

Morphological awareness and reading comprehension: The case of an English-Turkish

Bilingual Child versus a Turkish Monolingual Child

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Abstract

The current study aims to investigate the bilingual advantages in morphological processing and reading comprehension by comparing the performances of a 7:4 year-old English-Turkish bilingual child and a 7:10 year-old Turkish monolingual child on two morphological awareness tasks, namely a derivation task and a decomposition task in Turkish developed for the purpose of the study, and on a reading comprