoughts, emotions and actions (Diamond, 2013). Executive functioning is related to the development of numerous abilities children possess such as attentional skills, knowledge and usage of rules, and theory of mind (Zelazo, Reznick, & Frye, 1997). In Zelazo et al.'s (1997, p.219) problem-solving framework, executive function is proposed to involve "representing a problem flexibly, planning organized sequences, executing those sequences and evaluating the results of one's rule use." In their pioneering work, Miyake et al. (2000) postulated differences in shifting (cognitive flexibility), updating (working memory) and inhibition (suppression of prepotent responses) within the umbrella of executive functioning. Confirmatory factor analysis has revealed that these three functions, which constitute the core of executive functioning (Diamond, 2013), are clearly dissociable while sharing a common variance.

Bilingualism is often associated with cognitive advantages that occur across

the lifespan (Bialystok & Viswanathan, 2009; Bialystok, 2009; Bialystok, Craik, Grady, Chau, Ishii, Gunji & Pantev, 2005; Cook, 1997; Hakuta & Diaz 1985; Ricciardelli, 1992). Zelazo and Frye (1998) showed that most 3 year olds performing the Dimensional Card Change Sort (DCCS) task, which requires both inhibition and shifting, perseverate due to lack of cognitive control. In their theory of cognitive complexity and control, Zelazo and Frye (1998) suggest that preschool children lack the necessary representation and executive functioning in order to undertake tasks that have conflicting rules before age 4. It is argued that this ability which requires the representation of higher order rules begins to emerge around age 4. This ability is enhanced in bilingual populations since bilinguals are in constant need to inhibit the language which is not in use and as well as shift from one language to the other. Therefore, bilinguals are found to outperform monolinguals on tasks that involve cognitive flexibility (Bialystok & Martin, 2004; Bialystok, 1999; Barac & Bialystok, 2012). Blom et al. (2014) compared Turkish-Dutch bilingual and Dutch monolingual 5- and 6-year-olds on tasks that measure visuospatial and verbal span abilities. For verbal span, both forward digit span (measure short term memory) and backward digit span (measure of working memory) were implemented. After controlling for SES differences, it was observed that the bilingual group outperformed the monolingual group in working memory. The difference was more pronounced for 6-year-olds but also evident for 5-year-olds. Nicolay and Poncelet (2013) compared two groups of 8-year-old children. One group consisted of monolingual children and the other group consisted of children who were intensely exposed to a second language for three years (immersion group). The two groups were compared based on a battery assessing attentional and executive competence. The immersion group was faster than monolingual group in terms of auditory selective attention, divided

attention and mental flexibility, thus indicating a bilingualism advantage.

2.6 Aim of the study and hypotheses

The above literature indicates that there are bidirectional effects between the two languages of a bilingual. In addition, these effects may manifest themselves in domain general mechanisms such as executive functioning, as well as domain specific areas such as motion event conceptualization. The present study aimed to investigate effects of L2 on L1 and on L1 on L2 language competence reflected in narratives and motion event conceptualization patterns. Narratives provide a comprehensive picture of both linguistic and discourse organizational skills while comparison of motion event conceptualization patterns across L1-Turkish and L2-English, languages that are typologically different, provides more specific information about the effects of L2 on L1 and vice versa. Executive functioning was also assessed to see the effects of early intense exposure to L2. An important motivation for the present study was to obtain a clearer picture concerning the controversial results of two previous studies conducted in the same context. As noted above, while the findings of Aktan-Erciyes and Aksu-Koç (2016a) showed no adverse effects of early immersion in L2-English) on L1-Turkish competence for children aged 4 to 5, the results of the follow-up study where a more complex narrative story was elicited (Aktan-Erciyes & Aksu-Koç, 2016b) revealed that children in L2 immersion in preschool displayed lower L1 narrative skills compared to their peers who attended L1 preschools. It was therefore necessary to further investigate whether adverse effects of L2 exposure on L1 narrative competence are replicable or not and whether adverse consequences will extend to the first two years of primary school when the amount of L2 exposure drops to 10 hrs/week of L2-

English alongside 30 hrs/week of L1-Turkish. These children, however still continue to be bilinguals despite the decrease in L2 exposure. Therefore, it was predicted that immersion in L1 curriculum starting from 6 years of age will override the effects of L2 on L1 both in the case of narrative discourse and of motion event conceptualization.

The specific hypotheses are as follows:

I. Language competence: Narrative discourse and vocabulary skills

1. For monolingual vs. bilingual comparison of plot complexity, narrative quality and linguistic complexity in L1 narratives it is predicted that:

a) Five-year-old monolinguals will display higher levels of plot complexity, narrative quality and linguistic complexity in L1-Turkish narratives than 5-year-old bilinguals since bilinguals who have been immersed in an L2-English preschool context will have less developed narrative skills in L1.

b) There will be no difference between 7-year-old monolinguals and 7-year-old bilinguals in plot complexity, narrative quality and linguistic complexity in L1-Turkish narratives since bilinguals who have been immersed in an L1 primary school context for two years will have caught up with their monolingual peers.

c) Seven-year-old monolinguals and 7-year-old bilinguals will display higher levels of plot complexity, narrative quality and linguistic complexity than 5-year-old monolinguals and 5-year-old bilinguals, respectively, in L1-Turkish narratives.

2. For comparison of L1-Turkish vs. L2-English narratives of bilinguals it is hypothesized that:

a. For both 5- and 7-year-olds, there will be no difference between L1 and L2 narratives in terms of plot complexity and narrative quality.

b. Both 5- and 7-year-olds will display higher levels of linguistic complexity in their L1 narratives compared to their L2 narratives.

c. Seven-year-old bilinguals will display higher levels of plot complexity, narrative quality and linguistic complexity than 5-year-old bilinguals in L2-English narratives.

3. Monolingual children will outperform their bilingual peers in knowledge of vocabulary in Turkish.

II. Motion Event Conceptualization

1. If L2-English (manner focused) exposure influences L1-Turkish (path focused), then five-year-old bilinguals will use more manner structures in L1 narrative motion scenes and L1 motion event descriptions compared to 5-year-old monolinguals.

2. Seven-year-old bilinguals will not differ in the use of manner structures in L1 narrative motion scenes and L1 motion event descriptions, compared to 7-year-old monolinguals.

3. Bilingual children will display more manner structures in their L2 narrative motion scenes and L2 motion event descriptions compared to their L1 narrative motion scenes and L1 motion event descriptions due to the fact that L2-English is a manner focused and L1-Turkish is a path focused language.

III. Cognitive Competence

1. On executive functioning tasks, bilingual children will outperform their monolingual peers:

a. Bilingual children will display higher level of cognitive flexibility as measured by DCCS-border.

b. Bilingual children will display higher level of working memory as measured by Backward Verbal and Digit Span tasks.

c. Bilingual children will display higher level of inhibition as measured by Flanker task compared to their monolingual peers.

2. Performance on executive functioning tasks will be correlated with L2 vocabulary knowledge as measured by PPVT-4.

CHAPTER 3

METHODOLOGY

3.1 Research design

A 2x2 (Age Group x Lingualism) quasi-experimental design was implemented. Age had two levels, 5 and 7-year-olds and lingualism had two levels: monolinguals and bilinguals. Monolinguals and bilinguals differed in terms of the type of school they were attending:

1) Bilinguals were children attending L2 preschools:

Full-time L2-English preschools offer full-time instruction in English (9:00 – 16:00, a total of 7 hours of English teaching per day). Five-year-old bilinguals were attending L2 preschools, 7-year-old bilinguals were attending primary section of the same schools. The age of onset (AoO) of English was 3. Primary schools offered 10 hours of English instruction in the curriculum.

2) Monolinguals were children attending L1 schools:

These schools offer instruction in Turkish in the preschool and introduce English only for 2-3 hours per week. Primary school offered 6 hours of English instruction per week.

3.2 Participants

Fifty four 5-year-olds (M_{age}= 69 months, SD= 3.76) and 58 7-year-old (M_{age}= 91 months, SD=4.33) bilingual and monolingual children participated in the study (See Table 1). Fifty-one bilingual (25 females) and 61 monolingual children (34 females) were tested. Thus in total 112 children participated in the study. All children were from Turkish families, having native Turkish mothers and fathers. Bilingual children

have been exposed to intense English as early as 3 years of age. L2 schools typically cater to upper middle-class families; therefore L1 Schools were chosen among schools of comparable quality to ensure SES equivalence. All families were from high socio-economic status and there was a marginally significant difference regarding income in favor of the bilingual group ($t(105) = -1.98$, $p = .051$) but no difference for mother's and father's education levels ($t(110) = -1.64$, $p = .103$, $t(110) = 1{,}44$, $p = .152$, respectively). There was a moderately high correlation ($r(112) = .57$, $p = .001$) between the educational levels of father's and mother's, therefore only the mother's education was used in the analyses.

Table 1. Mean Age (months) and Standard Deviation of Participants

	Monolinguals				Bilinguals			
	Female		Male		Female		Male	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
5-year-olds	70.11	3.42	68.36	3.38	68.63	3.35	69.27	4.69
7-year-olds	88.76	4.46	91.19	4.77	92.00	3.15	92.73	3.85
N	34		27		25		26	

3.3 Materials

3.3.1 Language competence tasks

Children's language competence was assessed by a vocabulary test in Turkish for monolinguals and in Turkish and English for bilinguals.

Turkish vocabulary test. TİFALDİ - Turkish Expressive and Receptive Language Test (Berument & Güven, 2012) is a standardized tool to assess knowledge of vocabulary in Turkish of children of 2 to 12 years of age. TİFALDİ receptive

vocabulary sub-scale (TİFALDİ-R) consists of 159 items. Each item consists of four pictures on a page one of which represents the stimulus word presented by the experimenter. The child's task is to respond by selecting the picture that best illustrates that word's meaning. TİFALDİ –R was administered to both bilingual and monolingual children.

English vocabulary test. PPVT-4 (Dunn & Dunn, 2012) is a norm referenced instrument for measuring receptive vocabulary of children and adults. PPVT-4 consists of 228 test with four full-color pictures as response options on a page. PPVT-4 was implemented to bilingual children to assess their L2 competence. An English speaking experimenter different than the one implementing TİFALDİ administered PPVT-4.

3.3.2 Executive functioning tasks

Cognitive flexibility task**.** The DCCS is an executive functioning task (Zelazo, Frye & Rapus, 1996) aimed 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) are used in the standard version. Target cards are attached to two separate boxes as labels and stays there throughout the whole session. In the pre-switch phase children are 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 are asked to sort the cards according to the other dimension. At five years-of-age children are expected to pass the standard version (5 correct out of 6 post-switch trials). Therefore, immediately after the standard version is implemented, the border version was introduced by adding extra cards in the task. These extra cards have

borders and children are told that when border cards are presented ‘shape’ game will be played and when a card without borders are presented, ‘color’ game will be played. Therefore, the child had to switch between the rules depending on the card’s specifications. A total of 12 trials were scored; the total amount of correct responses was used to assess the performance.

Working memory tasks. Two tasks for assessing working memory were used. First, Backward verbal span task consisting of animal names was implemented. The task was modelled after the digit-span task of WISC-R; the numbers were replaced by one or two syllable animal names since young children tend to repeat the counting sequences they already know instead of digits that are presented (cited in Yılmaz, Aktürk, Aksu-Koç, 2012). The second task is WISC-R Backward Digit Span task where children are given 2-digit practice trials to repeat backwards and then continue with test trials where list size is increased until the child fails to repeat two consecutive trials up to maximum of 7 digits. The child receives one point for each successful trial accomplished.

Inhibition task. A Flanker (Rueda et al., 2004) task was implemented on the computer screen. In each display, five horizontally positioned fish appears on the screen. The task is to feed the central fish by pressing the appropriate key (ctrl -for fish looking towards left and right arrow- for fish looking toward right). On congruent trials the center fish points to the same direction with other fish whereas in the incongruent trials, center fish points to the opposite direction. Two blocks of 20 trials (including both randomly presented congruent and incongruent trials) were implemented. Participants were instructed to respond as quickly and accurately possible. The task is a good measure of conflict inhibition, which is found to be superior in bilingual individuals. Following calculation in Rueda et al. (2004), an

accuracy score was calculated by adding the number of correct items and considering the reaction times (RT) (i.e. A logarithmic conversion of RT figures was added up on accuracy score).

3.3.3 Narrative skills tasks

Narrative skills task (Turkish). A wordless picture book (*Frog, Where are you?,* Mayer, 1969) was presented to the child. The experimenter made sure that neither the experimenter nor the child knows about the book until the child tells the story. This was assured by placing identical books in two different colored envelopes and asking the child to choose one of them. The experimenter acted as if she saw the book for the first time. Participants were asked to go over the pages to comprehend the story and were asked to tell the story to the experimenter. All sessions were videotaped and transcribed for analyses. Both bilingual and monolingual children performed the task.

Narrative skills task (English*)* An English-speaking experimenter implemented the same task in English on a different day only to bilingual children.

3.3.4 Motion event conceptualization tasks

Motion Event conceptualization in L1 and L2 narratives. Frog Story includes certain scenes that can be coded for motion. These scenes include 1. Frog's exit from the jar, 2. Dog's fall from the window, 3. Gopher coming out of the hole, 4. Owl's exit from a nest, 5. Boy and dog falling down and 6. Boy and dog landing on a pond. Those utterances in the narratives describing these six specific scenes in both L1 and L2 were transcribed and coded.

Motion Event Conceptualization Task. In this task, children watched 12 movie clips of different motion events with a combination of 8 manners (hop, skip, walk, run, cartwheel, crawl, jump and step) and 7 paths (through, down, to, under, around, across, into). Each movie lasted about 3 to 4 seconds and all actions were performed by a woman in the outdoor area (Göksun, Lehet, Malykhinia & Chatterjee, 2015; Akhavan, Nozari & Göksun, 2017). Children were asked to describe the event they have seen after seeing each motion event. (see Appendix A for the full list of stimuli).

3.3.5 Demographic form

Participant families filled out an online form for basic demographic information such as family income, parental education, and language practices (exposure to L2) at home. (See Appendix C)

3.4 Procedure

All children were tested close to the end of the school year so that there were three school years of L2 immersion for 5-year-old bilinguals and two school years of L1 immersion for 7-year-old bilinguals. All children were tested in the school setting in a quiet room. Turkish sessions were always performed first. Following the completion of Turkish sessions within maximum two weeks, English sessions were administered. Turkish sessions were performed by the researcher in the designated order: 1. Narrative skills task, 2. Event conceptualization task, 3. Verbal span task, 4. DCCS-border, 5. Digit span task, 6. Flanker task and 7. TİFALDİ. English sessions were administered only to the bilingual group in the following order: 1. Narrative skills task, 2. Event conceptualization task and 3. PPVT-4. The English sessions

were undertaken by three research assistants in order to prevent language bias of the participants. Three researchers took part in English sessions and there was no effect of researcher on either narrative or motion event scores, (Fs< .274, ps> .762).

CHAPTER 4

RESULTS: NARRATIVE COMPETENCE

4.1 Narrative transcription, coding and reliability

All narratives were transcribed by trained undergraduate psychology students and then checked by the researcher. All of the coding was done by the researcher and for reliability, two voluntary undergraduate psychology students took part in coding as well. There were no effects of gender and family income level on narrative measures, F's < 2.11, p's > .104.

There were two main schemes utilized for coding narrative structure and quality: (1) Berman and Slobin (1994) adapted by Ayaş-Köksal (2011) and (2) Pearson (2002). These two coding schemes were used for the following reasons. Berman and Slobin's Plot Complexity coding relies on explicit mention of crucial components of the plot and their specific indicators within the story. Pearson's Narrative Quality coding is designed to capture four areas: Frog Story Elements, Sequence, Perspective/Affect and Engagement. Although Frog Story Elements coding overlaps with Plot Complexity coding to a large extent, for the sake of completeness I used both schemes. All coding schemes are explained in detail in the following sections. For each scheme, coding was undertaken by the researcher and for reliability purposes trained undergraduate students of psychology took part in coding as well.

Narratives were also coded for the complexity of the linguistic structures in both L1 and L2 narratives. This coding is described in detail in section 4.4.

4.2 Plot complexity coding (Berman & Slobin, 1994)

Narratives were coded based on the schema developed by Ayaş-Köksal (2001;p.38) following the criteria suggested in Berman and Slobin (1994). This coding scheme is based on the assumption that discourse competence relies on explicit mention of major plot components within which subcomponents are organized around a global theme. Three basic plot components constituting a story are: plot onset, plot unfolding and plot resolution. For the *Frog Story,* plot onset refers to the initial event where the boy realizes the frog's escape. Plot unfolding refers to interactions with other characters during the search for the frog. Finally, plot resolution refers to the finding of the lost frog. Due to the importance of the search theme within the story we also noted reference to the search, coding explicit mentions of the missing frog and reiterations of the search for it.

Plot complexity was coded for the presence of three basic components and for the presence of the sub-components specific to the story, where presence of each element received 1 point. Plot onset was scored based on the presence of mentions of the following sub-components: precedent event which refers to the event prior to the boy's discovery of frog's loss (the boy's waking up), temporal location, characters (the boy, the dog and the frog), boy's statement of the inference that the frog has disappeared and the response of the boy as the protagonist. Based on the presence of these sub-components one could assign 0 to 8 points for plot onset. The next component, plot unfolding was scored based on the presence of the following components: seeking the lost frog at home, interacting with bees, with gopher, with owl, with deer and falling into a pond. Failure to name the animals correctly did not affect the score, the scoring criterion depended on explicit mention of the interaction per se regardless of the correct label of the animal. Based on the presence of these

sub-components, one could get 0 to 6 points for plot unfolding. The component of plot resolution was scored for the mention of finding the frog by the protagonist which received 1 point. We also coded the search theme component separately by noting the explicit mention of the lost frog and reiteration of the search theme. Explicit mention of the lost frog received a score of 1 and additional mentions of the search theme received up to 2 points, 1 point for one or two additional mentions and 2 points for more than two additional mentions. Thus the maximum score obtainable is 19. Table 2 presents the plot complexity coding scheme with examples.

Table 2. Coding Scheme for Plot Complexity

Plot Components	Plot Sub-Components	Examples and Explanations
Plot Onset	Precedent Event (+1)	The boy wakes up
	Temporal Location (+1)	In the morning/evening
	Characters (+3)	The boy/child, the dog, the frog Scoring ranges between 0-3 Only one character = 1 Two of the characters =2 Three characters = 3
	The main characters discover something (+1)	The boy finds out that the frog is missing The boy looks for the frog and cannot find the it When the boy and the dog wake up they could not see the frog
	Statement of inference about the frog's disappearance (+1)	The frog ran away from the jar The frog left its jar
	The response of the protagonist (+1)	The boy is surprised/sad
Plot Unfolding	Seeking the lost frog at home (+1)	The boy looks for the frog somewhere in the house
	Encountering the bees (+1)	The bees attack the dog and the boy. The dog wants to catch the bees
	Interacting with gopher (+1)	Gopher attacks boy's nose Gopher gets angry at the boy
	Interacting with owl (+1)	Owl gets out of tree and attacks the boy
	Interacting with deer (+1)	Deer throws the boy to the lake
	Falling down (+1)	Boy and the dog fall down into the lake
Resolution	Protagonist finds lost frog (+1)	The boy found his frog *the boy finds **a** frog, does not receive any point
Search Theme	Explicit mention of lost frog (+2)	Explicit mention of missing frog and the fact that boy was searching for him (range: 0-2). One point for mentioning each aspect of initiating the search theme: -The frog is missing -The boy is looking for the frog * Only mentioning that the frog leaves its jar does not receive any point
	Reiteration of search theme (+2)	No additional mention = 0 1 or 2 additional mentions = 1 Multiple additional mentions = 2.

*Berman and Slobin (1994) adapted by Ayaş- Köksal, (2011), p.38

4.3 Narrative quality coding (Pearson, 2002)

The coding scheme used by Pearson (2002) is designed to capture four areas of narrative competence: frog story elements, sequence, perspective and affect (reference to characters and reference to internal states), and engagement. Coding details for each category are given in Table 3.

Frog story elements include the overall plotline of the story. Sequence refers how narrators chain successive events. For perspective and affect, adequate reference to characters and mention of internal states are scored. For engagement, the narrative is evaluated in terms of the amount of effort put to ensure listener engagement.

For each area the score of 6 was considered to be an average performance as presented in bold characters in the sixth row in Table 3. For frog story elements coding, the story receives points depending on the existence of each element listed in the column. For Sequence, the stories were coded in terms of the categories indicated in the column ranging from 0 to 12, for instance an average factual story would receive a score of 6, a story that has elaborated episodes received a score of 7. After the assignment of a score ranging from 0 to 12, the coder also searched for any instances of picture description and irrelevant details included within the story. For any presence of picture description 1 point is deducted from the Sequence score and same procedure is carried out for inclusion of irrelevant details. For perspective and affect and engagement, a story is initially given a score of 6. If any of the characteristics indicated above the average row is found in the narrative, then the designated score is deducted from the average score of 6, and if any of the characteristics listed below the average row is found in the narrative, then the designated score is added to the final score. A sample transcript coded using this scheme is presented in Appendix D.

Table 3. Coding Scheme for Narrative Quality

Frog Story Elements	Sequence	Perspective/Affect	Engagement
Mentions discovery of missing frog +2 Uses mental verb+1 'looks' only	0 Picture description	–2 Uses 'here' 'there' 'now' to refer to her own reference frame (not the story's)	
+2 Initiates search	3 Gives isolated events	Poor first mention (uses pronoun right away) –1 Main characters –1 Other characters	–2 Vague or confused (in parts)
+1 Finds frog	4 Sequential events (some, not all)	Lapses in reference (reader must ask 'who?') –1 1 defective reference –2 2 defective references –4 5 or more	Disfluencies –2 (grave, interfere with listener's ability to follow story)
+1 Takes frog (home)	–1 for picture description –1 for irrelevant details		
(6) AVERAGE	(6) FACTUAL STORY	(6) NEUTRAL OBSERVER	(6) MATTER OF FACT TONE
+1 Articulates goal	7 Elaborated episodes	+1 Ascribes intention	Attempts to be lively or engaging +1 use of 'refrain' +1 appropriate exclamations
+1 Articulates lack of success		+1 Gives internal state information (affective statements, 1 or 2)	
	8 Hierarchical structure (beginning/middle/ end) (highlighting of an event)	+1 3 or more affective statements	+1 extensive direct speech
+4 Notes character's misperception (branch/antler or other)	12 Retrospective or prospective summary +2 for summary statement +3 for 2 or more	+3 Mentions ironic perspective	Uses figures of speech +1 each (up to 3))
_____/12	_____/12	_____/12	_____/12
			Total_____/48

*Pearson (2002, p.173)

4.4 Linguistic complexity coding

All Frog Story transcriptions were converted into a form following the conventions used by Berman and Slobin (1994), with one 'verbed clause' per line. A clause was defined as "any unit that contains a unified predicate … expressing a single situation (activity, event, or state)" (Berman & Slobin, 1994: p. 660).

The Turkish narratives were coded for the following the clause types: Simple Clause (e.g. *çocuk bağırdı,'*the boy shouted*'*), Infinitival Clause (e.g. *atlamak istedi, '*wanted to jump*'*), Coordinate Clause (e.g. *evden çıktı ve aradı, '*went out of the house and searched*'*), Subordination with Adverbial and Complement Clause (e.g. verb+dığı için *kurbağa kaybolduğu için üzüldü,'*was sad for losing the frog*'; çocuk köpeğe susmasını söyledi* ' the boy told the dog to keep quiet'), Subordination with Converbs (verb+ken (*koşarken düştü,'*fell while running*'*), verb+erek (*koşarak geldi,'*came by means of running'). The English narratives were coded for the following clause types: Simple Clause (e.g. *there was a boy*), Infinitival Clause (e.g. *boy wanted to help*), Coordinate Clause (e.g. *helped the dog and went to the forest*), Subordination with Adverbial Clause (e.g. *when they woke up the frog was gone*). A detailed explanation and examples of Linguistic Complexity Coding can be seen in Table 4 for Turkish and Table 5 for English.

For both English and Turkish narratives Total Number of Word Tokens were also calculated. Total number of Complex clauses was the sum of Coordinate clauses, Subordination with Adverbial or Complement clauses and Subordination with Converbs. Total number of Simple clauses was the sum of all Simple clauses and Infinitival clauses. The percentage of Simple and Complex Clauses were calculated on the basis of Total Number of Clauses for each. All of linguistic complexity coding was undertaken by the researcher and for reliability purposes another trained graduate student coded 20% of the data.

Table 4. Linguistic Complexity Coding: Definitions and Examples for L1-Turkish

Linguistic Complexity Components	Definitions	Examples
Simple clause	A clause with one predicate	-*Bir çocuk **vardı*** - 'There **was** a boy'
Infinitival clauses	A clause with two predicates joined by the -*mak* construction	-*Kurbağay*ı *bul**mak istedi*** -'**Wanted to** find the frog' - *Koş**maya başladı*** -**Started to run**
Coordinate clauses	Two clauses joined with a coordinating conjunction such as 'and', 'but', 'then', 'at last', 'however'	-*evden **çıktı ve aradı** kurbağasını* - '**exited** the house **and searched** for his frog'
Subordination with adverbial and complement clauses	Two clauses joined by a subordinating conjunction such as *-dığı zaman 'when'* *-çünkü 'because'* *-dığı için'for that reason'* *-dıktan sonra 'after' 'while', 'so'*	*- Köpek düş**tükten** sonra kızdı ona* - 'he got angry with the dog **after it fell**'
Subordination with converbs	Two 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*	*-Köpek yere düş**ünce** sinirlendi çocuk* - 'Boy got angry **when** the dog fell'

Table 5. Linguistic Complexity Coding: Definitions and Examples for L2-English

Linguistic Complexity Components	Definitions	Examples
Simple Clause	A clause with one predicate	*-The boy **shouted***
Infinitival Clause	A clause with main and aspectual or modal verbs joined by "to"	*-The boy **wanted to run***
Coordinate Clause	Two clauses joined with a coordinating conjunction such as *and* and *but*	*-the child **woke** up **but** the frog **was not** in the box* *- the child **shouted and ran***
Subordination with adverbial clause	Two clauses joined by a subordinate conjunction using *because, after, when, while, so*	*-the child **was** so sad **because** he **lost** his frog* *- **after** child **woke up** there **was** no frog*

Inter-rater reliability for plot complexity, narrative quality and linguistic complexity measures were assessed through percentage of agreement which was derived from total number of agreements divided by total number of agreements and disagreements. Percent agreement for plot complexity, narrative quality and linguistic complexity components were .91, .93 and .94, respectively. There was a high agreement between the raters for plot complexity (κ = .89 (95% CI, .86 to .93), $p < .01$), narrative quality (κ = .91 (95% CI, .89 to .94), $p < .01$) and linguistic complexity (κ = .92 (95% CI, .90 to .96), $p < .01$). All disagreements were resolved until an agreement was reached.

4.5 Plot complexity: Comparison of monolingual vs. bilinguals for L1

Mean scores and standard deviations of plot components for the frog story narratives elicited in Turkish can be seen in Table 6. For the analysis of Turkish frog stories produced by both the monolingual and bilingual groups, I conducted a 2 (Age: 5-and

7-year-olds) x 2 (Lingualism: monolingual and bilingual) factorial ANOVA for each plot sub-component.

For plot onset, there was a significant effect of age, $F(1,107) = 16.17$, $p < .001$, $\eta_p^2 = .13$, where 7-year-olds (M = 5.7, SD = 1.27) performed better than 5-year-olds (M = 4.44, SD = 1.91) but there was no effect of lingualism $F(1,107) = .26$, $p < .609$, $\eta_p^2 = .003$.

For plot unfolding, there was again a significant main effect of age, $F(1,107) = 17.88$, $p < .001$, $\eta_p^2 = .14$, and 7-year-olds (M = 4.21, SD = .70) performed better than 5-year-olds (M = 3.26, SD = 1.53). There was no effect of lingualism, $F(1,107) = 2.05$, $p = .155$, $\eta_p^2 = .02$, however, there was a marginal interaction effect of age x lingualism $F(1,107) = 2.78$, $p = .07$, $\eta_p^2 = .03$, where 5-year-old monolingual children performed better than bilingual peers.

For plot resolution, there was a main effect of neither age, $F(1,107) = 2.39$, $p = .125$, $\eta_p^2 = .02$, nor lingualism, $F(1,107) = .26$, $p = .26$, $\eta_p^2 = .002$.

For the search theme, there was a main effect of age $F(1,107) = 10.92$, $p < .001$, $\eta_p^2 = .09$ and of lingualism $F(1,107) = 10.45$, $p < .05$, $\eta_p^2 = .09$ but no interaction, $F(1,107) = .79$, $p = .374$, $\eta_p^2 = .008$. When compared, 7-year-olds (M = 1.89, SD = 1.12) articulated the search theme more often than 5-year-olds (M = 1.13, SD = 1.19). Regardless of age, monolingual children (M = 1.87, SD = 1.28) performed better than bilingual group (M = 1.13, SD = 1.00).

For Total scores, which is the sum of plot onset, plot unfolding, plot resolution and search theme scores, there was a significant effect of age $F(1,107) = 24.52$, $p < .001$, $\eta_p^2 = .19$, where 7-year-olds (M = 12.40, SD = 2.51) performed better than 5-year-olds (M = 9.28, SD = 3.82). However, there was no significant effect of

lingualism, $F(1,107) = 1.65$, $p = .202$, $\eta_p^2 = .015$. Mean scores can be seen in Figure 1.

Table 6. Means and Standard Deviations for Plot Complexity Components by Lingualism and Age Group for L1-Turkish Narratives

	monolingual				bilingual			
	5 year olds		7 year olds		5 year olds		7 year olds	
	M	SD	M	SD	M	SD	M	SD
Plot Onset	4.19	2.06	5.78	1.31	4.69	1.76	5.60	1.22
Plot Unfolding	3.62	1.53	4.19	0.78	2.92	1.49	4.24	0.60
Plot Resolution	0.44	0.51	0.56	0.50	0.46	0.51	0.64	0.49
Search Theme	1.38	1.30	2.28	1.14	0.88	1.03	1.40	0.91
Total Score	9.62	3.89	12.81	2.71	8.96	3.80	11.88	2.19
N	27		33		26		25	

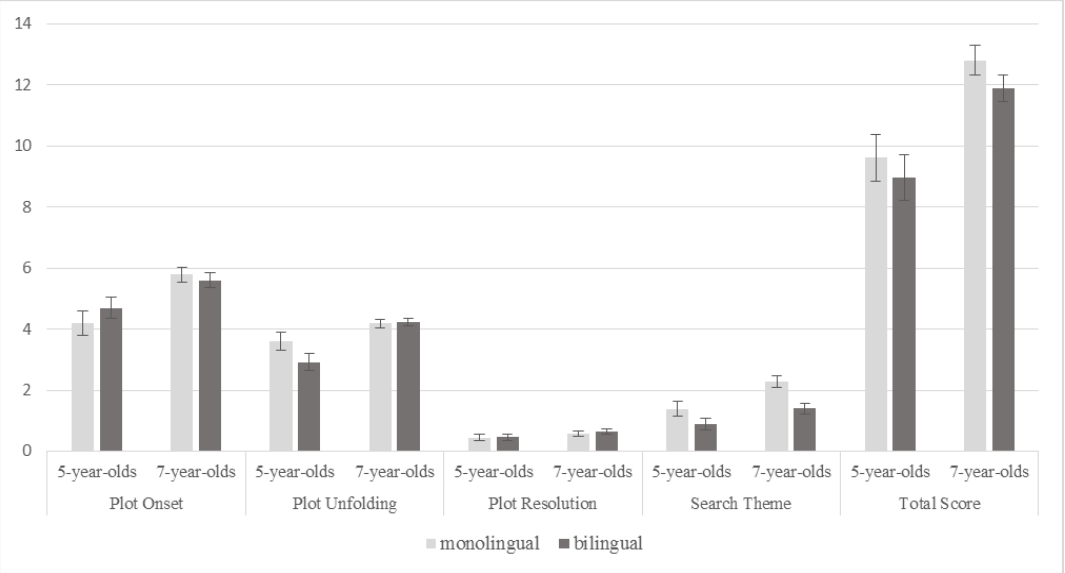

Figure 1. Means for plot complexity components by lingualism and age group in L1-Turkish narratives

4.6 Plot complexity: Comparison of bilinguals for L1 vs. L2

I compared L1-Turkish and L2-English frog stories of bilingual 5 and 7-year-olds. I performed 2x2 (language: L1 and L2 x age: 5 and 7-year-olds) Mixed ANOVA's for

each component of Plot Complexity. For significant interaction outcomes, 3 t-tests were performed ((1) 5-year-old L1 vs. 5-year-old-L2, (2) 5-year-old L2 vs. 7-year-old L2, (3) 7-year-old L1 vs. 7-year-old L2. Since L1 narratives of 5-and 7-year-olds were already compared no further tests were applied). I utilized a Bonferroni correction (Holm, 1979) for all comparisons with a corrected alpha: $(1- (1-.05)^{1/3} = .017)$. Mean scores and standard deviations for L1 and L2 can be seen in Table 7 and Figure 2.

For plot onset, there was no significant effect of language; bilingual children performed similarly in both L1 and L2 narratives, $F(1,46) = .231$, $p = .633$, $\eta_p^2 = .005$. There was no significant effect of age either, $F(1,46) = 3.12$, $p = .084$, $\eta_p^2 = .064$. There was no significant interaction of language and age, $F(1,46) = .943$, $p = .337$, $\eta_p^2 = .02$.

For, plot unfolding, there was a significant main effect of language, $F(1,46) = 18.74$, $p = 0$, $\eta_p^2 = .289$, where bilingual children had higher scores in their L1 narratives (M = 3.54, SD = 1.35) compared to L2 narratives (M = 2.42, SD = 1.40). There was a main effect of age, where 7-year-olds performed better than 5-year-olds, $F(1,46) = .11.32$, $p = .002$, $\eta_p^2 = .197$. However, there was no significant interaction between language and age, $F(1,46) = 3.08$, $p = .086$, $\eta_p^2 = .063$.

For plot resolution, there was no main effect of language, age and age x language interaction ($F(1,46) = .194$, $p = .662$, $\eta_p^2 = .004$, $F(1,46) = 2.93$, $p = .094$, $\eta_p^2 = .060$, $F(1,46) = .154$, $p = .697$, $\eta_p^2 = .003$, respectively).

For search theme, there was a main effect of language, where bilingual children performed better in L1 narratives (M = 1.13, SD = .98) compared to L2 narratives (M = .48, SD = .65). There was also a significant interaction of language

and age, $F(1,46) = 7.11$, $p = .011$, $\eta_p^2 = .134$. For 5-year-olds there were no differences between L1 and L2 narratives, ($t(23) = .923$, $p = .365$); however 7-year-old bilingual children performed better in L1 compared to L2 stories, $t(21) = 5.13$, $p < .001$. When L2 narratives for 5 and 7-year-olds were compared, there was no significant difference in terms of the Search theme, $t(46) = 2.09$, $p = .042$)[1]

For total scores there was a significant effect of language where bilingual children performed better in L1 (M = 10.35, SD = 3.47) compared to L2 narratives (M = 8.85, SD = 3.33), $F(1,46) = 5.98$, $p = .018$, $\eta_p^2 = .115$. There was a main effect of age where 7-year-olds performed better than 5-year-olds, $F(1,46) = 5.49$, $p = .02$, $\eta_p^2 = .107$. There was also a significant interaction of language and age, $F(1,46) = 4.90$, $p = .032$, $\eta_p^2 = .096$. There were no differences between L1 and L2 narratives for 5-year-olds there, $t(25) = .153$, $p = .88$. However, 7-year-olds performed better in L1 compared to L2 narratives, $t(21) = 3.79$, $p < .001$. There were no differences in L2 narratives between 5 and 7-year-olds, $t(46) = -.104$, $p = .918$.

Table 7. Means and Standard Deviations for Plot Complexity Components by Age Group for L1 vs. L2 Narratives of Bilinguals

	5-year-olds				7-year-olds			
	L1-Turkish		L2-English		L1-Turkish		L2-English	
	M	SD	M	SD	M	SD	M	SD
Plot Onset	4.69	1.76	5.23	2.14	5.63	1.25	5.45	1.47
Plot Unfolding	2.92	1.49	2.23	1.36	4.27	0.63	2.63	1.43
Plot Resolution	0.47	0.51	0.69	0.47	0.68	0.48	0.55	0.51
Search Theme	0.88	1.03	0.65	0.74	1.41	0.85	0.27	0.46
Total Score	8.96	3.79	8.80	3.71	12.00	2.12	8.91	2.99
N	26		26		22		22	

[1] No significant difference due to corrected alpha value .017

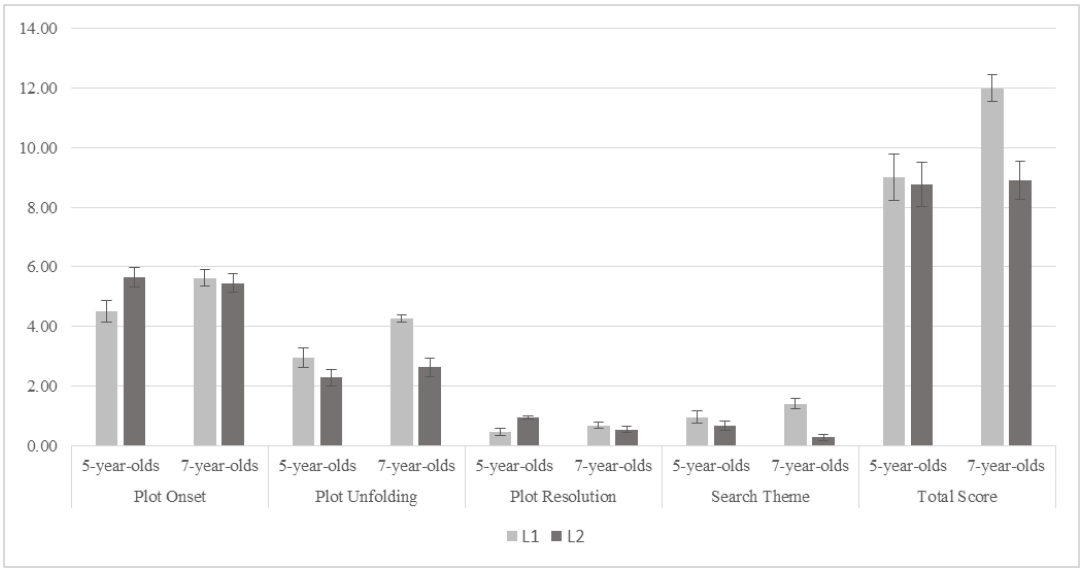

Figure 2. Means for plot complexity components by age group in L1 vs. L2 narratives for bilinguals

4.7 Narrative quality: Comparison of monolingual vs. bilinguals for L1

Mean scores and standard deviations of Narrative quality components can be seen in Table 8 and Figure 3. I conducted a 2 (Age: 5-and 7-year-olds) x 2 (Lingualism: monolingual and bilingual) factorial ANOVA for each component of narrative quality.

Table 8. Means and Standard Deviations for Narrative Quality Components by Lingualism and Age Group for L1 Narratives

	monolingual				bilingual			
	5 year olds		7 year olds		5 year olds		7 year olds	
	M	SD	M	SD	M	SD	M	SD
Frog Story Elements	5.26	2.80	6.85	2.65	2.92	2.71	5.64	2.46
Sequence	6.30	2.64	8.91	1.89	4.46	2.60	6.28	1.70
Perspective/Affect	2.15	2.94	7.36	1.45	2.42	2.53	2.60	2.63
Engagement	3.04	1.63	5.85	0.91	2.35	1.13	3.00	2.04
Total Story Score	16.74	8.43	28.97	5.29	12.15	7.02	17.52	7.06
N	27		33		26		25	

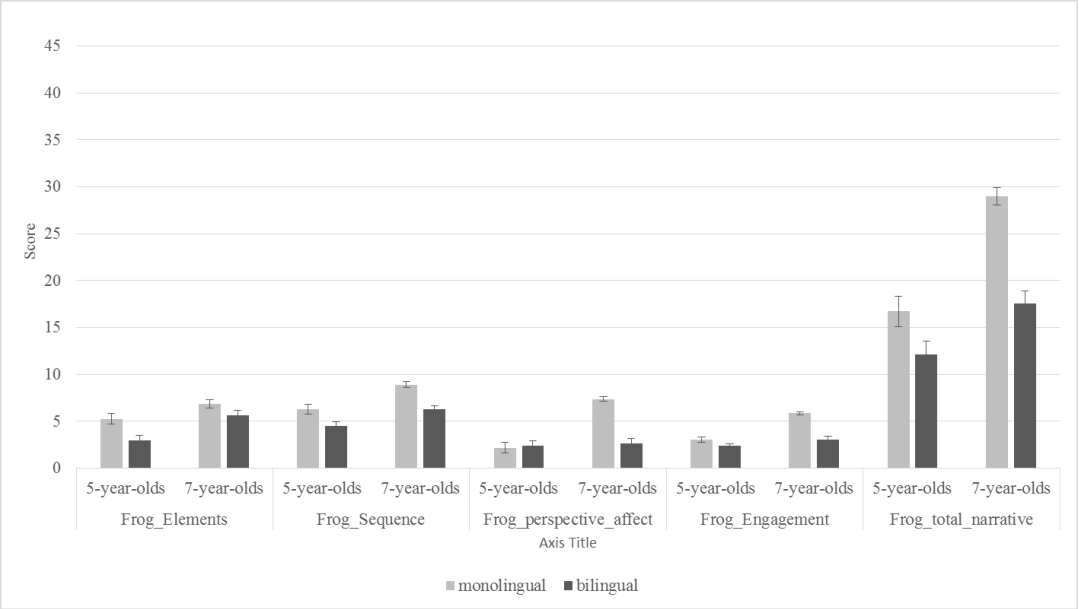

Figure 3. Means for narrative quality components by lingualism and age group in L1 narratives

For frog story elements, there was a significant effect of lingualism, $F(1,107) = 12.18$, $p < .001$, $\eta_p^2 = .102$, where monolingual (M = 6.13, SD = 2.81) children performed better than bilingual peers (M = 4.25, SD = 2.91) and there was also a significant main effect of age ($F(1,107) = 17.97$, $p < .001$, $\eta_p^2 = .015$), 7-year-olds (M = 6.33, SD = 2.62) performed better than 5-year-olds (M = 4.11, SD = 2.97). There was no interaction effect of age x lingualism ($F(1,107) = 1.23$, $p = .269$, $\eta_p^2 = .011$.

For sequence, which is a measure of narrative quality, there was again a main effect of lingualism, where monolingual children (M = 7.73, SD = 2.59) performed better than bilingual ones (M = 5.35, SD = 2.36), $F(1,107) = 27.39$, $p < .001$, $\eta_p^2 = .20$; and main effect of age, $F(1,107) = 26.99$, $p < .001$, $\eta_p^2 = .201$, where 7-year-olds (M= 7.59, SD = 2.22) performed better than 5-year-olds (M = 5.39, SD = 2.75). There was no interaction of age x lingualism ($F(1,107) = .867$, $p = .354$, $\eta_p^2 = .008$).

For perspective and affect there were both main effect of age ($F(1,107) = 34.45$, $p < .001$, $\eta_p^2 = .244$) and lingualism ($F(1,107) = 23.87$, $p < .001$, $\eta_p^2 = .182$).

Results show that 7-year-olds (M =5.31, SD = 3.12) performed better than 5-year-olds (M = 2.28, SD = 2.72) and monolinguals (M = 5.01, SD = 3.44) performed better than bilinguals (M = 2.51, SD = 2.55). There was also a significant interaction effect, $F(1,107) = 30.08$, $p = 0$, $\eta_p^2 = .015$. Pairwise comparisons showed that there was no significant difference between 5-year-old bilinguals and 5-year-old monolinguals ($t(51) = .36$, $p = .717$). However, for 7-year-olds, monolinguals performed significantly better than bilinguals, $t(56) = 8.79$, $p < .001$. Therefore, the significant main effect of lingualism stemmed from the difference between monolingual and bilingual 7-year-olds.

For engagement there was a significant main effect of age ($F(1,105) = 38.81$, $p < .001$, $\eta_p^2 = .266$) and lingualism ($F(1,107) = 40.48$, $p < .001$, $\eta_p^2 = .274$) as well as a significant age x lingualism interaction ($F(1,107) = 15.04$, $p < .001$, $\eta_p^2 = .123$). The results showed that 7-year-olds (M = 4.62, SD = 2.05) performed better than 5-year-olds (M = 2.69, SD = 1.44) and monolinguals (M = 4.58, SD = 1.89) performed better than bilinguals (M = 2.66, SD = 1.66). The results of a t-test revealed that significant interaction effect was due to the fact that 7-year-old monolinguals were better than their bilingual peers ($t(56) = 7.16$, $p < .001$) but no such difference found for 5-year-olds, ($t(51) = 1.78$, $p = .08$).

For total story score, which is derived from adding up frog story elements, sequence, perspective and affect and engagement scores, there was a main effect of age and lingualism, ($F(1,107) = 43.93$, $p < .001$, $\eta_p^2 = .291$), ($F(1,105) = 36.49$, $p < .001$, $\eta_p^2 = .254$) respectively. The results showed that 7-year-olds (M = 24.03, SD = 8.33) performed better than 5-year-olds (M = 14.49, SD = 8.03). Also, monolinguals (M = 23.47, SD = 9.17) outperformed bilinguals (M = 14.78, SD = 7.48). There was also a significant interaction effect of age x lingualism ($F(1,107) = 6.68$, $p < .05$, η_p^2

=.059). When we investigated the pairwise comparison we found that for both ages monolinguals performed better than bilinguals. The significant interaction showed that performance difference between monolinguals and bilinguals for 7-year-olds was greater than the performance difference for 5-year-olds. (see Figure 4).

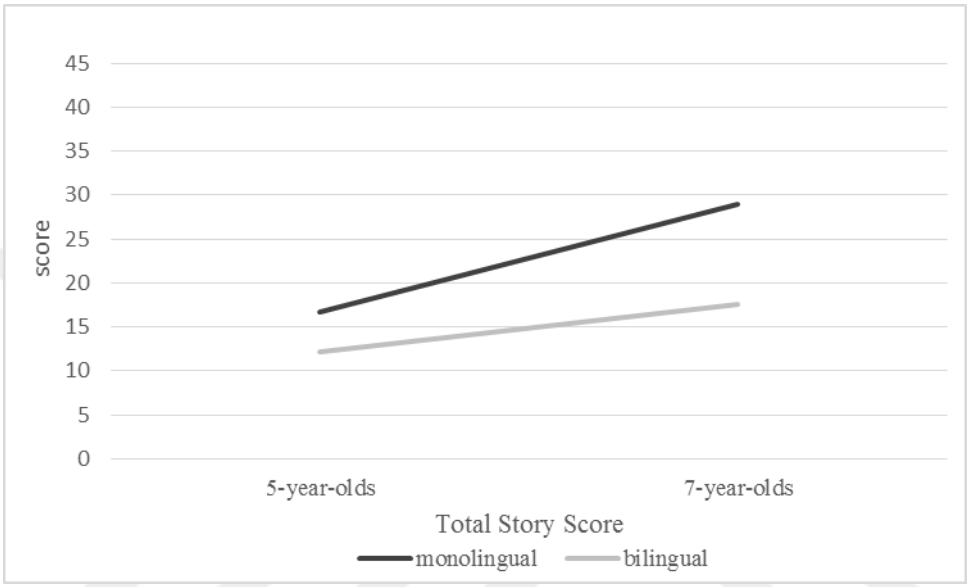

Figure 4. Total story scores by lingualism and age group for L1 narratives

4.8 Narrative quality: Comparison of bilinguals for L1 vs. L2

The L1 and L2 frog story narratives were compared following Narrative Quality Scoring (Pearson, 2002) for 5- and 7-year-old bilingual children. I performed a 2x2 (language: L1 and L2 x age) Mixed ANOVA's for each sub-component of Narrative Quality. Again, all post-hoc t-tests were performed using adjusted alpha: .017. Mean scores can be seen in Table 9 and Figure 5.

For frog story elements, there was no main effect of language, $F(1,46) = .159$, $p = .692$, $\eta_p^2 = .003$, and no main effect of age, $F(1,46) = 1.45$, $p = .235$, $\eta_p^2 = .031$. There was a significant interaction of age x language $F(1,46) = 17.79$, $p < .001$, $\eta_p^2 = .279$. Five-year-old bilinguals performed better in L2 compared to L1, $t(25) = -2.38$,

$p < .01$. However, 7-year-olds performed better for L1 narratives compared to L2 narratives, $t(21) = 3.01$, $p < .01$. When L2 narratives of 5-and7-year-olds were compared, there was no significant difference, $t(46) = 1.60$, $p = .113$.

For sequence, there was neither main effect of language nor an interaction of age and language, $F(1,46) = .062$, $p = .805$, $\eta_p^2 = .001$, $F(1,46) = .018$, $p = .893$, $\eta_p^2 = 0$, respectively. There was only main effect of age, where 7-year-olds performed better than 5-year-olds, $F(1,46) = 11.61$, $p < .001$, $\eta_p^2 = .279$.

For perspective and affect, there was a significant main effect of language, $F(1,46) = 38.30$, $p < .001$, $\eta_p^2 = .454$. Bilingual children performed better in L2 narratives (M = 5.41, SD = 1.90) compared to their L1 narratives (M = 2.43, SD = 2.57). There was neither main effect of age, nor an interaction of language and age, $F(1,46) = 3.144$, $p = .083$, $\eta_p^2 = .064$, $F(1,46) = 2.48$, $p = .122$, $\eta_p^2 = .051$, respectively.

For engagement, there was a significant main effect of language, $F(1,46) = 44.60$, $p < .001$, $\eta_p^2 = .492$. Bilingual children performed better in L2 (M = 4.83, SD = 2.14) compared to L1 narratives (M = 2.48, SD = 1.50). There was neither main effect of age nor and interaction of age and language, $F(1,46) = .663$, $p = .420$, $\eta_p^2 = .014$, $F(1,46) = 3.24$, $p = .078$, $\eta_p^2 = .066$, respectively.

Finally, Total Story Scores showed that again, there was a main effect of language, where bilingual children performed better in L2 narratives (M = 18.27, SD = 8.29) compared to L1 narratives (M = 12.15, SD = 7.01), $F(1,46) = 20.73$, $p < .001$, $\eta_p^2 = .311$. There was no main effect of age, $F(1,46) = 3.35$, $p = .074$, $\eta_p^2 = .068$; and no interaction effect of age and language, $F(1,46) = 2.27$, $p = .139$, $\eta_p^2 = .047$.

Table 9. Means and Standard Deviations for Narrative Quality Components by Age Group for L1 vs. L2 Narratives of Bilinguals

	5-year-olds				7-year-olds			
	L1-Turkish		L2-English		L1-Turkish		L2-English	
	M	SD	M	SD	M	SD	M	SD
Frog Story Elements	2.92	2.71	4.46	2.76	5.50	2.42	3.45	2.19
Sequence	4.45	2.59	4.46	2.33	6.27	1.77	6.09	2.56
Perspective-Affect	2.42	2.53	4.34	2.33	2.45	2.67	6.95	3.71
Engagement	2.34	1.12	5.00	2.40	2.63	1.86	4.13	2.21
Total Story Score	12.15	7.02	18.26	8.29	16.86	6.91	20.50	7.78
N	26		26		22		22	

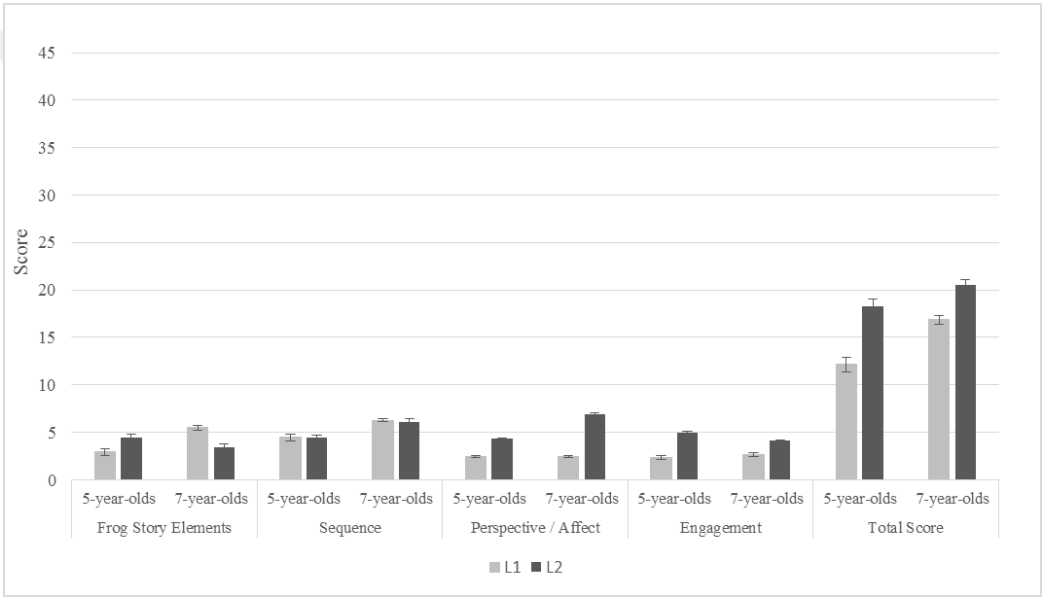

Figure 5. Means for narrative quality components by age group for L1 vs. L2 narratives of bilinguals

4.9 Linguistic complexity: Comparison of monolinguals vs. bilinguals for L1

I conducted a 2 (Age: 5-and 7-year-olds) x 2 (Lingualism: monolingual and bilingual) factorial ANOVA for all linguistic complexity components. I also computed percentage scores for Simple Clauses and Complex Clauses total of which corresponded to Total number of Clauses. Total number of Complex clauses corresponds to the sum of Coordinate Clauses, Subordination with adverbial and complement clauses, and Subordination with Converbs. Total number of Simple

Clauses corresponded to sum of Simple and Infinitival Clauses. Percentage of Complex Clauses was calculated by dividing Total number of Complex Clauses to Total number of Clauses. The same computation was done for Percentage of Simple Clauses.

First, I compared L1 frog story narratives in terms of Total number of Words. We found a significant main effect of lingualism ($F(1,107) = 10.98$, $p < .001$, $\eta_p^2 = .09$), where monolinguals (M = 182.1 SD = 63.9) narrated longer stories than bilinguals (M = 137.6, SD = 76.4). There was also a marginal effect of age ($F(1,107) = 3.79$, $p = .054$, $\eta_p^2 = .03$) where 7-year-olds (M = 174.4, SD = 47.6) produced longer stories than 5-year-olds (M = 147.5, SD = 91.9). There was no significant interaction of age x lingualism. I also compared monolinguals and bilinguals based on Total Number of Clauses they used. There was a significant effect of lingualism ($F(1,107) = 19.17$, $p < .001$, $\eta_p^2 = .15$), where monolinguals (M = 47.13, SD = 14.07) produced more Number of Clauses than bilinguals (M = 34.96, SD = 15.46). There was also a significant main effect of age, 7-year-olds (M = 45.34, SD = 10.98) had higher scores compared to 5-year-olds (M = 37.38, SD = 19.16) ($F(1,107) = 7.83$, $p < .01$, $\eta_p^2 = .07$). There was no significant interaction effect of age x lingualism ($F(1,107) = 2.62$, $p = .108$, $\eta_p^2 = .02$) (see Table 4.10).

For percentage of Infinitival clauses, there was a main effect of lingualism ($F(1,107) = 3.89$, $p < .05$, $\eta_p^2 = .03$) where monolinguals (M = .06, SD = .04) used more Infinitival clauses than bilinguals (M = .04, SD = .05). There was no main effect of age ($F(1,107) = 2.53$, $p = .114$, $\eta_p^2 = .02$) or age x lingualism interaction ($F(1,107) = .86$, $p = .356$, $\eta_p^2 = .008$). For percentage Coordinate clauses, there was a marginal effect of lingualism ($F(1,107) = 3.35$, $p = .07$, $\eta_p^2 = .03$), where again

monolinguals (M = .09, SD = .06) used more Coordinate clauses than bilinguals (M = .06, SD = .06). There was no main effect of age ($F(1,107) = 2.27$, $p = .134$, $\eta_p^2 = .02$) or age x lingualism interaction ($F(1,107) = .221$, $p = .639$, $\eta_p^2 = .03$). Subordination with converbs, there was a main effect of lingualism ($F(1,107) = 4.55$, $p < .05$, $\eta_p^2 = .04$), again monolinguals had (M = .08, SD = .05) higher scores compared to bilinguals (M = .06, SD = .06), there was again no main effect of age ($F(1,107) = 2.70$, $p = .103$, $\eta_p^2 = .02$) and no interaction effect of age x lingualism ($F(1,107) = .006$, $p = .9374$, $\eta_p^2 = 0$). For Subordination with adverbial and complement clauses, there was no significant effect of lingualism ($F(1,107) = 3.23$, $p = .07$, $\eta_p^2 = .03$). There was no main effect of age ($F(1,107) = 1.05$, $p = .306$, $\eta_p^2 = .01$). However, there was a significant interaction effect of age x lingualism ($F(1,107) = 13.79$, $p < .01$ $\eta_p^2 = .115$). The t-test revealed a significant difference for 5-year-olds ($t(51) = 2.27$, $p < .05$) where bilingual 5-year-olds (M = .02, SD = .04) had lower scores than monolingual 5-year-olds (M = .07, SD = .04). There was no difference for 7-year-olds.

I investigated whether bilinguals and monolinguals differed in terms of the percentage of Simple Clauses and Complex clauses they used in their narratives. For this purpose a 2 (Age: 5-and 7-year-olds) x 2 (Lingualism: monolingual and bilingual) factorial ANOVA was conducted. The results showed that there was a main effect of age ($F(1,107) = 7.61$, $p < .01$ $\eta_p^2 = .07$) and lingualism ($F(1,107) = 16.99$, $p < .001$ $\eta_p^2 = .14$) on percentage Complex clauses (see Table 4.10). There was no significant interaction effect of age x lingualism ($F(1,107) = 2.39$, $p = .125$, $\eta_p^2 = .02$). Pairwise comparisons showed that 7-year-olds (M = .48, SD = .14) used more Complex Clauses than 5-year-olds (M = .39, SD = .21). Results also showed that for

bilingual children (M =.36, SD = .19) the percentage of Complex Clauses was lower compared to monolinguals (M = .50, SD = .15) regardless of age. Complementary results were obtained for Simple Clauses, there was a main effect of age ($F(1,107)$ = 7.61, $p < .01$ η_p^2 =.07) and lingualism ($F(1,107) = 16.99$, $p < .001$ η_p^2 =.14) the percentage of Simple Clauses was lower for 7-year-olds (M = .52, SD = .14) than for 5-year-olds (M = .61, SD = .21) and higher for bilinguals (M = .64, SD = .19) compared to monolinguals (M = .50, SD = .15). There was no significant interaction of age x lingualism ($F(1,107) = 2.39$, $p = .125$, η_p^2 =.02) (see Table 10 and Figure 6).

4.10 Linguistic complexity: Comparison of bilinguals for L1 vs. L2

For Linguistic Complexity components, I compared L1 and L2 narratives of bilingual children. For this purpose I performed 2x2 (language: L1-L2 x age: 5- and 7-year-olds) Mixed ANOVA's. Again for significant interactions I performed post-hoc t tests with Bonferroni adjusted alpha level .017. For mean scores see Table 10 and Figure 6.

Results for Total Number of Words for narratives for L1 and L2 showed that there was an effect of language on Total Number of Words, where bilingual children produced longer stories in L2 compared to L1, $F(1,44) = 38.28$, $p < .01$, $\eta_p^2 = .47$. There was no main effect of age, $F(1,44) = 1.24$, $p = .027$, $\eta_p^2 = .47$ or an interaction of age x language, $F(1,44) = 1.48$, $p = .231$, $\eta_p^2 = .032$. I carried out similar analysis for Total Number of Clauses. The results revealed there was a significant effect of language on number of clauses where bilingual children used more clauses in their L1 (M = 36.15, SD =15.41) compared to L2 (M = 30.17, SD = 9.85) narratives.

There was a significant effect of age, where 7-year-olds (M = 36.37, SD = 11.21) used more clauses compared to 5-year-olds (M = 29.66, SD = 9.15). There was no significant interaction of age x language, $F(1,44) = 2.46$, $p = .124$, $\eta_p^2 = .053$.

I also compared L1 and L2 narratives of bilingual children in terms of percentages of Simple and Complex clauses. For Simple Clauses, there was an effect of language where bilingual children used more Simple Clauses in their L2 narratives (M = .79, SD = .17) compared to their L1 narratives (M = .62, SD = .19), $F(1,44) = 28.03$, $p < .001$, $\eta_p^2 = .39$. There was a main effect of age as well, where 5-year-olds (M = .78, SD = .32) used more Simple Clauses compared to 7-year-olds (M = .65, SD = .27), $F(1,44) = 10.77$, $p < .01$, $\eta_p^2 = .19$. There was no interaction of age x language, $F(1,44) = .158$, $p = .693$, $\eta_p^2 = .004$. Complementary results were obtained for Complex clauses. There was an effect of language where bilingual children used more Complex Clauses in their L1 narratives (M = .38, SD = .19) compared to their L2 narratives (M = .20, SD = .17), $F(1,44) = 28.03$, $p < .001$, $\eta_p^2 = .39$. There was again main effect of age, where 7-year-olds (M = .35, SD = .27) used more Complex Clauses compared to 5-year-olds (M = .22, SD = .32), $F(1,44) = 10.77$, $p < .01$, $\eta_p^2 = .19$. There was no interaction of age x language, $F(1,44) = .158$, $p = .693$, $\eta_p^2 = .004$. (see Table 10 and Figure 6).

Table 10. Means and Standard Deviations for Total Number of Words, Clauses, Simple Clauses and Complex Clauses by Lingualism and Age Group in L1 vs. L2 Narratives

	monolinguals				bilinguals - L1				bilinguals - L2			
	5-year-olds		7-year-olds		5-year-olds		7-year-olds		5-year-olds		7-year-olds	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Total Number of Words	177.5	80.1	185.7	47.9	116.4	94.3	159.6	43.6	195.5	91.2	207.2	71.2
Total Number of Clauses	45.4	16.8	48.5	11.5	29.1	18.2	41.1	8.8	28.4	8.3	31.8	8.9
Simple Clauses	0.48	0.15	0.49	0.15	0.71	0.22	0.57	0.12	0.87	0.11	0.73	0.18
Complex Clauses	0.52	0.15	0.51	0.15	0.29	0.22	0.43	0.12	0.13	0.11	0.27	0.18

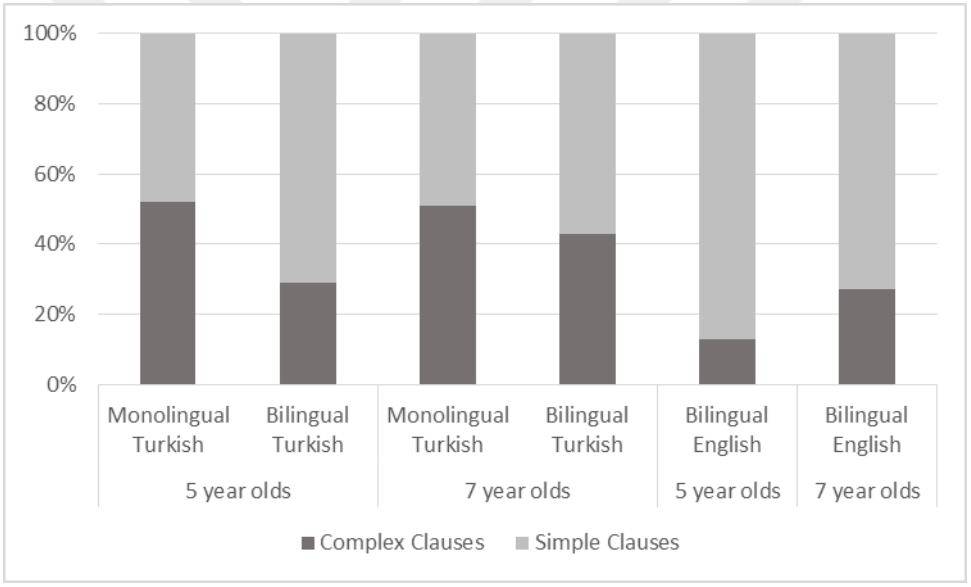

Figure 6. Mean percentages for complex and simple clauses by lingualism and age group for L1 and L2 narratives

4.11 Summary of Findings: Plot complexity, narrative quality, linguistic complexity

4.11.1 Plot complexity

I investigated whether there were effects of bilingualism on Plot Complexity measures for Frog Story narratives for both bilingual and monolingual 5-and 7-year-

olds. The results indicated that there was no effect of lingualism on plot onset, plot resolution and total scores. There was an effect of lingualism only for the Search Theme where monolinguals mentioned the Search Theme more than bilinguals regardless of age. Although there was no main effect of lingualism on Plot Unfolding, there was a significant interaction effect of age x lingualism, where 5-year-old monolinguals performed better than their bilingual peers. There was a main effect of age for all Plot Complexity components where 7-year-olds performed better than 5-year-olds, except plot resolution where all age groups performed poorly.

I also compared L1 and L2 narratives of bilingual children. For plot onset and resolution there was no significant effect of language or age, both age groups performed similarly for L1 and L2 narratives. For plot unfolding, bilingual children had higher scores in their L1 narratives compared to L2 narratives; 7-year-olds had higher scores compared to 5-year-olds regardless of the language used. For search theme, the main effect of language showed that bilingual children performed better in L1 narratives compared to L2 narratives; post-hoc tests showed that the difference was due to 7-year-olds who performed better in L1 compared to L2 but for 5-year-olds there was no such difference. For L2 narratives both 5-and 7-year-olds performed similarly regarding Search theme.

Overall, for Total Scores, there was a significant effect of language and age where bilingual children performed better in L1 compared to L2 and 7-year-olds performed better than 5-year-olds. Significant age x language interaction showed that the difference was due to the fact that 7-year-olds performed better in L1 compared to L2 but there was no such difference for 5-year-olds.

4.11.2 Narrative quality

I investigated whether there were differences in Narrative Quality measures between bilingual and monolingual children in their L1 narratives. For all components: frog story elements, sequence, perspective and affect, engagement and total scores, there were both main effect of age where 7-year-olds performed better than 5-year-olds and a main effect of lingualism where monolinguals performed better than bilinguals. For perspective and affect and engagement scores, there was an interaction effect which further showed that the difference for these components came from 7-year-olds where 7-year-old monolinguals performed better than 7-year-old bilinguals and there was no difference for 5-year-old monolinguals and bilinguals. For total scores again there was an interaction effect of age x lingualism, in addition to main effect of age and lingualism, which implies that performance difference between bilingual and monolingual 7-year-olds was greater than the difference between bilingual vs. monolingual 5-year-olds.

When L1 and L2 narratives of bilingual children were compared, for frog story elements results showed that 5-year-old bilinguals performed better in L2 compared to L1 however 7-year-olds performed better in L1 compared to L2. For sequence scores there was no difference between L1 and L2 narratives. For perspective and affect, engagement and total story scores, bilingual children performed better in L2 narratives compared to L1 narratives regardless of age.

4.11.3 Linguistic complexity

I compared L1 narratives of bilingual and monolingual children in terms of linguistic complexity measures. I also compared L1 and L2 narratives of bilingual children.

For Total Number of Words results showed that monolinguals produced longer narratives compared to bilinguals regardless of age. There was also a marginal effect of age, where 7-year-olds produced longer stories compared to 5-year-olds. For Total Number of Clauses, 7-year-olds used more clauses compared to 5-year-olds.There was also a main effect of lingualism where monolinguals used more clauses than bilinguals.

For linguistic complexity components of Infinitival Clauses, Coordinate Clauses, Subordination with converbs and Subordination with adverbial and complement clauses in narratives, no age effect was found. For Infinitival Clauses and Subordination with converbs, monolinguals had higher scores compared to bilinguals for both age groups. For Coordinate Clauses and Subordination with adverbial and complement clauses, there was a marginal effect of lingualism where again monolinguals had higher scores than bilinguals. For Subordination with adverbial and complement clauses, there was a significant interaction effect where 5-year-old monolinguals had higher scores than 5-year-old bilinguals.

I compared the percentage of Simple and Complex clauses in L1 narratives of bilingual and monolingual children. For both Simple and Complex clauses there was an effect of both age and lingualism where 7-year-olds used fewer Simple Clauses and more Complex clauses compared to 5-year-olds as well as monolingual children used fewer Simple clauses and more Complex clauses in their L1 narratives.

I also compared L1 and L2 narratives of bilingual children in terms of length. Assessed in terms of Total Number of Words, in each age group bilingual children produced longer narratives in L2 compared to L1. However, assessed in terms of Total number of clauses, bilingual children used more clauses in L1 narratives

compared to L2 narratives regardless of age. Significant main effect of age showed that 7-year-olds used more Clauses compared to 5-year-olds.

I also compared L1 and L2 narratives of bilingual children based on percentage scores of Complex and Simple clauses. Results showed that for both age groups, children expressed fewer Simple clauses and more Complex clauses in their L1 narratives compared to their L2 narratives. A significant main effect of age showed that 7-year-olds used fewer Simple clauses and more Complex compared to 5-year-olds.

CHAPTER 5

RESULTS: MOTION EVENT CONCEPTUALIZATION IN FROG STORY NARRATIVES

5.1 Transcription, coding and reliability

Coding for motion events was undertaken for the six scenes of the Frog Story that elicit motion event descriptions. These scenes were: 1. Frog's exit from the jar, 2. Dog's fall from the window, 3. Gopher popping out of the hole, 4. Owl's exit from a nest, 5. Boy and dog falling down and 6. Boy and dog landing in a pond. (See Appendix B for pictures

All path and manner structures were coded in detail. For manner, I coded: Manner expressed by a verb (e.g. *zıplıyor*, 'jumping'), by an adverbial clause (e.g. *zıplayarak gitti*, 'went running') and –by an adverb (e.g. *hızlıca* gidiyor, 'going fast'). For path information, I coded Path as expressed by a verb (e.g. *çıkıyor*, 'exiting'), by a light verb (e.g, *geliyor*, 'coming'), by a postposition (e.g. *arkasından* geliyor, 'coming behind') and by a suffix (e.g. *bahçe-ye atlıyor*, 'jumping to the garden') for Turkish transcriptions. For L2 descriptions manner expressed by a verb, (e.g. the girl is skipping) an adverb (e.g. woman is going fast) were coded. For Path information, Path expressed by a verb (e.g. the woman if falling), a light verb (e.g. the lady is going under the map) and a preposition were (e.g. girl is turning around the lamp) coded.

Depending on how manner and path structures were used, three possible categories were coded for both L1 and L2: Manner-only structures included only manner of motion, but not path (e.g, *atlıyor*,'jumping'), Path-only descriptions involved only path information but not manner (e.g. *çıkıyor*, 'exiting'), Path-and-

Manner descriptions included both path and manner components (e.g. *seke seke giriyor*, 'entering skipping').

For each of the above structures, coding was undertaken by the researcher and for reliability purposes one trained undergraduate student of psychology took part in coding as well. Inter-rater reliability for Manner and Path structures were measured both by percent agreement as well as by kappa. Percent agreement for Manner structures and Path structures were .92 and .93, respectively. There was a high agreement between the raters for Manner (κ = .87 (95% CI, .82 to .94), $p < .01$) and Path structures (κ = .90 (95% CI, .88 to .95), $p < .01$). All disagreements were resolved until an agreement was reached.

5.2 Expressing path and manner in L1 frog story narratives

5.2.1 Manner-only, path-only and path-and-manner descriptions in L1 Frog Story Narratives

First, I investigated whether there are effects due to demographic variables on children's descriptions of motion scenes. There were no gender and family income effects, F's < 1.86, p's > .142. The analyses were performed on the percentages of Manner-only, Path-only, and Path-and-Manner categories which added up to hundred percent. I conducted 2 (Age: 5-and 7-year-olds) x 2 (Lingualism: monolingual and bilingual) factorial ANOVAs.

For Manner-only descriptions, there was a main effect of lingualism, ($F(1,107) = 17.16$, $p < .001$ $\eta_p^2 = .14$), bilinguals (M = .42, SD = .28) produced more Manner-only utterances compared to monolinguals (M = .23, SD = .21). There was no significant effect of age ($F(1,107) = .02$, $p = .878$ $\eta_p^2 = 0$), however a significant

interaction of age x lingualism ($F(1,107) = 4.89$, $p < .05$ $\eta_p^2 = .05$). Post hoc t-tests showed ($t(49) = -4.19$, $p < .001$) that 5-year-old bilinguals (M = .48, SD = .29) produced more Manner-only utterances compared to 5-year-old monolinguals (M = .18, SD = .24), however for 7-year-olds no such difference was found ($t(56) = -1.66$, $p = .101$).

For Path-only utterances, there was a main effect of lingualism, $F(1,107) = 16.07$, $p < .001$ $\eta_p^2 = .13$, where monolinguals (M = .56, SD = .22) produced more Path-only utterances compared to bilinguals (M = .38, SD = .27). There was no significant effect of age ($F(1,107) = .809$, $p = .37$ $\eta_p^2 = .008$), however a significant interaction of age x lingualism was found ($F(1,107) = 6.29$, $p < .05$ $\eta_p^2 = .06$). Post-hoc tests showed that the difference came from 5-year-olds where bilinguals (M = .30, SD =.23) produce less Path-only descriptions than monolinguals (M = .61, SD = .21), ($t(49) = 4.87$, $p < .001$). There was no difference for 7-year-olds when bilinguals (M = .46, SD = .29) and monolinguals (M = .53, SD = .23) were compared ($t(56) = 1.02$, $p = .309$).

Same analyses were carried out for Path-and-Manner descriptions, where path and manner structures are both used in one utterance. The results showed that there was no effect of lingualism ($F(1,107) = .039$, $p = .843$ $\eta_p^2 = 0$), both bilinguals (M = .19, SD = .20) and monolinguals (M = .20, SD = .19) were equally likely to produce Path-and-Manner descriptions. There was also no significant effect of age ($F(1,107) = 1.67$, $p = .199$ $\eta_p^2 = .02$) and no interaction effect ($F(1,107) = .118$, $p = .732$ $\eta_p^2 = .001$). (See Table 11 and Figure 7)

Table 11. Mean Percentages and Standard Deviations for Path-only, Manner-only and Path-and-Manner Descriptions by Lingualism and Age Group for L1 and L2 Narratives

	monolinguals				bilinguals - L1				bilinguals - L2			
	5-year-olds		7-year-olds		5-year-olds		7-year-olds		5-year-olds		7-year-olds	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Manner-only	.18	.24	.29	.21	.48	.29	.38	.25	.31	.20	.23	.25
Path-only	.61	.21	.53	.23	.30	.23	.46	.29	.55	.28	.70	.24
Path-and-Manner	.21	.18	.18	.19	.22	.23	.16	.17	.13	.26	.06	.13
N	27		33		26		25		26		22	

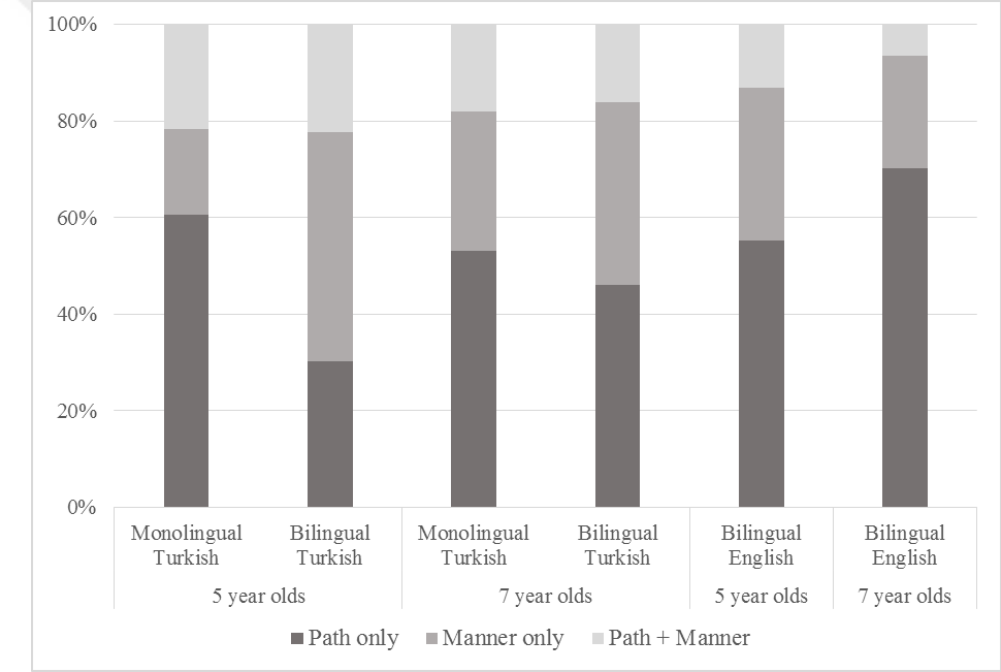

Figure 7. Mean percentages for path-only, manner-only and path-and-manner descriptions by lingualism and age group for L1 and L2 narratives

For each type of Manner and Path structure we coded, we analyzed whether there was a difference between monolinguals and bilinguals. I carried out analyses for percent usage of Manner verbs, Path verbs, Manner adverbial clauses, Manner adverbs, Path light verbs, Path postpositions and Path suffixes.

5.2.2 Manner verbs and path verbs in L1 frog story narratives

All the motion verbs used in the selected 6 scenes from Frog story were categorized as Manner verbs or Path verbs. If the child has described more than one motion event for the selected scenes, then the coding was applied to all motion events described (such instances were very rare). Percentage of Manner and Path verbs added up to hundred. Mean percentages and standard deviations of Manner and Path verbs can be seen in Table 12 and Figure 8.

I again conducted 2 (Age: 5-and 7-year-olds) x 2 (Lingualism: monolingual and bilingual) factorial ANOVA. For Manner verbs, there was a significant effect of lingualism, $F(1,107) = 27.14$, $p < .001$ $\eta_p^2 = .21$, where bilinguals (M = .67, SD = .29) expressed more Manner verbs compared to monolinguals (M = .42, SD = .24). There was no main effect of age, $F(1,107) = 1.36$, $p = .245$ $\eta_p^2 = .01$, where 5-year-olds (M = .56, SD = .31) and 7-year-olds (M = .50, SD = .27) used Manner verbs equally likely. There was a significant interaction of age x lingualism, $F(1,107) = 7.97$, $p < .01$ $\eta_p^2 = .07$. Post hoc t-test showed that bilingual 5-year-olds expressed (M = .77, SD = .25) more manner verbs compared to their monolingual peers (M = .37, SD = .24), $t(49) = -5.82$, $p < .001$. There was no significant difference between monolingual 7-year-olds (M = .29, SD =.21) and bilingual 7-year-olds (M =. 38, SD = .25), $t(56) = -1.67$, $p = .234$. Complementary results were obtained for Path-verbs. Again there was significant main effect of lingualism $F(1,107) = 27.14$, $p < .001$ $\eta_p^2 = .21$, where monolinguals (M = .58, SD = .24) expressed more Path verbs than bilinguals (M = .33, SD = .29). Again there was no significant age effect, $F(1,107) = 1.36$, $p = .245$ $\eta_p^2 = .01$ but a significant interaction effect of age x lingualism, $F(1,107) = 7.97$, $p < .01$ $\eta_p^2 = .07$. Post hoc t-test showed that among 5-year-olds (M = .63, SD = .24), monolinguals used more Path verbs compared to bilingual peers (M

= .23, SD = .25), $t(49) = 5.82$, $p < .001$. There was no difference among 7-year-olds in the usage of Path verbs when bilinguals (M = .43, SD = .29) and monolinguals (M = .55, SD = .25) were compared, $t(56) = 1.67$, $p = .101$.

Table 12. Mean Percentages and Standard Deviations for Manner and Path Verbs by Lingualism and Age Group for L1 and L2 Narratives

	monolinguals				bilinguals - L1				bilinguals - L2			
	5-year-olds		7-year-olds		5-year-olds		7-year-olds		5-year-olds		7-year-olds	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Manner verbs	.37	.24	.45	.24	.77	.25	.57	.29	.53	.29	.36	.24
Path verbs	.63	.24	.55	.24	.23	.25	.43	.29	.47	.29	.64	.24
N	26		33		26		25		26		22	

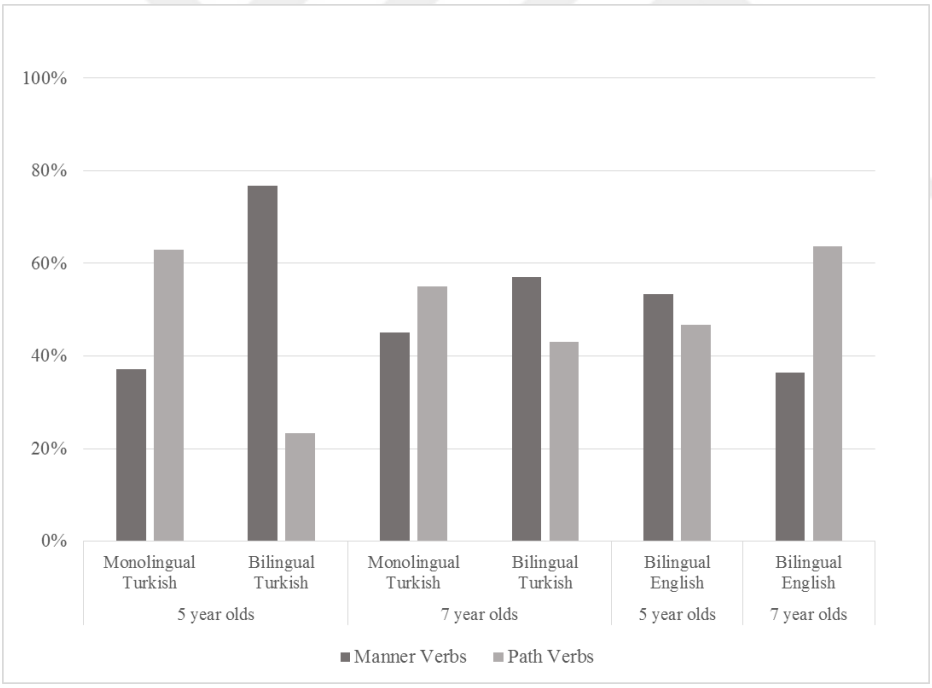

Figure 8. Mean percentages of manner and path verbs by lingualism and age group for L1 and L2 narratives

5.2.3 Other path and manner structures in L1 frog story narratives

I carried out similar analyses for all other Path and Manner structures. I compared bilinguals and monolinguals for percent usage of Manner adverbial clauses, Manner adverbs, Path light verbs, Path postpositions and Path suffix. In order to decide whether Univariate ANOVA's or a Multivariate ANOVA should be used, we investigated the correlation within Manner structures and Path structures separately. When significant correlations occurred between variables, we carried out MANOVA otherwise we analyzed each structure separately. Due to the low frequency of Manner Adverbs, we collapsed Manner Adverbs and Manner Adverbial Clauses in a single variable. There were no significant correlations either within Manner or within Path structures, therefore we conducted Univariate ANOVA's for each structure. Mean scores are displayed in Table 13.

A 2x2 (age x lingualism) factorial ANOVA showed that for Manner Adverb /Adverbial Clauses, there was no significant effect of lingualism or a significant interaction of age x lingualism, $F(1,107) = .052$, $p = .820$ $\eta_p^2 = .001$, $F(1,107) = .246$, $p = .621$, $\eta_p^2 = .002$, respectively. There was only a main effect of age, where 5-year-olds (M = .03, SD = .02) used more Manner Adverbs /Adverbial Clauses compared to 7-year-olds (M = .01, SD = .001).

For Path light verbs, there were no significant effects of lingualism ($F(1,107) = .181$, $p = .672$ $\eta_p^2 = .002$) or age ($F(1,107) = .235$, $p = .629$ $\eta_p^2 = .002$). There was no interaction effect either ($F(1,107) = .0$, $p = .994$ $\eta_p^2 = 0$).

For Path postpositions, there were no main effects of lingualism ($F(1,107) = 2.95$, $p = .089$ $\eta_p^2 = .02$) or age ($F(1,107) = 3.37$, $p = .069$ $\eta_p^2 = .008$) and no interaction effect of age x lingualism ($F(1,107) = .776$, $p = .380$ $\eta_p^2 = .007$).

For Path suffixes, there were no main effects of lingualism ($F(1,107) = .057$, $p = .812$ $\eta_p^2 = .02$) and age, ($F(1,107) = .029$, $p = .865$ $\eta_p^2 = .008$) and no interaction effect ($F(1,107) = 1.02$, $p = .314$ $\eta_p^2 = .01$).

Table 13. Mean Percentages and Standard Deviations of Other Path and Manner Descriptions by Lingualism and Age Group for L1 Narratives

	monolinguals				bilinguals			
	5-year-olds		7-year-olds		5-year-olds		7-year-olds	
	M	SD	M	SD	M	SD	M	SD
Manner verbs	.31	.16	.39	.12	.53	.24	.44	.24
Manner adverbial clauses	.03	.05	.01	.02	.01	.02	.01	.03
Manner adverbs	.01	.02	-	-	.03	.04	-	-
Path verbs	.41	.18	.38	.07	.17	.17	.34	.23
Path light verbs	.09	.04	.07	.08	.05	.09	.06	.09
Path postpositions	.06	.09	.06	.08	.12	.10	.07	.11
Path suffixes	.09	.10	.09	.07	.09	.08	.08	.08

5.3 Expressing path and manner in L1 vs. L2 frog story narratives of bilinguals

For bilingual group I compared L1 and L2 Frog Story narratives based on the categories of Manner-only, Path-only and Path-and-Manner as well as Manner and Path verbs separately. For this purpose I performed 2x2 (language: L1-L2 x age group) Mixed ANOVA's. For post-hoc tests that were performed for significant interactions I utilized Bonferroni adjusted alpha level .017.

5.3.1 Manner-only, path-only and path-and-manner descriptions in L1 vs. L2 frog story narratives of bilinguals

For Manner-only descriptions, there was a main effect of language, $F(1,44) = 6.35$, $p < .05$, $\eta_p^2 = .137$. Bilingual children used more Manner-only descriptions in their L1 (M = .41, SD =.26) narratives compared to their L2 (M = .27, SD = .23) narratives.

There was no main effect of age or age x language interaction, ($F(1,44) = 2.54$, $p = .119$, $\eta_p^2 = .06$, $F(1,44) = .001$, $p = .982$, $\eta_p^2 = 0$, respectively).

For Path-only descriptions, there was a main effect of language, $F(1,44) = 16.67$, $p < .001$, $\eta_p^2 = .294$. Bilingual children used less Path-only descriptions in their L1 (M = .38, SD =.27) narratives compared to their L2 (M = .63, SD = .27) narratives. There was a main effect of age, where 7-year-olds (M = 58, SD = .25) used more Path-only descriptions compared to 5-year-olds (M = .42, SD = .28) $F(1,44) = 8.29$, $p < .01$, $\eta_p^2 = .172$. There was no significant interaction of age and language, $F(1,44) = .014$, $p = .906$, $\eta_p^2 = 0$.

For Path-and-Manner descriptions, there was a main effect of language, where bilingual children used more Path-and-Manner descriptions in their L1 narratives (M = .21, SD = .20) compared to their L2 narratives (M = .09, SD =.20), $F(1,44) = 5.97$, $p < .05$, $\eta_p^2 = .130$. There was no main effect of age or age x language interaction, ($F(1,44) = 3.33$, $p = .075$, $\eta_p^2 = .077$, $F(1,44) = .036$, $p = .850$, $\eta_p^2 = .001$, respectively)

5.3.2 Manner verbs and path verbs in L1 vs. L2 frog story narratives of bilinguals

For Manner verbs there was a main effect of language, where bilingual children used more Manner verbs in their L1 narratives (M = .67, SD = .30) compared to their L2 narratives (M = .44, SD = .27), $F(1,44) = 13.45$, $p < .001$, $\eta_p^2 = .267$. There was also a significant effect of age, where 5-year-olds (M = .66, SD = .24) used more Manner verbs compared to 7-year-olds (M = .48, SD = .31). There was no significant interaction of age x language, $F(1,44) = .178$, $p = .675$, $\eta_p^2 = .005$.

I obtained similar complementary results for Path verbs. There was again main effect of language on scores, where bilingual children used more Path verbs in

their L2 narratives (M = .56, SD = .27) compared to their L1 narratives (M = .33, SD = .30), $F(1,44) = 13.45$, $p < .001$, $\eta_p^2 = .267$. There was also a significant effect of age, where 7-year-olds (M = .52, SD = .31) used more Path verbs compared to 5-year-olds (M = .34, SD = .24). There was no significant interaction of age x language, $F(1,44) = .178$, $p = .675$, $\eta_p^2 = .005$. List of all manner and path verbs used L1 and L2 frog story narratives can be seen in Table 14.

Table 14. Types and (Tokens) of Manner and Path Verbs Used by Monolingual and Bilingual Children in L1 and L2 Narratives

Manner verbs		
Monolinguals-L1 (8 types)	Bilinguals-L1 (13 types)	Bilinguals-L2 (10 types)
at 'throw'(13) *atla* 'jump'(6) *kaç* 'run away'(29) *bat* 'sink'(11) *kovala* 'chase' (3) *uç* 'fly'(3) *yuvarlan* 'roll' (2) *zıpla* 'bounce' (2)	*at* 'throw'(32) *atla* 'jump'(25) *koş* 'run' (18) *bas* 'step'(3) *kovala* 'chase'(5) *uç* 'fly'(1) *yuvarlan* 'roll' (7) *zıpla* 'bounce' (2) *kay* 'slip' (4) *takip et* 'follow' (2) *tırman* 'climb' (3) *çarp* 'crash' (2) *yüz* 'swim' (1)	*throw* (3) *jump* (14) *escape* (5) *climb* (6) *chase* (4) *run* (7) *pop out* (3) *sneak out* (1) *splash* (5) *walk* (1)
Path verbs		
Monolinguals-L1 (4 types)	Bilinguals-L1 (2 types)	Bilinguals-L2 (1 type)
çık 'exit' (64) *düş* 'fall' (90) *gir* 'enter (2) *in* 'descend' (3)	*gir* 'enter' (2) *düş* 'fall' (60)	*fall* (78)

5.4 Summary of findings: Expressing path and manner in L1 and L2 frog story narratives

5.4.1 Expressing path and manner in L1 frog story narratives

For L1 Frog story narratives, bilingual and monolinguals children's narratives were compared for Manner-only, Path-only and Path-and-Manner categorizations which add up to 100%. For Manner-only descriptions, it was found that bilinguals used more Manner-only descriptions compared to monolinguals. A significant interaction revealed that 5-year-old bilinguals used more Manner-only descriptions compared to their monolingual peers however, no such difference was found for 7-year-olds. For Path-only descriptions monolinguals used more Path-only descriptions compared to bilinguals, however a significant interaction revealed this effect to be due to monolingual 5-year-olds using more Path-only descriptions compared to their bilingual peers. There was no such difference for 7-year-olds. For Path-and-Manner descriptions, no significant differences were found regarding lingualism or age groups.

Manner and Path verbs were analyzed separately. In L1 narratives, bilinguals used more Manner verbs and less Path verbs compared to monolinguals. The difference was due to the fact that bilingual 5-year-olds used more Manner verbs and less Path verbs in their narratives compared to their monolingual peers, however there were no such differences for 7-year-old bilinguals vs. monolinguals.

I also carried out analyses for all other Path and Manner structures including Manner adverbs/adverbial clauses, Path light verbs, Path postpositions, and Path suffix. There were no significant effects of lingualism on any of these structures.

5.4.2 Expressing path and manner in L1 vs. L2 frog story narratives of bilinguals

I compared L1 and L2 frog story narratives of bilingual children in terms of how Path and Manner structures were expressed. Bilingual children used less Manner-only expressions in their L2 narratives compared to L1 narratives, regardless of age. For Path-only expressions, bilingual children used less Path-only descriptions in their L1 compared to their L2. There was also a significant effect of age where 7-year-old bilinguals used more Path-only description compared to 5-year-olds for both L1 and L2. For Path-and-Manner expressions, bilingual children used more Path-and-Manner in their L1 narratives compared to their L2 narratives, there were no age and age x language interaction effects.

When I investigated Path and Manner verbs, we found that bilingual children used more Manner verbs and less Path verbs in their L1 narratives compared to L2 narratives. There was also a significant effect of age where 5-year-olds used more Manner verbs and less Path verbs compared to 7-year-olds.

CHAPTER 6

RESULTS: MOTION EVENT CONCEPTUALIZATION IN MOTION EVENT TASK

6.1 Transcription, coding and reliability

For motion event conceptualization task, transcription and coding was undertaken for the twelve descriptions given for each video clip children had watched. Trained undergraduate psychology students transcribed the motion event task descriptions. All path and manner structures used in the descriptions were coded. All coding was held by the researcher and a second coder for reliability purposes. All coding details were identical to coding undertaken for Frog story narratives which were described in Chapter 5.

Inter-rater reliability for Manner and Path structure coding was assessed by percent agreement and kappa values. Percent agreement for Manner and Path structures were .97 and .95, respectively. There was a high agreement between the raters for Manner (κ = .95 (95% CI, .92 to .97), $p < .01$) and Path structures (κ = .91 (95% CI, .88 to .94), $p < .01$) were. All disagreements were resolved through discussion.

6.2 Expressing path and manner in L1 motion event descriptions

6.2.1 Manner-only, path-only and path-and-manner descriptions in L1 motion event descriptions

In order rule out effects due to demographic variables I first investigated effects of income and gender on children's motion event descriptions. There were no

significant effects of gender and income, F's < 1.21, p's > .311. Then I investigated how manner and path information is expressed. The analyses were performed on the percentages of Manner-only, Path-only and Path-and-Manner categories which added up to hundred. For each category, I conducted 2 (Age: 5-and 7-year-olds) x 2 (Lingualism: monolingual and bilingual) factorial ANOVA's. Mean percentages of the three categories can be seen in Table 14 and Figure 9. For Manner-only descriptions, there was a main effect of lingualism, $F(1,104) = 3.92$, $p < .05$, η_p^2 =.04, bilinguals (M = .36, SD = .21) used more Manner-only descriptions compared to monolinguals (M = .29, SD = .14). There was also significant effect of age, $F(1,104) = 28.9$, $p < .001$, η_p^2 =.22, 5-year-olds (M = .40, SD = .17) used more Manner-only descriptions compared to 7-year-olds (M = .25, SD = .14). The significant interaction between age and lingualism ($F(1,104) = 13.32$, $p < .001$, η_p^2 =.11) showed that the difference between the two groups was due to the fact that 5-year-old bilinguals (M = .49, SD = .19) used more Manner-only descriptions compared to 5-year-old monolinguals (M = .32, SD =.13), $t(50) = -3.73$, $p < .001$. Post hoc t-test showed that there was no difference between 7-year-old bilinguals (M = .26, SD = .14) and 7-year-old monolinguals, (M = .23, SD = .15), ($t(54) = 1.13$, p = .264).

I carried out the same analyses for Path-only descriptions. There was again main effect of lingualism, ($F(1,104) = 7.86$, $p < .01$, $\eta_p^2 = .07$), where monolinguals (M = .28, SD = .10) used more Path-only descriptions than bilinguals (M = .21 , SD =.13). There was also a main effect of age ($F(1,104) = 11.16$, $p < .001$, η_p^2 =.10), where 7-year-olds (M = .29, SD = .12) used more Path-only descriptions than 5-year-olds (M = .21, SD = .11). There was no interaction effect of age x lingualism ($F(1,104) = 1.23$, $p = .270$, η_p^2 =.01).

For Path-and-Manner descriptions, there was neither a main effect of lingualism, ($F(1,104) = .164$, $p = .687$, $\eta_p^2 = .002$), nor a main effect of age ($F(1,104) = 3.02$, $p = .085$, $\eta_p^2 = .03$). However, there was a significant interaction effect of age x lingualism ($F(1,104) = 5.0$, $p < .05$, $\eta_p^2 = .05$), where post hoc t-test ($t(50) = 2.01$, $p < .05$) showed that 5-year-old bilinguals (M = .34, SD = .19) used less Path-and-Manner descriptions compared to 5-year-old monolinguals (M = .43, SD = .13). For 7-year-olds, t-test showed ($t(54) = -1.22$, $p = .226$) no such difference for monolinguals (M = .41, SD = .19) vs. bilinguals (M = .47, SD = .18)

Table 15. Mean Percentages and Standard Deviations for Path-only, Manner-only and Path-and-Manner Descriptions by Lingualism and Age Group for L1 and L2 Motion Event Descriptions

	monolinguals				bilinguals - L1				bilinguals - L2			
	5-year-olds		7-year-olds		5-year-olds		7-year-olds		5-year-olds		7-year-olds	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Manner-only	.32	.13	.27	.15	.49	.19	.23	.14	.46	.29	.44	.24
Path-only	.25	.10	.30	.10	.17	.10	.28	.14	.14	.13	.24	.16
Path-and-Manner	.43	.13	.43	.19	.34	.19	.49	.18	.40	.26	.32	.27
N	27		33		25		23		23		22	

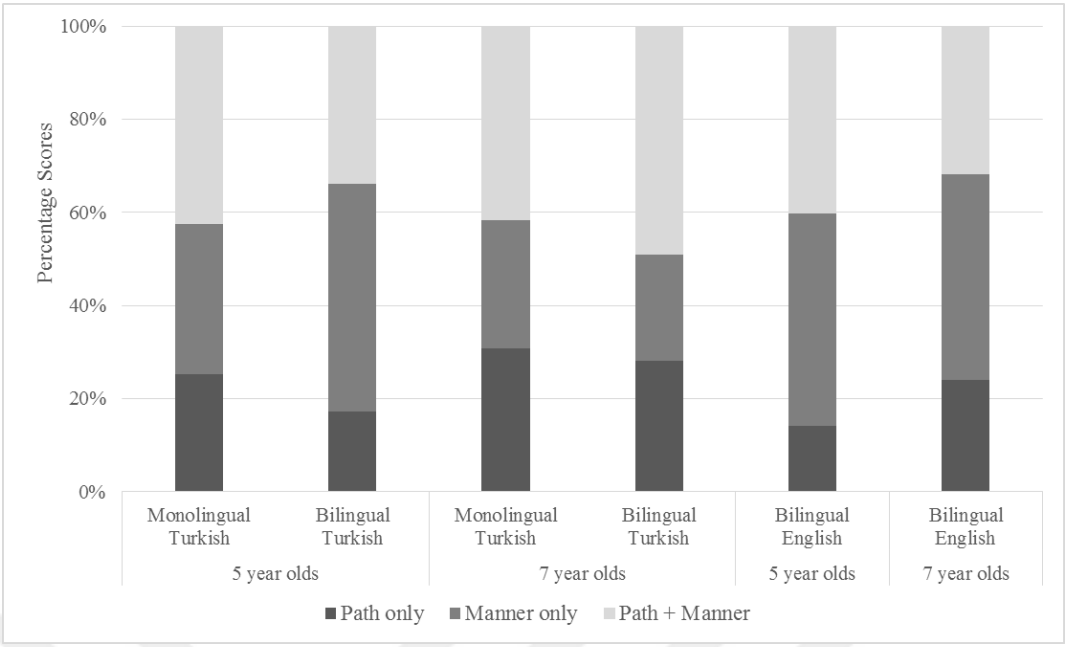

Figure 9. Mean percentages of path-only, manner-only and path-and-manner by lingualism and age group for L1 and L2 motion event descriptions

Next, I carried out the same analyses as the ones conducted for motions event descriptions of the Frog Story to see whether monolinguals and bilinguals differed in the percentage of Manner verbs, Path verbs, Manner adverbial clauses, Manner adverbs, Path light verbs, Path postpositions and Path suffix they used in their descriptions.

6.2.2 Manner verbs and path verbs in L1 motion event descriptions

All the motion verbs used as the main predicate of the sentence were categorized as either Manner verbs or Path verbs. Total percentage of Manner and Path verbs added up to hundred percent. Mean percentages and standard deviations of Manner and Path verbs in both L1 and L2 descriptions can be seen in Table 16 and Figure 10.

The 2 (Age: 5-and 7-year-olds) x 2 (Lingualism: monolingual and bilingual) factorial ANOVA revealed for Manner verbs a significant effect of lingualism, bilingual children (M = .58, SD = .18) expressed more Manner verbs compared to

monolinguals (M = .50, SD = .15), $F(104,1) = 6.07$, $p < .05$ $\eta_p^2 = .06$. There was also a significant effect of age where 5-year-olds (M = .59, SD = .17) expressed more Manner verbs than 7-year-olds (M = .49, SD = .16) ($F(104,1) = 12.01$, $p < .001$ $\eta_p^2 = .10$). A significant interaction of age x lingualism, ($F(104,1) = 10.46$, $p < .01$ $\eta_p^2 = .10$), showed that the difference between monolinguals and bilinguals was due to 5-year-olds. A post hoc t-test showed ($t(50) = -4.11$, $p < .001$) that 5-year-old bilinguals (M = .68, SD = .14) used more Manner verbs compared to their monolingual peers (M = .50, SD = .16), however there was no significant difference ($t(54) = .537$, $p = .594$) between 7-year-old monolinguals (M = .50, SD = .15) and bilinguals (M = .47, SD = .16). Complementary results were obtained for Path verbs. There was a significant main effect of lingualism, $F(104,1) = 6.11$, $p < .05$ $\eta_p^2 = .06$, where monolinguals (M = . 50, SD = .15) used more Path verbs compared to bilinguals (M = .42, SD = .18). There was also a significant age effect, $F(104,1) = 11.98$, $p < .001$ $\eta_p^2 = .10$, 7-year-olds (M = .51, SD = .16) used more Path verbs than 5-year-olds (M = .41, SD = 17). A significant interaction effect of age x lingualism, $F(104,1) = 10.45$, $p < .01$ $\eta_p^2 = .10$, showed that the difference between monolinguals and bilinguals stemmed from the 5-year-old group. Post hoc t-test showed that ($t(50) = 4.12$, $p < .001$), 5-year-old monolinguals (M = .50, SD = .16) used more path verbs than 5-year-old bilinguals (M = .32, SD = .14). Again there was no difference between 7-year-old bilinguals and monolinguals ($t(54) = -.528$, $p = .60$).

Table 16. Mean Percentages and Standard Deviations for Manner and Path Verbs by Lingualism and Age Group for L1 and L2 Motion Event Descriptions

	monolinguals				bilinguals - L1				bilinguals - L2			
	5-year-olds		7-year-olds		5-year-olds		7-year-olds		5-year-olds		7-year-olds	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Manner verbs	.50	.16	.50	.15	.68	.14	.47	.16	.80	.23	.69	.22
Path verbs	.50	.16	.50	.15	.32	.14	.53	.16	.20	.23	.31	.22
N	27		33		25		23		23		22	

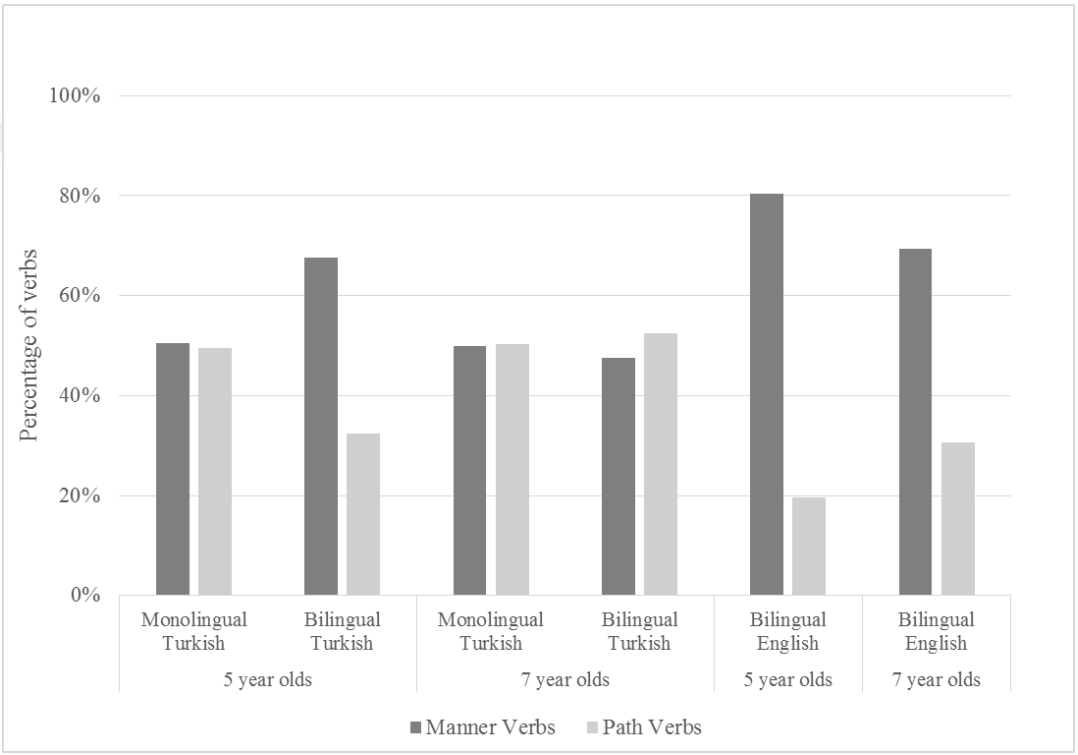

Figure 10. Mean percentages of manner and path verbs by lingualism and age group for L1 and L2 motion event descriptions

6.2.3 Other path and manner structures used in L1 motion event descriptions

Analyses similar to the ones carried out for Frog story narratives were carried for other Path and Manner structures. I first investigated the correlation within Manner structures and Path structures separately. Since the correlations were significant (see Table 17 and Table 18), I conducted 2 separate Multivariate ANOVA's (for Path

structures and Manner structures) to test the effect of lingualism. Due to the low frequency of Manner adverbs I collapsed Manner adverbial clauses and Manner adverbs into a single variable.

Table 17. Correlations between Manner Structures

	Manner adverbial clause	Manner adverbs
Manner verb	-.610**	-.082
Manner adverbial clause	1	-.079
Manner adverbs		1

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

Table 18. Correlations between Path Structures

	Path Light verbs	Path postposition	Path suffix
Path verb	-.255**	.275**	.050
Path Light verbs	1	-.119	-.161
Path postposition		1	.045
Path suffix			1

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

For Manner structures I ran a two-way MANOVA (age x lingualism) taking percentage of Manner verbs and Manner adverbial clause/adverbs as dependent variables. Results showed that there was a significant main effect of lingualism, Wilks' $\Lambda = .884$, $F(2,103) = 6.75$, $p < .01$, $\eta_p^2 = .116$. There was also a significant age effect, Wilks' $\Lambda = .829$, $F(2,103) = 10.64$, $p < .001$, $\eta_p^2 = .171$ and age x lingualism interaction, Wilks' $\Lambda = .893$, $F(2,103) = 6.15$, $p < .01$, $\eta_p^2 = .107$.

Univariate tests showed that there was no significant effect of lingualism on the use of Manner Adverbial Clauses/adverbs, $F(1,104) = .051$, $p = .821$ $\eta_p^2 = 0$.

There was a significant effect of lingualism only on Manner verbs, $F(1,104) = 13.58$, $p < .001$ $\eta_p^2 = .115$, which was already analyzed in the previous section.

For Path structures, again I ran a two-way MANOVA (age x lingualism) taking Path verb, Path light verb, Path postposition and Path suffix as dependent variables. There was a main effect of lingualism, Wilks' $\Lambda = .894$, $F(2,103) = 3.00$, $p < .05$, $\eta_p^2 = .106$. There was also a significant age, Wilks' $\Lambda = .709$, $F(2,103) = 10.36$, $p < .001$, $\eta_p^2 = .291$ and age x lingualism interaction, Wilks' $\Lambda = .880$, $F(2,103) = 3.43$, $p < .05$, $\eta_p^2 = .120$

Univariate tests showed that there was significant effect of lingualism for Path Light verbs, $F(1,104) = 5.24$, $p < .05$, $\eta_p^2 = .048$. Pairwise comparisons show that monolinguals (M = .13, SD = .15) used more Path light verbs compared to bilinguals (M = .08, SD = .16). There was also significant effect of lingualism on Path verbs, $F(1,104) = 8.22$, $p < .01$, $\eta_p^2 = .073$, which was already analyzed in the previous section.

Table 19. Mean Percentages and Standard Deviations for Other Path and Manner Descriptions by Lingualism and Age Group for L1 Motion Event Descriptions

	monolinguals				bilinguals			
	5-year-olds		7-year-olds		5-year-olds		7-year-olds	
	M	SD	M	SD	M	SD	M	SD
Manner verbs	.33	.10	.26	.12	.51	.28	.24	.12
Manner adverbial clauses	.16	.17	.16	.16	.18	.12	.16	.11
Manner adverbs	.03	.05	.03	.05	.02	.05	.01	.02
Path verbs	.27	.09	.25	.18	.15	.07	.25	.08
Path light verbs	.07	.08	.08	.13	.04	.05	.04	.05
Path prepositions	.10	.11	.15	.14	.08	.09	.13	.06
Path suffixes	.05	.11	.07	.13	.02	.10	.14	.09

6.3 Expressing path and manner in L1 vs. L2 motion event descriptions of bilinguals

Within the bilingual group I compared L1 and L2 Motion Event descriptions in terms of the following categories: Manner-only, Path-only and Path-and-Manner. I also compared L1 and L2 descriptions based on usage of Manner verbs and Path verbs. I compared each category separately computing 2x2 (language: L1-L2 x age group) mixed ANOVA's for each variable. For post-hoc comparisons I utilized Bonferroni adjusted alpha level of .017.

6.3.1 Manner-only, path-only and path-and-manner descriptions of motion events in L1 vs. L2

For Manner-only descriptions, there was a main effect of language, $F(1,43) = 4.72$, $p < .05$, $\eta_p^2 = .099$. Bilingual children used more Manner-only descriptions in their L2 (M = .44, SD = .27) compared to their L1 (M = .36, SD = .20) descriptions. There was also a main effect of age such that 5-year-olds (SD = .47, SD =.18) used more Manner-only descriptions compared to 7-year-olds (M = .33, SD =.17). There was also a significant interaction of age x language, $F(1,43) = 6.75$, $p < .05$, $\eta_p^2 = .136$. Post-hoc tests showed that while 5-year-old bilinguals did not differ in Manner-only descriptions in their L1 compared to their L2 descriptions, $t(22) = .284$, $p = .779$, 7-year-old bilinguals used more Manner-only descriptions in their L2 (M = .42, SD = .24) compared to their L1 (M = .23, SD = .13) descriptions, $t(21) = -3.64$, $p < .001$. When I compared 5-and 7-year-olds' L2 descriptions for the Manner-only category, there was no significant difference, $t(46) = .179$, $p = .859$. Therefore, the main effect of language was due to the fact that 7-year-old bilinguals used more Manner-only expressions in their L2 compared to L1 descriptions.

For Path-only descriptions, there was neither a main effect of language nor an interaction of age x language, $F(1,43) = 1.86$, $p = .180$, $\eta_p^2 = .041$, $F(1,43) = .039$, $p = .844$, $\eta_p^2 = .001$, respectively. There was only a main effect of age, where 7-year-old bilinguals (M = .26, SD = .12) used more Path-only descriptions compared to 5-year-olds (M = .16, SD = .22) regardless of the language used, $F(1,43) = 9.796$, $p = .003$, $\eta_p^2 = .186$.

For Path-and-Manner descriptions, there was neither main effect of language nor main effect of age, $F(1,43) = 1.69$, $p = .201$, $\eta_p^2 = .038$, $F(1,43) = .796$, $p = .377$, $\eta_p^2 = .018$, respectively. However there was an interaction effect of age x language, $F(1,43) = 6.06$, $p = .018$, $\eta_p^2 = .124$. A post-hoc analysis showed that 5-year-olds did not differ in their L1 and L2 descriptions, $t(22) = -.842$, $p = .409$. On the other hand, 7-year-olds used more Path-and-Manner descriptions in their L2 compared to their L1, $t(21) = 2.6$, $p < .01$. When L2 descriptions of 5-and 7-year-olds were compared, no differences were found for Path-and-Manner category, $t(46) = 1.09$, $p = .281$.

6.3.2 Manner verbs and path verbs in L1 vs. L2 motion event descriptions of bilinguals

I again ran 2x2 Mixed ANOVA's in order to investigate differences between L1 and L2 descriptions of bilingual children. For Manner verbs, there was a main effect of language where bilingual children used more Manner verbs in their L2 descriptions (M = .75, SD = .23) compared to L1 descriptions (M = .58, SD = .18), $F(1,43) = 22.76$, $p < .001$, $\eta_p^2 = .341$. There was also a main effect of age, where 5-year-old bilinguals (M = .74, SD = .21) used more Manner verbs than 7-year-olds (M = .59, SD = 23) regardless of the language used $F(1,43) = 11.73$, $p < .001$, $\eta_p^2 = .099$.

There was no significant interaction of age x language, $F(1,43) = 1.77$, $p = .191$, $\eta_p^2 = .039$.

For Path verbs, complementary results were found. There was a main effect of language where bilingual children used more Path verbs in their L1 descriptions (M = .42, SD = .18) compared to L2 descriptions (M = .25, SD = .23), $F(1,43) = 22.76$, $p < .001$, $\eta_p^2 = .341$. There was also main effect of age, where 7-year-old bilinguals (M = .41, SD = 23) used more Path verbs than 5-year-olds (M = .26, SD = .21) regardless of the language used, $F(1,43) = 11.73$, $p < .001$, $\eta_p^2 = .099$. There was no significant interaction of age x language, $F(1,43) = 1.77$, $p = .191$, $\eta_p^2 = .039$. List of all manner and path verbs used L1 and L2 motion event descriptions can be seen in Table 20.

Table 20. Types and (Tokens) of Manner and Path Verbs Used by Monolingual and Bilingual Children in L1 and L2 Motion Event Descriptions

Manner verbs		
Monolinguals-L1 (10 types)	Bilinguals-L1 (12 types)	Bilinguals-L2 (11 types)
atla 'jump'(28) *koş* 'run' (18), *yürü* 'walk'(21) *tırman* 'climb' (22) *kay* 'slide' (26) *hopla* 'hop' (1) *dolaş* 'walk around'(2) *parende at* cartwheel'(15) *zıpla* 'bounce'(12) *takla at* 'somersault'(6)	*atla* 'jump'(32) *koş*, 'run'(10) *yürü* 'walk'(16) *tırman* 'climb'(34) *kay* 'slide'(23) *hopla* 'hop'(1), *sek* 'skip'(4) *parende at* 'cartwheel'(8) zıpla 'bounce'(6) *bas* 'step'(3) *eğil* 'bend'(2) *sıçra* 'jump'(2)	*jump* (55) *run* (38) *walk* (29) *climb* (32) *slide* (24) *hop* (17) *skip* (31) *cartwheel* (3) *flip* (1) *somersault* (10) *step* (8)
Path verbs		
Monolinguals-L1 (3 types)	Bilinguals-L1 (3 types)	Bilinguals-L2 (1 type)
çık 'ascend'(89) *gir* 'enter'(57) *in* 'descend' (62)	*çık* 'ascend'(50) *gir* 'enter'(78) *in* 'descend'(5)	*enter* (77)

6.4 Summary of findings: Expressing path and manner in L1 and L2 motion event descriptions

6.4.1 Expressing path and manner in L1 motion event descriptions

Bilingual and monolingual children's L1 Motion event descriptions were compared in terms of Manner-only, Path-only and Path-and-manner categorizations. For Manner-only descriptions, bilinguals used more Manner-only descriptions compared to monolinguals. There was also an effect of age where 5-year-olds used more Manner-only descriptions compared to 7-year-olds. A significant interaction showed that the difference was due to the fact that 5-year-old bilinguals used more Manner-

only descriptions compared to monolingual peers but there was no difference between 7-year-old bilinguals and monolinguals. For Path-only descriptions, again there was an effect of lingualism, monolinguals used more Path-only descriptions than bilinguals. There were also age differences where 7-year-olds used more Path-only descriptions than 5-year-olds. For Path-and-Manner descriptions, there was no main effect of lingualism however significant interaction of age x lingualism showed that 5-year-old bilinguals used less Path-and-Manner descriptions compared to monolingual peers.

Analyses were also carried out for use of Manner verbs and Path verbs. For Manner verbs, there was a significant effect of lingualism; bilinguals used more Manner verbs compared to monolinguals and a significant interaction of age x lingualism showed that bilingual 5-year-olds expressed more Manner verbs compared to 7-year-olds. Complementary results were found for Path verbs, where monolinguals used more Path verbs compared to bilinguals and again significant interaction showed that 5-year-old monolinguals used more Path verbs compared to their bilingual peers.

When other path and manner structures were analyzed, a significant effect of lingualism was found for Path light verbs where monolinguals used more Path light verbs compared to bilinguals.

6.4.2 Expressing path and manner in L1 vs L2 motion event descriptions of bilinguals

I compared L1 and L2 descriptions of bilingual children based on how path and manner structures were expressed. Bilingual children used more Manner-only descriptions in their L2 descriptions compared to L1 descriptions. Significant

interaction of age x language showed that 7-year-old bilinguals used more Manner-only descriptions in their L2 compared to L1 descriptions. No such differences were found for 5-year-olds. For Path-only descriptions a significant main effect of age showed that 7-year-old bilinguals used more Path-only descriptions compared to 5-year-old bilinguals regardless of the language used. Finally, for Path-and-Manner descriptions, there was only a significant interaction of age x language where 7-year-olds bilinguals used more Path-and-Manner descriptions in their L2 compared to their L1.

For Path and Manner verbs similar analyses were carried out. For Manner verbs, bilingual children used more Manner verbs in their L2 compared to their L1. Main effect of age showed that 5-year-old bilinguals used more Manner verbs than 7-year-olds regardless of the language used. Complementary results showed that bilingual children used more Path verbs in their L1 descriptions compared to L2 descriptions. Results also revealed that 7-year-old bilinguals used more Path verbs than 5-year-olds regardless of the language used.

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CHAPTER 7

RESULTS: EXECUTIVE FUNCTIONING AND LANGUAGE COMPETENCE

7.1 Executive functioning tasks

I administered four executive functioning tasks, DCCS, two working memory tasks: Backward Digit span and Backward Verbal span and Flanker task. All tasks were administered in sessions ran in Turkish. Mean scores and standard deviations can be seen in Table 21 and Figure 11.

7.1.1 Cognitive flexibility

I administered DCCS-border to measure cognitive flexibility. For DCCS-border task, total number of correct trials in the border version were calculated. A 2 (Age: 5-and 7-year-olds) x 2 (Lingualism: monolingual and bilingual) factorial ANOVA revealed that there were main effects of lingualism and age on DCCC-border accuracy scores, $F(1,105) = 19.56$, $p < .001$, $\eta_p^2 = .16$ and $F(1,105) = 18.19$, $p < .001$, $\eta_p^2 = .15$, respectively. Bilingual children (M = 9.77, SD = 2.25) performed better than monolingual ones (M= 8.78, SD = 2.39) and 7-year-olds (M = 9.53, SD =2.20) performed better than 5-year-olds (M = 7.92, SD = 2.32). There was no interaction effect of age x lingualism, $F(1,105) = 1.692$, $p = .196$, $\eta_p^2 = .02$.

7.1.2 Working memory

Backward Digit span task (WISC-R) and a Verbal Span Task were used to assess working memory. Results of a 2 (Age: 5-and 7-year-olds) x 2 (Lingualism: monolingual and bilingual) factorial ANOVA showed that there were main effects of lingualism and age on Backward Digit span task scores, $F(1,101) = 9.18$, $p < .001$,

η_p^2 =.08 and (F(1,101) = 37.66, p < .001, η_p^2 =.27, respectively. Bilingual children (M = 3.92, SD = 1.61) performed better than monolinguals (M= 3.2, SD = 1.21) and 7-year-olds (M = 4.15, SD = 1.35) performed better than 5-year-olds (M = 2.72, SD = 1.12). There was no interaction effect of age x lingualism, F(1,105) = .430, p = .513, η_p^2 =.004

Similar results were obtained for the Verbal Span task. Bilingual children (M = 3.61, SD = 1.26) performed better than monolingual ones (M = 3.16, SD = 1.15), F(1,106) = 6.2, p < .05, η_p^2 =.06. Also, older children (M = 3.84, SD =1.09) performed better than younger ones (M =2.79, SD =1.11), F(1,106) = 26.64, p < .001, η_p^2 =.20. There was again no interaction effect of age x lingualism, F(1,105) = .024, p = .877, η_p^2 = 0.

7.1.3 Inhibition

In order to assess inhibition the Flanker task was administered. For the scoring of this task, I followed Rueda et al. (2004) where an accuracy score was calculated by adding the number of correct items and considering the reaction times (RT) (i.e. Logarithmic conversion of RT figures were added to the accuracy score). There was a marginal effect of lingualism, F(1,108) = 3.28, p = .07, η_p^2 =.03. Bilingual children performed better than monolinguals (M = 7.51, SD = 1.51 and M = 7.17, SD = 1.41, respectively). There was no interaction effect of age x lingualism, F(1,108) = 0, p = .985, η_p^2 = 0.

Table 21. Means and Standard Deviations for Executive Functioning Tasks by Lingualism and Age Group

	monolingual				bilingual			
	5 year olds		7 year olds		5 year olds		7 year olds	
	M	SD	M	SD	M	SD	M	SD
DCCS-border	7.36	2.09	8.55	2.20	8.61	2.44	10.84	1.40
N	28		33		23		25	
Backward digit span	2.48	1.12	3.79	0.96	3.05	1.07	4.67	1.63
N	27		33		21		24	
Backward verbal span	2.54	1.14	3.64	0.90	3.08	1.02	4.12	1.27
N	28		33		24		25	
Flanker Accuracy + RT	6.28	1.40	7.93	0.89	6.69	1.63	8.35	0.69
N	28		33		26		25	

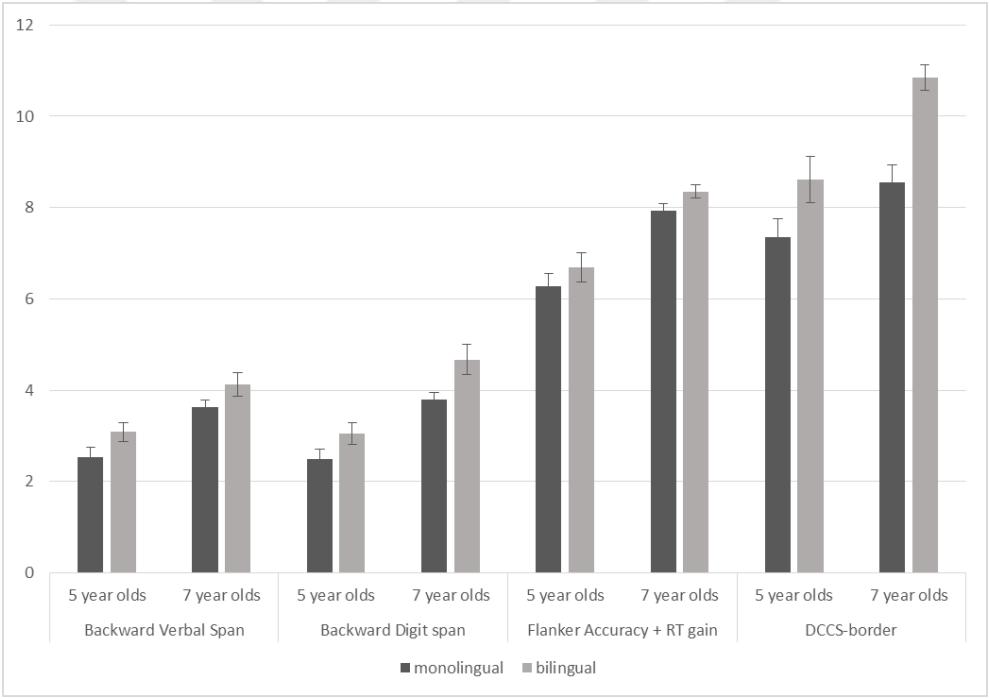

Figure 11. Mean scores for executive functioning tasks by lingualism and age group

7.2 Language competence tasks

I administered TİFALDİ-R to assess Turkish receptive vocabulary for both monolingual and bilingual children. For the bilingual group, I also used PPVT-4 to

assess receptive vocabulary in English. Means and standard deviations can be seen in Table 20 and Figure 12.

7.2.1 Turkish expressive and receptive vocabulary test – receptive subtest (TİFALDİ-R)

I conducted a 2 (Age: 5-and 7-year-olds) x 2 (Lingualism: monolingual and bilingual) factorial ANOVA. The results showed that there was no main effect of lingualism on vocabulary, $F(1,108) = .406$, $p = .525$, $\eta_p^2 = .004$, monolinguals (M = 81.67, SD = .11.70) and bilinguals (M = 79.84, SD = 11.59) performed similarly. There was significant age effect, $F(1,108) = 91.10$, $p < .001$, $\eta_p^2 = .46$, where 7-year-olds (M = 88.41, SD = 5.01; corresponding to 8;09 age level and 71st percentile for monolingual Turkish-speaking children) performed better than 5-year-olds (M = 72.70, SD = 11.25; corresponding to 6;11 age level and 66th percentile for monolingual Turkish-speaking children). There was no interaction effect of age x lingualism, $F(1,108) = .104$, $p = .747$, $\eta_p^2 = .001$.

7.2.2 Peabody picture vocabulary test – 4 (PPVT-4)

Due to the fact that the PVVT was administered only to the bilingual group, I only made comparisons within the bilingual participants. I compared 5-year-old bilinguals and 7-year-old bilinguals by conducting independent samples t-test. The results showed that 7-year-olds (M = 99.56, SD = 22.66), (corresponding to 6;1 age level and 28th percentile for monolingual English-speaking children) performed better than 5-year-olds (M = 72.54, SD = 20.12) (corresponding to 4;2 age level and 16th percentile for monolingual English-speaking children) . (See Table 22)

Table 22. Means and Standard Deviations for TİFALDİ-R and PPVT-4 Scores by Lingualism and Age Group

	monolingual				bilingual			
	5 year olds		7 year olds		5 year olds		7 year olds	
	M	SD	M	SD	M	SD	M	SD
TİFALDİ-R	73.46	11.78	88.64	5.54	71.88	10.81	88.12	4.29
PPVT-4	-	-	-	-	72.54	20.12	99.56	22.66

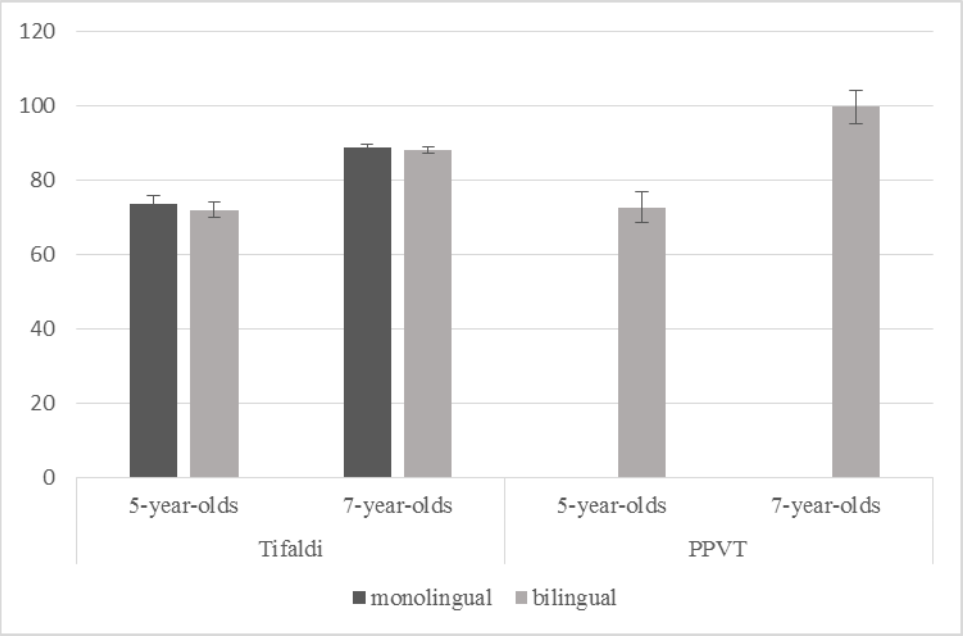

Figure 12. Means for TİFALDİ-R and PPVT-4 by lingualism and age group

7.3 Summary of results: Executive functioning and language competence

Tasks that evaluate cognitive flexibility, working memory and inhibition were administered. The DCCS-border scores which measured cognitive flexibility, showed that bilinguals were at an advantage compared to monolinguals regardless of age. Seven-year-olds performed better than 5-year-olds. For working memory, backward verbal and digit span tasks, again showed that bilinguals performed better than monolinguals and that 7-year-olds performed better than 5-year-olds. For

Flanker task, which is a measure of conflict inhibition there was only a trend in scores in favor of bilinguals.

For language competence scores, TİFALDİ-R test scores were compared. The results showed that there was no effect of lingualism on vocabulary, indicating that bilinguals and monolinguals performed similarly. There was also a significant effect of age where again 7-year-olds performed better than 5-year-olds.

CHAPTER 8

RESULTS: BIVARIATE RELATIONS BETWEEN VARIABLES

8.1 Correlations between variables

Bivariate relations between variables were investigated through correlation analyses. Correlations between narrative competence measures, language competence measures, executive functioning and demographic variables are presented in Table 23, Table 24 and Table 25.

Results presented in Table 23 shows that when age is partialed out, none of the correlations between variables is significant. I also ran correlation analyses for the two age groups separately and these are presented in Tables 24 and Table 25.

8.1.1 Correlations between variables: 5-year-olds

According to the results, TİFALDİ-R is positively correlated with Backward digit span indicating that 5-year-olds with higher scores on the test of Turkish vocabulary performed better in working memory as measured by Backward digit span, $r(48) = .50$, $p < .01$. There was a negative correlation between Home exposure to L2 with TİFALDİ scores, indicating that as Home exposure to L2 increases, children's Turkish receptive vocabulary score decreases, $r(54) = -.27$, $p <. 05$. TİFALDİ-R was negatively correlated with the percentage of Manner-only constructions and positively correlated with the percentage of Path-and-Manner constructions, where children with higher TİFALDİ-R scores used less Manner-only descriptions and more Path-and-Manner descriptions, $r(52) = -.38$, $p < .01$, $r(52) = .32$, $p < .01$, respectively. (See Table 24)

Correlations for Narrative competence (Total Narrative scores and Plot complexity scores) showed that the Total Narrative score was correlated with percentage of Complex clauses, showing that children who displayed higher narrative skills also used more complex clauses, $r(53) = .39$, $p < .01$. Plot complexity scores were negatively correlated with Home Exposure to L2, indicating that as exposure to L2 increased at home, the complexity of plot structure scores decreased, $r(52) = -.48$, $p < .01$. On the other hand, Plot complexity and Complex Clause scores were positively correlated with mother's education, $r(52) = .40$, $p < .01$, $r(52) = .35$, $p < .01$, respectively.

There were meaningful correlations between executive functioning measures. DCCS scores were correlated with, Backward digit span, and Backward verbal span tasks, $r(47) = .38$, $p <. 001$ $r(51) = .39$, $p < .01$, respectively. These working memory tasks were also correlated, $r(48) = .60$, $p < .01$.

Home exposure to L2 was related to Mother's education and percentages of Manner-only and Path-and-Manner scores, ($r(52) = .64$, $p < .01$, $r(49) = .48$, $p <. 01$, $r(52) = -.42$, $p <. 01$, respectively). As Home exposure to L2 increased, children's usage of Manner-only constructions also increased while Path-and-Manner percentage decreased.

8.1.2 Correlations between variables: 7-year-olds

Results showed that TİFALDİ-R scores were correlated with two working memory tasks, Backward digit and verbal span tasks, $r(57) = .46$, $p <. 01$ and $r(57) = .32$, $p < .05$, respectively (See Table 25).

For Narrative scores, results indicate that Total Narrative Score was correlated with Percentage of Complex Clauses used in the narrative, $r(58) = .54$, $p <$

.01 and negatively correlated with DCCS, $r(58) = -.37$, $p < .01$.. Plot Complexity scores were correlated with Flanker task, $r(58) = .32$, $p < .05$ and Mother's education, $r(57) = .28$, $p < .05$ which implies that as inhibition performance as measured in Flanker task and mother's education increased Plot Complexity scores also increased.

Among the executive functioning tasks the two working memory tasks, backward digit and verbal span tasks were correlated, $r(57) = .51$, $p < .01$. Backward digit span was also correlated with DCCS, $r(57) = .38$, $p < .01$.

For Motion Event Task measures, there were significant correlations. Manner-only scores were negatively correlated with Path-and-Manner scores, $r(55) = -.57$, $p < .001$.

Table 23. Correlations between Variables- Age Partialed out

	TİFALDİ-R	PPVT-4	Total Narrative Score	Plot Complexity	% of Complex Clauses	DCCS	Backward digit span	Backward verbal span	Flanker Task	Home Exposure to L2	Mother's education	Manner-only %	Path-only %	Path-and-Manner %
TİFALDİ-R	1	.053	-.139	.462	.057	.129	.243	.064	-.038	-.338	-.390	-.198	.043	.163
PPVT-4		1	.053	.138	-.232	-.184	-.028	.072	.030	.015	.018	.100	.043	-.127
Total Narrative Score			1	-.278	.420	.138	.171	.191	-.200	.239	.146	.022	.135	-.114
Plot Complexity				1	.052	.103	-.116	-.159	-.032	-.413	.126	-.171	-.033	.189
% of Complex Clauses					1	.223	.020	.092	-.048	.112	.135	-.004	-.043	.034
DCCS						1	.226	.081	.169	-.041	-.113	.251	-.036	-.219
Backward digit span							1	.596	-.035	-.166	-.341	-.065	-.049	.097
Backward verbal span								1	.197	.109	-.187	-.098	.043	.066
Flanker Task									1	.181	.006	.162	-.031	-.137
Home Exposure to L2										1	-.157	.188	.020	-.196
Mother's education											1	.196	-.093	-.127
Manner-only %												1	-.315	-.757
Path-only %													1	-.381
Path-and-Manner %														1

* p<.05, ** p<.01

Table 24. Correlations between Variables- 5-year-olds

	TİFALDİ-R	PPVT-4	Total Narrative Score	Plot Complexity	% of Complex Clauses	DCCS	Backward digit span	Backward verbal span	Flanker Task	Home Exposure to L2	Mother's education	Manner-only %	Path-only %	Path-and-Manner %
TİFALDİ-R	1	.167	-.019	.192	.095	.150	.500**	.149	.134	-.296*	-.168	-.383**	.136	.324*
PPVT-4		1	-.115	.218	-.167	-.163	-.085	-.061	-.042	-.130	.066	-.043	.296	-.126
Total Narrative Score			1	-.128	.386**	-.133	-.014	-.002	-.190	.147	.084	-.060	-.130	.148
Plot Complexity				1	.084	-.022	.007	-.070	-.043	-.484**	.400**	-.166	-.182	.294*
% of Complex Clauses					1	-.053	-.037	-.066	-.081	-.163	.350**	-.230	-.082	.300*
DCCS						1	.389**	.390**	.142	.162	.083	.230	-.123	-.174
Backward digit span							1	.603**	.020	-.132	-.198	-.122	.018	.114
Backward verbal span								1	.221	.172	.094	.069	.087	-.130
Flanker Task									1	.078	.134	.113	-.032	-.101
Home Exposure to L2										1	.639**	.488**	-.161	-.421**
Mother's education											1	.260	-.042	-.253
Manner-only %												1	-.414**	-.809**
Path-only %													1	-.201
Path-and-Manner %														1

* p<.05, ** p<.01

Table 25. Correlations between Variables- 7-year-olds

	TİFALDİ-R	PPVT-4	Total Narrative Score	Plot Complexity	% of Complex Clauses	DCCS	Backward digit span	Backward verbal span	Flanker Task	Home Exposure to L2	Mother's education	Manner-only %	Path-only %	Path-and-Manner %
TİFALDİ-R	1	.153	-.042	-.145	-.075	.091	.455**	.321*	-.060	.227	.011	-.039	.062	-.008
PPVT-4		1	.134	.065	-.009	.309	.239	.099	.248	.079	.094	.220	-.039	-.160
Total Narrative Score			1	.029	.536**	-.374**	-.228	-.106	-.140	.109	.037	-.001	.167	-.110
Plot Complexity				1	.145	.022	-.219	-.174	.323*	.098	.276*	.344*	.237	-.440**
% of Complex Clauses					1	-.140	-.167	-.089	-.011	-.069	.058	-.048	.150	-.060
DCCS						1	.384**	.086	.182	-.090	.106	-.133	.147	.012
Backward digit span							1	.509**	-.061	-.096	.003	.048	.072	-.087
Backward verbal span								1	-.073	-.149	-.181	-.064	.024	.037
Flanker Task									1	.167	.121	.256	-.167	-.101
Home Exposure to L2										1	-.181	.092	-.162	.032
Mother's education											1	.276*	.112	-.302*
Manner-only %												1	-.109	-.753**
Path-only %													1	-.572**
Path-and-Manner %														1

* p<.05, ** p<.01

CHAPTER 9

DISCUSSION

The present study aimed to answer two major research questions: (1) Whether intense exposure to a second language (L2) affects first language (L1) narrative skills of 5- and 7-year old children, and (2) whether learning a second language that is typologically different from the first affects their motion event conceptualization patterns. It also asked whether early learning of a second language had effects on executive functioning. These questions were investigated by comparing narratives and motion event conceptualization patterns produced in both L1 and L2 by bilingual children to those produced by monolingual children. In addition, executive functioning and vocabulary assessments were made for both groups of children.

The context of L2 acquisition of the present study is one where L1 is the dominant societal language. For the sample studied L2 learning started at 3 years of age in preschool in an immersion program which ended at 6 years of age when children started primary school. Current schooling practices pose a discontinuity in L2 exposure at 6 years of age with number of hours reduced from a maximum of 40 to 10. This situation provided an opportunity for investigating the consequences of very early L2 immersion on L1 and on executive functions. Overall, results showed that learning an L2 that is typologically different from L1 in an immersion context has noteworthy consequences on how motion events are conceptualized in a bilingual mind at the time of speaking. The results have also shown that being immersed in L2 in preschool has some negative consequences on L1 competence as assessed by narrative production skills. Third, bilingualism at an early age has positive consequences for executive functioning.

The results will be discussed with respect to three main areas investigated in the present study: (1) narrative competence (2) motion event conceptualization and (3) executive functioning.

9.1 Narrative competence: Plot complexity, narrative quality and linguistic complexity

9.1.1 Comparison of L1 narratives of bilinguals and monolinguals

The evaluation of children's narrative were made in terms of plot complexity evidenced by the explicit mention of major plot components, namely, plot onset, plot unfolding and plot resolution that are organized around a global theme. Due to the significance of search theme within the frog story, explicit mention of the lost frog and reiterations of its search were also treated as a plot component. The hypothesis which stated that 5-year-old monolinguals would outperform their bilingual peers in L1 narratives in terms of plot complexity was only partially supported since there was no difference between the two groups for the subcomponents plot onset, plot unfolding and plot resolution. However, for the search theme 5-year-old monolinguals performed better than their bilingual peers. The results supported the hypothesis that there would be no difference between 7-year-old bilinguals and monolinguals for plot onset, plot unfolding and plot resolution. However, 7-year-old monolinguals also performed better than bilingual peers on the search theme. The hypothesis about age that 7-year-olds would perform better than 5-year-olds was also partially supported. For all components except for plot resolution, both monolingual and bilingual 7-year-olds performed better than 5-year-olds. For plot resolution neither age group performed well in explicitly mentioning the boy's finding the frog

he lost. The lack of a difference in plot onset, plot unfolding and plot resolution between bilinguals and monolinguals for each age group indicates that bilinguals and monolinguals are following a similar pace of development when the conceptual structure of narrative in terms of major plot components is considered, and lingualism does not have an effect on this development. However, there was a difference in the Search component in favor of monolinguals which will be discussed subsequently. The age difference found for plot onset and plot unfolding where 7-year-olds performed better than 5-year-olds shows development in these components parallel to findings from typical monolingual development (Berman, 1988, Berman, 2004 among others). The lack of an age difference in plot resolution indicates that children aged 7 or younger still have difficulty with this component which is found to emerge late. In their pioneering work, Peterson and McCabe (1983) showed that narratives of 5-year-olds often ended prematurely at the climatic event, often leaving out resolution. Studies from different languages reported in Berman and Slobin (1994) show that by age 9 children form well-formed narratives where they include more information about plot components including resolution.

The present findings for plot complexity for L1 where monolinguals and bilinguals were compared are in line with the findings of Akinci, Jisa, and Kern (2001). They compared low SES immigrant Turkish (L1) - French (L2) bilingual children's L2-French frog story narratives to French monolingual narratives as well as comparing their L1-Turkish narratives to their L2-French narratives based on components of plot onset, plot unfolding and plot resolution. When L2 French narratives were compared to L1 French narratives no difference was found for 5-and 7-year olds regarding the three components but for 10-year-olds there was a monolingual advantage showing higher level of performance by monolinguals

compared to bilinguals. This monolingual advantage was attributed to a delay in development of narrative structure for bilinguals which was linked to lack of home-based narrative activities rather than linguistic delay in French. Furthermore, bilingual children's L1-Turkish and L2-French narratives did not differ for plot onset, plot unfolding and resolution for either of the age groups. The study differs from the present study in that bilingual children were from low SES backgrounds with limited access to home-based literacy related activities. The present study also finds no difference between L1 and L2 in plot structure for plot onset and plot resolution.

One of the most important findings for plot complexity in the present study was the monolingual advantage found for the Search component of the frog story. For both age groups monolinguals outperformed bilinguals for this component in L1-Turkish narratives. Though the hypothesis regarding monolingual advantage for 5-year-olds was confirmed for this component, the monolingual advantage was also observed for 7-year-olds contrary to our prediction of no difference. The search component has special significance because it is the connecting theme of the episodes of the story but it is not readily observable in the pictures and needs to be inferred from the events and kept in memory. One explanation for this finding regarding L1 narratives might be the fact that bilinguals might be deploying more of their cognitive resources to producing correct language rather than to a coherent plot organization at the global level. This explanation might be further supported by the fact that bilinguals performed worse in terms of linguistic complexity at both age groups when compared with monolingual peers. That is, they may have been less able to invest higher order thinking to structuring the narrative by incorporating the crucial theme of search in their narratives.

The present findings of no difference between monolingual and bilingual groups regarding the plot components of onset, unfolding and resolution are in the same line with Kunnari, Valimaa and Laukkanen-Nevala (2016) who found no difference in macrostructure properties of narratives produced by L1-Finnish – L2-Swedish bilingual 5-year-olds compared to L1-Finnish monolingual 5-year-olds.

The present study did not compare the children's L2-English narratives to L1-English narratives from monolingual speakers of English. Such comparisons were carried out by Akinci, Jisa, and Kern (2001) as discussed above, and also by Miller et al. (2006) who compared L1-Spanish – L2-English bilingual and L1-English monolingual children aged 4-to-5. Neither of the studies found a difference in narrative structure in these comparisons. Considered together, all these findings comparing bilingual children's L1 narratives with those of L1 monolinguals (present study) and L2 narratives with those of L2 monolinguals (Akıncı et al, 2001; Miller et al. 2006) suggest that the structure of children's narratives in terms of the basic plot components included – to the exclusion of their higher order organization around a binding theme such as the 'search' – at a given age, are not influenced by their status of lingualism.

Regarding the Narrative Quality dimensions of frog story elements, sequence, perspective/affect and engagement in L1-Turkish narratives, it was hypothesized that 5-year-old monolinguals would outperform 5-year-old bilinguals but for 7-year-olds there would be no difference. Results showed that the hypotheses were partially confirmed. For frog story elements, sequence and total narrative quality, 5-year-old monolinguals performed better than 5-year-old bilinguals. However, for perspective and affect and engagement components the results were not in the expected direction, 5-year-old monolingual and bilingual children performed similarly whereas there

was a monolingual advantage for all components for 7-year-olds where no difference was predicted. The hypothesis that 7-year-olds would perform better than 5-year-olds on all components of narrative quality regardless of lingualism was confirmed.

Frog story elements (Pearson, 2002) required the mention of the crucial plot components, namely the discovery of the missing frog, search for the frog, finding the frog and taking it home as well as articulating goal and lack of success. It therefore captures almost the same components as Berman and Slobin's (1994) plot complexity. The results for frog story elements indicate a monolingual advantage for both ages, confirming the hypothesis for 5-year-olds. This finding contrasts with the findings of no difference for Plot complexity comparisons carried out for bilinguals vs. monolinguals. However, the coding of the frog story elements component according to of Pearson's scheme (2002) incorporated the search theme as well as the major plot components and which rendered the actual difference. The monolingual advantage prevailed for 7-year-olds, which, however, was against the prediction of no difference. This finding is in line with the findings of Pearson (2002) that show a higher level of performance of 7-year-old monolinguals than bilinguals on frog story elements. The monolingual advantage found for frog story elements which include the basic plot components suggest that bilinguals might be developing narrative structure at a slower pace compared to their monolingual peers. However, these plot components heavily depend on the search for the frog, the main theme of the story, and therefore tap the same difference found for the search component of the plot complexity analysis where again a monolingual advantage was found. In a similar vein, Uccelli and Páez (2007) compared monolingual and bilingual preschool children in a longitudinal design where both groups were tested in preschool as well as in first grade for narrative quality following Pearson (2002). Monolingual children

performed better than bilinguals, furthermore narrative quality for L1-Spanish at preschool predicted L2-English narrative performance at first grade indicating an interdependence of narrative competence across languages. It appears, then, that bilinguals perform comparable to monolinguals when narrative structure is evaluated in terms of the presence of the basic plot components necessary for sequential organization but lag behind monolinguals in terms of the organization of these components in relation to a higher order guiding theme, that is, in terms of a hierarchical structure.

The results for sequence, which concerned how children chained successive events, (performance ranging from picture description to hierarchical structure including retrospective or prospective judgments) confirmed the hypothesis that 5-year-old monolinguals would outperform 5-year-old bilinguals. The hypothesis that 7-year-old monolinguals and bilinguals would perform similarly was disconfirmed since 7-year-old monolinguals also outperformed 7-year-old bilinguals. Monolinguals at both ages were better at telling a story with hierarchical structure, episodes contributing to the global theme as compared to bilinguals. In fact, these findings support the above interpretation regarding the discrepancy between the results of the plot complexity and narrative quality analyses. Similar findings related to a monolingual advantage for hierarchical organization of the episodic structure in narratives have been found in the literature for different language pairings including Spanish-English, Portuguese-English and Hebrew-English where both monolingual and bilingual children were tested (Gutiérrez-Clellen 2002; Shrubshall, 1997; Kupersmitt, Yifat & Blum-Kulka, 2014).

For perspective and affect and engagement there was no difference between 5-year-old bilinguals and monolinguals contrary to the prediction of higher

performance by monolinguals. The hypothesis of no difference for 7-year-olds was not supported either; 7-year-old monolinguals performed better than their bilingual peers. Both monolingual and bilingual 5-year-olds performed poorly on this dimension possibly because they had poor skills of referential management and their ability to include internal state information within a narrative was still not well developed (Bamberg & Damrad-Frye, 1991; Berman, 2009, Karmiloff-Smith, 1981). It is not before the ages of 7-9 that children take into account shared vs. non-shared knowledge systematically which is crucial in referential management according to perspective (Kail & Hickmann, 1992; Küntay, 2002; Serratrice, 2008) and not before the ages of 5-7 that they show advances on the evaluative dimension (Bamberg & Damrad-Frye, 1991; Berman, 2009; Küntay & Nakamura, 2004).

Analyses for engagement in L1 stories revealed a monolingual advantage for both age groups confirming the hypothesis of difference for 5-year-olds but not the hypothesis of no difference for 7-year-olds since the monolingual 7-year-olds again outperformed bilingual peers. Engagement refers to the ability of the narrator to draw attention of the listener, using appropriate intonation and figures of speech while avoiding disfluencies that might interfere with the listener's ability to follow the story. The monolingual advantage is likely due to the fact that monolingual children were used to engage in narrative activities in L1 while bilingual children were more accustomed to do so in L2 in their L2 preschool context.

Finally for total narrative quality (evaluated on the basis of scores for frog story elements, sequence, perspective and affect and engagement), again monolinguals displayed a higher performance than bilinguals at both ages. However, there was also an interaction between age and lingualism such that the performance difference between monolingual and bilingual 7-year-olds was greater than

performance difference between 5-years old monolinguals and bilinguals This is a striking finding which indicates that contrary to the hypothesis predicting no difference between 7-year-old bilinguals and monolinguals, the performance difference actually got enhanced as children got older. This raises intriguing questions regarding the fact that two years of L1 formal schooling does not yet remove the gap between 7-year-old bilinguals and monolinguals.

The L1 narratives of monolingual children of both age groups displayed a higher level of linguistic complexity than those of the bilingual children. Monolinguals produced longer narratives with higher number of words and clauses in their L1 narratives compared to bilinguals. Five-year-old monolinguals used a higher percentage of complex clauses compared to 5-year-old bilinguals as expected. However, the hypothesis of no difference was not confirmed for 7-year-olds as monolinguals again outperformed their bilingual peers. This finding converges with those in the literature showing the use of fewer complex syntactic structures in bilingual compared to monolingual narratives (Akinci, Jisa, & Kern, 2001; Kupersmitt & Berman, 2001).

Overall, the results of the present study indicate that L1 narrative structure in terms of the presence of basic plot components is unaffected by three preschool years of immersion in L2. However, such early immersion does have effects both in terms of sophistication in narrative organization and its linguistic expression. These effects remain even after two years of schooling with predominantly L1 instruction.

9.1.2 Comparison of L1 vs. L2 narratives within bilingual children

Comparison of L1 vs. L2 narratives within the bilingual group revealed important findings for development of narrative competence. It was hypothesized that there

would be no difference between L1 and L2 narratives in terms of plot complexity. For 7-year-olds, the results supported the hypothesis for plot onset and plot resolution subcomponents. For plot unfolding and the search theme, the hypothesis was not supported. L1 narratives include more details for both components compared to L2 narratives. One reason for this might be an order effect since L2 narratives were always second in order, being told a few days after the L1 narratives and children just did not talk about some of the scenes the second time round For 5-year-olds, results supported the hypotheses of no difference for plot complexity, they performed similarly for both L1 and L2. The higher level of performance for the Search theme found for 7-year-old but not for 5-year-old bilinguals in L1 compared to L2 is most likely due to the 7-year-olds' better developed ability to keep in mind the higher order theme of the search while talking about different episodes, as their higher level performance on the working memory tasks would suggest.

The lack of difference for plot resolution between L1 and L2 narratives is consistent with reports in the literature that this ability is rather late to emerge. Development of narrative structure is still in progress for 5-year-olds. As Berman and Slobin (1994) also report not all 5-year-olds are able to construct a globally structured narrative producing not more than two of the major plot elements, most often failing to bring the story to a resolution. Akinci et al.'s similarly found that bilingual 5- and 7-year-old children's L1-Turkish and L2-French narratives did not differ for plot resolution.

In the present study, it was hypothesized that both 5- and 7-year-old bilinguals would display similar performance in L1 compared to L2 for narrative quality measures. This hypothesis was not supported. While 7-year-old bilinguals showed higher level of performance for frog story elements in their L1 narratives

contrary to predictions, 5-year-old bilinguals showed higher performance in their L2 narratives. This finding suggests that L1 immersion starting at the age of 6 might have had positive outcomes for L1 narratives for 7-year-old bilinguals. On the other hand, higher performance of the 5-year-old bilinguals on L2 compared to L1 narratives may an effect of their practice in telling stories in L2-English in their immersion context as well as reflective of the benefit of telling the story for the second time.

The results for perspective/affect, engagement and total narrative quality partially supported predictions of no difference. Both 5- and 7-year-olds showed higher performance in L2 compared to L1 for these measures. This could be again due to an order effect since children always produced L2 narratives after they produced L1 narratives and may have benefited from having told the story once (Pavlenko, 2009; Pearson, 2002). Second, the typological difference between English that has gendered pronouns and Turkish that does not, might be a factor affecting referential adequacy to which the present coding of perspective/affect was sensitive. Clear reference to story characters is important for understanding from whose perspective the story is being told. Aksu-Koç and Nicoloupoulou (2015) found that in referential management, English-speaking children tend to follow a pronoun dominant strategy whereas Turkish-speaking children tend to overuse null-pronouns. While the gendered pronouns of English are informative for reference tracking, inappropriate use of null-pronouns in Turkish may have resulted in poor referential marking. The L2-English narratives of bilinguals might therefore have benefitted from this typological difference in the expression of perspectives.

It was hypothesized that both 5-and-7-year-old bilinguals would display higher level of linguistic complexity in their L1 compared to L2 narratives. The

results confirmed this hypothesis for both age groups; both 5-and 7-year-old bilinguals used lower percentage of complex clauses in their L2 narratives indicating that in terms of complexity their L1 was superior to L2. Taken together with plot complexity and narrative quality results, the results of the linguistic complexity measures suggest that both 5-and 7-year-old bilingual children of the present study may be expanding more cognitive resources at the language level when narrating in L1 and therefore the disadvantage found for narrative competence measures might be due to bilingualism per se. To see whether this claim finds support in the data, I re-analyzed the search, frog story elements, sequence, perspective and affect and engagement sub-components of L1 narratives taking L1 linguistic complexity (percentage of complex clauses in L1) as a covariate. The results revealed a significant effect of linguistic complexity for all sub-components except for search. For frog story elements, the effect of linguistic complexity wiped out the significance of lingualism indicating that children's skill in using complex linguistic structures in Turkish accounted for most the variance observed in the conceptual structure of their narratives and confirmed the monolingual advantage. On the other hand, for sequence, perspective and affect and engagement, results showed significant effects of both linguistic complexity and of lingualism, that is, there was an effect of bilingualism per se. These findings indicate that while linguistic competence might explain differences in narrative organization it still leaves room for alternative explanations such as the use of socio-cognitive skills necessary for modulations of perspective and affect, and the ability to maintain the higher order global theme in mind necessary for sequence. Put differently, bilingual children may be allocating more cognitive resources for linguistic expression and less to the higher level global structuring of their narratives.

9.1.3 Overall evaluation of narrative competence

Aktan-Erciyes and Aksu-Koç (2016b) found that 5-year-old monolinguals displayed higher level of performance than their bilingual peers in terms of narrative structure, narrative quality and linguistic complexity suggesting that children experiencing early immersion in L2 might be at a disadvantage even in an L1 dominant community. However, the small sample size of 30 children and restricted age range (only 5-year-olds) motivated further investigation of whether this disadvantage disappears as a result of L1 immersion in elementary school. It was hypothesized that due to the two years of formal schooling in L1 starting at the age of 6, 7-year-old bilinguals would perform as well as their monolingual peers. However, the monolingual advantage was found to persist for 7-year-olds contrary to expectation. This might be due to several reasons. First, two years of L1 immersion might not be sufficient to fill the gap between bilinguals and monolinguals. Pearson (2002) found that monolingual advantage for L2-English did not disappear for 7-year-old bilinguals but only for 10-year-olds, thus indicating that more school years is needed for bilinguals to catch up with monolinguals for their L2-English. The present findings suggest that this may also be the case when L1 is at issue. Other research also points to the fact that it takes time for bilingual children to achieve some comparable level of narrative competence in their two languages. Miller et al. (2006) found that L1 and L2 narrative competence were closely related and that for L1-Spanish and L2-English bilingual preschool children, narrative skills developed both within and across languages. Likewise, Gutiérrez-Clellen (2002) found that majority of 7- and 8-year-old L1-Spanish and L2-English bilingual children performed better in L1 narrative production but there were still some bilingual children who performed better in L2.

Another explanation for the monolingual advantage might be that bilingual children may be more experienced in narrating in L2 more than in L1. In preschool, literacy related activities are carried out in L2 more than in L1 for the bilingual group, therefore when L1 immersion in elementary school starts, L2 is the more familiar language they have to engage in those activities. Furthermore, children acquire community norms of narrating through their early experiences starting in the home context (Heath, 1982). Aside from attending an L2 immersion school, bilingual children were further exposed to L2 at home. Although families were not asked what specific activities in L2 were carried out in the home context (e.g., book reading, watching movies, talking) it was found that overall home exposure to L2 was negatively related to L1 plot complexity; as home exposure to L2 increased plot complexity scores for L1 decreased.

The present study also showed that a comprehensive way of assessing children's linguistic, cognitive and pragmatic abilities is the use of elicited narrative data. Although no differences were found for L1 vocabulary development as measured by TİFALDİ-R for bilinguals vs. monolinguals, noteworthy differences were found in terms of narrative competence. Overall, the present study made it possible to see the effects of early and intense L2 exposure on L1 by utilizing narratives elicited in both L1 and L2. Furthermore, it replicated the results of a previous study, where 5-year-old bilinguals performed worse in both narrative quality and linguistic complexity in frog story narratives compared to their monolingual peers (Aktan-Erciyes & Aksu-Koç, 2016b). Narratives of bilingual children have been studied more often in societies where L1 is not the dominant language (e.g., Akinci, Jisa & Kern, 2001; Kaufman, 2001; Kupersmitt & Berman, 2001; Viberg, 2001), with a focus on the development of L2 and often with no data

for L1 monolinguals that match the minority's L1, with some exceptions (e.g., Verhoeven & Boeschoten, 1986). In this respect the results of the current study are important as they provide information on bilingual narrative development in an L1 dominant, high SES context. Comparison of narrative performance in both L1 and L2 has shown that early L2 immersion has some negative consequences for L1 narrative development even in an L1 dominant environment. This finding raises questions regarding how early immersion schooling should start and how it should be designed to enhance both L1 and L2. Schwartz & Shaul (2013) investigated L1-Russian - L2-Hebrew children's narrative competence in two schooling contexts: (1) bilingual preschools (where both Russian and Hebrew instruction is implemented: L1 and L2 instruction) and (2) monolingual preschools (Hebrew is the language of instruction: L2 immersion). The results of the longitudinal study showed that children attending bilingual preschools outperformed their peers attending monolingual preschools in both L1 and L2 narratives which were quite similar reflecting a balanced pace of development. However for children attending monolingual L2 immersion preschools, performance was lower for L1 suggesting an unbalanced development in the narrative domain. Schwartz and Shaul (2013) interpret the results as indicating an interdependence between L1 and L2. Similarly, Viberg (2001) suggests that narrative competence is a general conceptual competence which is available for both languages, therefore unbalanced development in linguistic skills might impede narrative development in both languages. Pearson (2002) who found narrative ability in L1 to be a strong predictor of narrative ability in L2 also argued that narrative abilities concerning conceptual structure could be transferred between languages. Iluz-Cohen and Walters (2012) also argue that narrative abilities such as story structure is invariant across languages

of a bilingual child however language specific aspects such as lexical and morpho-syntactic properties are less likely to be transferred. Our findings support this interdependence in that bilingual children performed equally well for plot onset, plot resolution, frog story elements and sequence in both L1 and L2, indicating a general conceptual competence available both for their L1 and L2.

Finally, as Fanon (1967, p.38) stated “to speak a language is to take on a world, a culture”. The value a community gives to its own language seems to be a crucial factor, yet very challenging to measure. However, it should be incorporated in studies that investigate L1-L2 interactions. One way of assessing the value of a language for its users may be to ask parents of children who attend immersion schools. In some cases, immersion might not be a matter of choice such as in immigrant contexts. In some cases, this choice of L2 immersion might be tightly related to the value parents put on their L1. Garcia and Otheguy (1994) state that “for both the individual and the society, languages can be said to have value no less than other commodities.” (p.100). Therefore, in anticipation of better educational opportunities, better living standards and the like, parents might be putting value on L2 as much as they put on L1 and in some cases even more, although L2 might not be the dominant societal language. Acquiring more than one language has profound advantages in today’s world. However, there lies a risk of unbalanced development of the learner’s different languages especially when intense exposure starts early.

9.2 Motion event conceptualization

A second major question of the present study was whether learning a second language in an immersion context has an effect on motion event conceptualization of the learners. Following Slobin’s Thinking-for-Speaking hypothesis, I examined

motion event conceptualization comparing young Turkish monolingual and bilingual children's motion event descriptions produced in narratives and in a motion event conceptualization task consisting of 12 video clips all of which included both manner and path components. Studying children learning Turkish (V-framed) and English (S-framed) languages that fall into different categories in terms of the expression of motion provide an opportunity to investigate the effects of learning a second language on motion event conceptualization in bilingual vs. monolingual minds. Overall, findings indicate bidirectional effects between L1 and L2. Findings are discussed in the light of the Thinking-for-Speaking framework considering the hypotheses of the study.

It was hypothesized that 5-year-old bilingual children would use more manner structures and less path structures in their L1 narratives and L1 motion event descriptions compared to their monolingual peers but that there would be no such difference for 7-year-olds. These hypotheses for both narratives and motion event descriptions were confirmed. The results showed that 5-year-old bilingual children used more manner structures in the forms of manner verbs in both their L1 narratives and their motion event descriptions. They also used more Manner-only constructions and less Path-only expressions. For 7-year-old bilinguals, there was no difference from monolinguals as expected. These findings are explained by the amount of exposure the different age groups had to their two languages. Five-year olds were in an L2 immersion environment for three preschool years. In addition, they were tested in their preschool setting where teachers and other staff always speak English. Therefore, they can be said to have been primed to talk and think in English when they participated in the data collection sessions of the study. On the other hand, 7-year old bilinguals who started primary school at 6-years of age were exposed to an

L1 curriculum and the amount of L2 exposure decreased to about one fourth the hours of L2 in preschool. Thus, with the advance of literacy, the context of L1 usage was enriched and gained momentum compared to L2 activities.

These findings are in line with previous research investigating the effects of L2 on L1 motion conceptualization in adult bilinguals (Cadierno & Ruiz, 2006, Hohenstein et al., 2006; Filipovic, 2011) as well as children. In a study comparing Spanish (L1)-English (L2) bilingual children with Spanish monolinguals, Aveledo (2015) had children of three age groups (5 to 6, 7 to 9 and 10 to 12 years of age) watch and describe naturalistic videos depicting different manner and path combinations. Results showed that bilinguals produced more manner verbs and fewer path verbs than monolinguals in their L1 Spanish. However, the results differed for different age groups; 5- to 6-year-old bilinguals performed closer to Spanish than English, whereas 7- to 9-year olds showed a considerable increase in manner verb production, explained in terms of an influence of L2-English on L1 Spanish. Differences in the amount of exposure to L2-English for different age groups also accounted for the findings. Five- to 6-year-olds were exposed to 8 hours/week of English classes whereas this amount was 16 hours/week for 7-to-9 year olds. In a further study Aveledo and Athanasopoulos (2016) replicated Aveledo (2015) and got the same results. The findings of both studies converge with the findings of the present study as they show that more L2 hours in school enhances the likelihood of L2 effects on children's motion descriptions in L1. In a study comparing L1-Turkish – L2-English bilingual, Turkish monolingual, and English monolingual adult participants, Özçalışkan (2016) showed that in describing events in Turkish, Turkish-English bilinguals used fewer conflated (path and manner described in a single clause) but more separated (path and manner expressed in more than one clause)

constructions than English monolinguals, but they did not differ from Turkish monolinguals, producing similar amounts of separated and conflated descriptions. These findings with adults indicating no monolingual-bilingual difference in use of path and manner constructions are similar to our findings of no monolingual-bilingual difference for 7-year-olds. However, they differ from our findings for 5-year old bilinguals who used more manner constructions than monolinguals. This lack of difference between bilingual vs. monolingual adults in Özçalışkan's study can be explained by the late AoO of L2 (M=11.8 years), which is much later than AoO of L2 in the present study (M= 3.0 years).

The AoO of L2 immersion for bilingual children of the present study was around the age 3. Allen et al. (2007) found that language specific patterns had not yet been consolidated by age 3, and that some remnants of universal tendencies for "compact syntactic constructions such as packaging both elements in one clause rather than two" were still observed (Allen et al, 2007, p. 45). The results of the present study showing effects of L2 on motion event descriptions of bilingual 5-year-olds in L1 may also be interpreted as reflecting the consequences of early L2 immersion that starts before language-specific patterns have been consolidated. The finding of no difference for 7-year-olds is informative about the timing and duration of L2 immersion. When L2 immersion was replaced by L1 dominance in formal schooling at the age of 6, the effects of L2 on L1 were overwritten.

Differences in L1 description of motion events and frog story motion scenes of bilinguals and monolinguals highlighted L2 influences on L1 by showing that children immersed in L2 between 3-5 years of age produced more manner constructions following the L2-English pattern, than monolingual age mates. On the other hand, differences in L2 descriptions of motion events and frog story motion

scenes of the 5- and 7- year old bilinguals highlighted L1 influences on L2 due to increased exposure to L1. Comparison of L1 and L2 motion event descriptions within each age group yielded more Manner-only constructions and manner verbs than Path-only constructions and path verbs for L2 compared to L1 for 7-year-old bilinguals only. Five-year-olds, on the other hand, were found to use more manner than path constructions and verbs both in their L1 and L2 descriptions. Results also showed that regardless of the language in use (L1 or L2) 7-year-old bilinguals used fewer manner verbs and more path verbs and path-only constructions compared to 5-year-old bilinguals, which again points to an influence of L1 immersion for 7-year-old bilinguals. This finding from 7-year-olds is in line with the results of adult studies showing reflections of L1 on L2 event conceptualization, (see Jarvis & Pavlenko, 2008 for an overview) for different AoO and proficiency levels (Brown & Gullberg, 2008; Filipovic &Vidakovic, 2010; Hohestein et al, 2006; Montrul, 2001; Stam, 2010). For example, Filipovic and Vidakovic (2010) investigated bidirectional effects of Serbian and English in L1-English – L2-Serbian and L1-Serbian – L2-English adult bilinguals and English and Serbian adult monolinguals in a paradigm where participants described motion events. For expressing path in their L2 utterances, L1-English and L2-Serbian bilinguals relied on prepositions rather than verbs and prepositions, which was an influence of L1- English. For L1-Serbian and L2-English bilinguals, path information was encoded both in a verb and a preposition, which was an indication of influence from L1 Serbian. There was also an effect of proficiency level, L1 influence was the strongest for lower and intermediate learners while the effect decreased with increasing proficiency, suggestive of a stronger L2 influence. For manner information in L2 utterances, L1-English and L2-Serbian bilinguals used manner verb-plus-path preposition

constructions (typical English construction) more than Serbian monolinguals. On the other hand, Serbian learners of English used manner verb-plus-path preposition less often, and preferred to encode manner outside the verb using manner adjuncts. As for encoding path, with increasing proficiency levels L1 influence decreased. Overall, it can be said that that bidirectional relations between L1 and L2 are heavily influenced by AoO, proficiency level and amount of exposure.

The results of the present study for comparison of L1 and L2 frog story motion scenes yielded an unexpected result for encoding of manner and path structures. Bilingual children, regardless of age group, encoded in their L1 compared to their L2 narratives, more manner verbs and fewer path verbs, more Manner-only and Path-and-Manner and fewer Path-only constructions. This finding is unexpected since Turkish as a V-framed language is more a path rather than manner language contrary to English. One explanation is that bilingual children who produced L2 narratives after they told the story in L1 skipped some of the scenes that could have yielded manner information. In fact, bilingual children, regardless of age, included less information for the plot unfolding component for L2 compared to L1 tellings, and the scenes skipped most often were those where the gopher pops out of the hole, the owl flies out from its nest and the bees chase the boy, which all call for manner descriptions. A further inspection of the data showed that more than half of the motion verbs used to describe the scenes were the verb “fall” which is a path verb, and these were the scenes depicting the boy’s fall. That second tellings become less detailed than the first due to an order effect is also recognized in the literature (Pavlenko, 2009). Another explanation for the unexpected result concerns the discourse level perspective bilingual children seem to have adopted in telling the story. Producing narratives in L2 is more demanding for early second language

acquirers, therefore maintaining the boy's perspective as the main protagonist might have been easier for them. Such a strategy would enhance the likelihood of the use of the verb "fall" and increase the percentage of path structures. Sticking to the main protagonist's perspective – also called the thematic subject strategy (Karmiloff-Smith, 1981) – rather than shifting perspectives has been found to be a relatively less taxing way to organize the story for young children even in L1 (Aksu-Koç & Tekdemir, 2004). An alternative explanation which argues that bilingual children may be using the verb "fall" like a light verb because they lack the necessary vocabulary for motion verbs due to limited vocabulary can be ruled out in view of the variety of manner verbs (10 types) bilingual children have used in the context of their L2 narratives. In short, the unexpected low percentage of manner verbs in L2 descriptions of narrative scenes can be said to be a combined outcome of order effect as well as the discourse level perspective preferences.

The present study highlighted important bidirectional interactions between L1 and L2 in childhood. The comparison of L1's of monolinguals vs. bilinguals revealed an effect of L2-English on L1-Turkish (with higher percentage of manner verbs in Turkish) for 5-year-olds. The comparison of L2s of the two bilingual groups across age revealed an effect of L1-Turkish on L2-English (with higher percentage of Path-only constructions and more path verbs) for 7-year-olds than 5-year olds. The influence of L1 on L2 often called as 'transfer effects' has been investigated more often than influences of L2 on L1 (e.g., Meisel, 2004, 2007; Unsworth & Blom, 2010). For language pairings such as Turkish and English, to our knowledge, this is the first study that investigates the bidirectional effects of L1-Turkish and L2-English in early childhood. The two types of tasks used, the motion event conceptualization task which allows for more experimental control, and the frog story narrative which

allows for more ecological validity, yielded converging evidence for bidirectional effects of L1 and L2 in the motion event conceptualization context.

Closer investigation of manner and path verbs used in both frog story narratives and motion event descriptions revealed interesting points. Bilinguals tended to use more types of manner verbs (a total of 21 across the two tasks) compared to monolinguals (a total of 16 across the two tasks) in their L1. What matters for the questions of the present study is not the number of types of the manner and path verbs that monolingual and bilingual children possess for the language used, but which ones they prefer to use at the time of speaking. Since the monolingual and bilingual children did not differ in terms of their knowledge of vocabulary in Turkish it can be safely assumed that the difference in the number of manner verb types given above reflect a difference in the preference of bilingual vs. monolinguals for ways of encoding events that determines the difference, which presents a further support for Thinking-for-Speaking.

A second point concerning verbs is that very few types of path verbs were used compared to manner verbs both in frog story narratives and motion event descriptions both by bilinguals (a total of 5 across the two tasks) and monolinguals (a total of 7 across the two tasks). While this may be a function of the scenes presented in the two tasks, it may also be a function of the fact that path is a core obligatory component of motion (Talmy, 1985; Slobin, 2004) and does not show as much variation as manner to be coded with a rich variety of verbs in language.

The results of the present study provide input in two respects. First, the present study has used a within subject design with a bilingual population and two different methodologies that yielded differences in motion event descriptions in the two languages. The L1 descriptions of the bilingual 5-year-old participants displayed

more manner constructions than monolinguals, reflecting an effect of L2, the language of their preschool context. Conversely, the L1 effect on L2 is reflected by use of more path constructions in motion event descriptions by 7-year-old bilinguals compared to 5-year-old bilinguals. This effect of L1 on L2 however should be further investigated preferably incorporating a comparison with L1-English monolinguals to strengthen the claim. Finding L2 effects on L1 motion event conceptualizations provides a strong support for Thinking-for-Speaking hypothesis as it suggests that knowing a second language may influence how motion event conceptualization is structured when describing events in the first language.

Overall, bidirectional language effects were found in bilingual children's motion event descriptions and frog story narratives. Findings support the Thinking-for-Speaking hypothesis that when speakers are expressing their thoughts they engage in a form of thinking that is provided by the grammatical and lexical characteristics of their language. Slobin (1987, p.435) suggests that Thinking-for-Speaking involves using those characteristics "that (a) fit some conceptualization of the event, and (b) are readily encodable in the language". Thus it is "a special thought that is mobilized for communication" (Slobin, 1996, p.76). As the present study has shown, having acquired L2 that frames motion events differently than L1 has projections on L1. Even an early L2 user appears to conceptualize motion events in L1 through the filter of L2 while speaking. The question of whether a speaker of L1 who has acquired an L2 linguistic system has also acquired the conceptualization patterns of L2 is an important one. Pavlenko (2005) provides a number of possible outcomes for such patterns: (1) coexistence of L1 and L2 conceptual domains that suggests that bilinguals make use of distinct conceptual representations, (2) L1-based conceptual transfer which refers to L1 conceptual system guiding L2 language use, in

beginning and intermediate stages of L2 learning, (3) Internalization of new concepts refers to adoption of L2 words and concepts which are nonexistent in L1, (4) Shift from L1 to L2 conceptual domain, (5) Convergence of L1 and L2 conceptual domains which suggests creation of a unitary concept distinct from both L1 and L2, (6) Restructuring of a conceptual domain which refers to cases when shift is not complete and certain elements in a concept may be altered, and finally (7) Attrition of previously learned concepts which refers to loss of previously learned concepts and schemas. The results found for 5-year-old bilinguals are in line with a shift from L1 to L2 conceptual domain, additionally L1 effects on L2 found in the study might point to an L1-based conceptual transfer that guides L2. In their investigation of lexico-semantic organization for bilinguals, Ameel, Storms, Malt, and Sloman (2005) suggest that due to the bidirectional effects of the two languages, early bilinguals have a merged lexico-semantic organization. This is reflected in bilinguals naming and categorization preferences compared to monolinguals which further reflects that a bilingual's category boundaries for each language seem to come closer to each other and differ from a monolingual's organization. Further research that incorporates both linguistic and non-linguistic measures are necessary in order to gain more insight on the issue.

To summarize, early intense exposure to L2 had meaningful consequences which are in line with the Thinking-for-Speaking hypothesis. More specifically, learning an L2 that frames motion events differently than L1 had an effect on motion event conceptualizations reflected in expressions in L1. The effect was not unidirectional in the sense that when L1 exposure increased with formal schooling, as in the case of 7-year-old bilinguals of the study, the effect was reversed by the influence of L1 on L2. Different patterns found for different age groups call for a

broader age group of bilinguals to be investigated in future studies. Clearly, more research is needed with bilinguals for further evidence for the extent of effects that stem from early exposure.

9.3 Executive functioning, language competence and relations between variables

In addition to two major research questions, the present study also investigated whether learning a second language would have positive consequences on domain general processes such as executive functioning. For this purpose, children were assessed in three subdomains of executive functioning: inhibition, cognitive flexibility and working memory. For inhibition, there was no significant effect of lingualism, monolinguals and bilinguals performed similarly, however there was a trend in favor of bilingual children. Bilingual advantage was found both for working memory and cognitive flexibility tasks. The findings converge with the previous literature where bilingual advantage has been documented for working memory. For example, Blom et al. (2014) compared Turkish-Dutch bilingual and Dutch monolingual 5 and 6 year olds on tasks that measure visuospatial and verbal span abilities. Even after controlling for SES differences, it was observed that the bilingual group outperformed the monolingual group in working memory tasks. The advantage is also reported for younger ages. Poulin-Dubois, Blaye, Coutya and Bialystok (2011) showed that bilingual two-year-olds were better at inhibition compared to their monolingual peers, indicating that this advantage could emerge very early. The advantage regarding cognitive flexibility is found to be prevalent throughout the lifetime, from early childhood to older adulthood (Bialystok & Martin, 2004; Bialystok, Craik, Klein, & Viswanathan, 2004; Bialystok et al., 2005; Bialystok, 2007; Bialystok & Viswanathan, 2009). However, there are also some

recent studies (Gathercole et al., 2014; Papp & Greenberg, 2013) that do not validate a general bilingual advantage on executive functions but raise questions regarding differences in processing between simultaneous bilinguals and sequential L2 learners. Their findings point to the need for further research, as well as for careful scrutiny in the types of bilingual participants to be contrasted, the types of performance assessed, and the types of explanations offered.

For language competence as measured by vocabulary knowledge, there were no differences between bilinguals and monolinguals. This finding concurs with the results of studies on similar second language education practices in Canada (Burger, Weinberg, Hall, Movassat, & Hope, 2011), Finland (Björklund and Mård-Miettinen, 2011, L1: French), Ireland (Duibhir, 2011, L1: Irish) and Hong Kong (Hoare, 2011, L1-Cantonese) where outcomes of immersion schooling in L2-English nearly approach the outcomes of monolingual education. The dominant language in the community for the present study is L1-Turkish which further provides support for L1 when children are immersed in L2-English schooling.

The correlations between the variables further supported our findings. Vocabulary knowledge in L1was negatively correlated with the percentage of Manner-only descriptions for L1 motion event conceptualization task, indicating that as proficiency in L1 increased there was less usage of Manner-only descriptions. On the other hand, L2 exposure at home was found to be positively correlated to manner use in L1 which further supports the influence of L2 on L1.

Findings also revealed that mother's education was positively related to plot complexity in L1 narratives. This finding is expected in the sense that maternal education is a strong predictor of children's language competence (Ayaş-Köksal, 2011; Bornstein, Haynes, & Painter, 1998; Hart & Risley, 2003; Hoff, 2003 among

others). Pan, Rowe, Singer and Snow (2005) investigated maternal correlates of vocabulary 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. Social contexts that children engage in include culture, SES and ethnicity. These are aspects of the child's proximal environment where school, home, and all social interactions are included. The quality and quantity of interaction a child is exposed to constitute the "engines of development" (Bronfenbrenner & Morris, 1998, p.996). 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 (Hoff, 2006; Bekman, Aksu-Koç, Erguvanlı-Taylan, 2011).

9.4 Limitations and future directions

There are a number of methodological limitations of the study. One is the number of schools that took part in the study. There were only two schools that participated, therefore the difference between the two groups, monolinguals and bilinguals, especially for executive functioning, might also be a result of the school curriculum and practices that might have boosted the potential of the children. There were no significant differences regarding income, however there was a marginal difference between the two groups in favor of the bilingual group. Both schools represented samples from upper-middle class Turkish families and there were no differences between the two schools in terms of parental education levels.

Another shortcoming is due to not having counterbalanced the order Turkish vs. English sessions that resulted in the order effect for the bilingual group. The bilingual group always performed L1-Turkish sessions first therefore, there were practice effects for L2-English sessions. The practice effect was particularly evident in the frog story narratives where there were instances of children including less details for the story, skipping some parts or performing better in some respects due to retelling. The order of sessions were not counterbalanced for bilinguals considering that English is not their first language and they would be performing at greater ease if they received L2 sessions in the second order. For future research, counterbalancing should be considered.

One other limitation is the number of researchers who took part in L2-English data collection sessions. There were three research assistants who took part which might have caused an experimenter effect. The analyses showed, however, that there was no effect of experimenter on any of the variables.

The present study found bilingual disadvantage for some narrative competence measures which might be tied to early immersion and the lack of comparable input in L1 in the preschool. Furthermore, monolingual advantage extended to 7-year-olds indicating that two years of L1 school immersion did not decrease the difference between monolingual and bilingual children. Living in an L1 dominant community, it is expected that monolingual advantage will disappear at a later point in development. Therefore, future research should include older bilingual and monolingual children. Studying older age groups is also important for investigating Thinking-for-Speaking effects on motion event conceptualization. The influence of L2 on L1 which seems to fade for 7-year-old bilingual due to dominance

of L1 in schooling might be observed again when children continue to receive L2 instruction in the subsequent years of formal schooling.

The present study investigated bidirectional relations between L1 and L2 in motion event conceptualization patterns utilizing tasks that measure linguistic output (motion event descriptions and frog story narratives), however non-linguistic tasks (e.g., similarity judgment tasks for motion events) that measure these patterns might also shed light on the influence of L1 and L2 on each other. Studies that find effects for linguistic tasks might not find the same effects where non-linguistic cognitive tasks are utilized (Aveledo & Athanasopoulos, 2016; Aveledo, 2015 among others). Furthermore, several empirical studies show that gestures provide additional information about mental representations (Levy & McNeill, 1992; Goldin-Meadow & Alibali, 1995). Therefore, investigating L2 learner's gestures in addition to their speech in childhood will give a more complete picture of the bilingual mind as well as Thinking-for-Speaking effects.

9.5 Conclusion

The present study demonstrated that learning a second language which is typologically different from the first within an immersion context in an L1 dominant community has noteworthy consequences for narrative discourse, motion event conceptualization and executive functioning. Positive effects on executive functioning which is widely documented in the literature have been confirmed in the present study. Effects of learning a typologically different language on motion event conceptualization in early childhood have not been studied very frequently. This is the first study that investigates motion event conceptualization in children who acquire L1-Turkish and L2-English, which is one of the major contributions of the

present research. In line with the Thinking-for-Speaking framework, findings revealed that early acquisition of L2-English that is typologically different from L1-Turkish has influences on how motion events are conceptualized in a bilingual mind while thinking for speaking. Specifically, 5-year-old bilingual children tended to emphasize manner more than their monolingual peers. Current practices in language policies for schools enabled the investigation of the consequences of a shift from L2 immersion to L1 immersion. The findings suggested a reversal of the influence of L2 on L1. Data from bilingual children in both L1 and L2 enabled the investigation of bidirectional relations between their two languages. Results indicated that the development of L1 narrative skills of bilinguals lag behind those of monolinguals even after two years of elementary education in an L1 immersion context.. The exposure starts as early as 3-years-of age when L1 grammar has not been fully established. Therefore, supporting L1 in the preschool contexts where L2 immersion starts early is of great importance.

APPENDIX A

MOTIONS DEPICTED IN MOTION EVENT TASK

1. Climb up a tree
2. Crawl under a sign
3. Hop through
4. Jump down
5. Run across street
6. Skip around
7. Run upstairs
8. Cartwheel behind
9. Slide down
10. Step over bench
11. Skip to door
12. Walk across

APPENDIX B

FROG STORY PICTURES USED FOR MOTION EVENT CODING

1. Frog's sneaking out of the jar

4. Owl's exit from a nest

2. Dog's fall from the window

5. Boy and dog falling down

3. Gopher popping out of the hole

6. Boy and dog landing on a pond

APPENDIX C

DEMOGRAPHIC FORM

1. Child's name:

2. Do you use a language different than Turkish at home? If yes please specify.

__ None __ English __ French __ German __ Arabic __ Other

3. How many hours of foreign language is your child exposed to at home?

__ None __ 0-1 hrs __ 1-2 hrs __ 2-3 hrs __ 3-4 hrs __ more than 4 hrs

4. Highest level of education completed (mother)

__ Primary school __ Middle school __ Highschool __ University

__ Masters __ Ph. D.

5. Highest level of education completed (father)

__ Primary school __ Middle school __ Highschool __ University

__ Masters __ Ph. D.

6. Describe the secondary caregiver of your child if you have any.

__ Relative (grandmother, aunt) __ Turkish speaking nanny __ Foreign language speaking nanny __ None

7. Total income.

4000-6000 TL __
6000-8000 TL __
8000-10000 TL __
10000-15000 TL __
>15000 TL __

APPENDIX D

SAMPLE TRANSCRIPT OF FROG STORY

Sample transcript coded using Pearson (2002) Narrative Competence coding:

S02, monolingual, 8;0

Bir varmış bir yokmuş. Evvel zaman içinde kalbur zaman içinde bir çocuk varmış. Adı - ne olsun ne olsun - Kaan diye bir çocuk varmış. Köpekle konuşurken köpeği bir bakmış büyülü bir tane daha hayvanı varmış. Çok sevinmiş. Ben de onunla oynarım, sen benimle küsmüşsün demiş. Ondan sonra çok yorulmuşlar. Köpeğiyle Kaan uyumaya başlamışlar. Kurbağa da fırsattan kaçmaya çalışmış. Ondan sonra uyandıkları zaman bir bakmışlar kurbağa yok. Aramışlar bakmışlar bakmışlar ama yok. Yine yok. Balkondan bile bakmışlar. Köpeğini yollarken bir bakmış kafasına kavanoz varmış. Onu çıkartmaya çalışmışlar. Ama zor zor çıkartmışlar. Kaan çok sinirlenmiş. Taa ormanlara kadar gitmişler aramak için kurbağayı. Bir de ne görsün? Arı kovanı. Arı kovanının yanındalar. Arı kovanının yanına gelince arılar da gitmişler sokmaya. Bir sürü arı gitmiş gelmiş bakmış neredeler diye. Kaan saklanmaya gitmiş. Baykuş da varmış. Baykuş demiş ki: “Kaan hemen git git”. Köpeği hızlıca gitmiş. O da gitmiş. Kaan saklanmak için büyük taşların tepesine çıkmış inmiş. Kaan böyle saklanmış. Köpek de aynı şeyi yapmış. Ondan sonra Kaan öyle yaparken ağaca takılmış. O ağaç değilmiş. Geyikmiş meğer. Geyiğe takılmış. Ama onu Kaan ağaç zannetmiş. Köpeği de görünce çok şaşırmış.Geyik giderken bir uçurum varmış. Ondan sonra geyik durunca Kaan da düşüvermiş. Köpeği ile birlikte. Suda iyice düşmüş. Acımış. Hala saklanırken şşş konuşma - konuşmaaaa- Köpük diye kızmış. Ondan sonra ikisi birlikte gitmeye başlamışlar. Kurbağasını görünce çok sevinmiş. Oley! Zafere ulaştık. Onun bir ailesi varmış. O yüzden gidemiyormuş.

Subject no	2		
Frog Story Elements	Sequence	Perspective/Affect	Engagement
Mentions discovery of missing frog **2**	**0** Picture description	Uses 'here' 'there' 'now' to refer to her own reference frame **0**	
Initiates search **2**	**3** Gives isolated events	Poor first mention **0**	Vague or confused in parts 0
Finds frog **1**	**4** Sequential events (some, not all)	Lapses in reference **0**	Disfluencies **0**
Takes frog (home) **0**	for picture description for irrelevant details		
(6) AVERAGE	**(6)** FACTUAL STORY	**(6)** NEUTRAL OBSERVER	**(6)** MATTER OF FACT TONE
Articulates goal **1**	Elaborated episodes	Ascribes intention **1**	Attempts to be lively or engaging **2**
Articulates lack of success **1**		Gives internal state info **1**	
	9 Hierarchical structure **9**	3 or more affective statements **3**	extensive direct speech 1
Notes character's misperception **4**	Retrospective or prospective summary **+3**	Mentions ironic perspective **0**	Uses figures of speech **0**
11	**12**	**9**	**8**
			Total**:** **40**

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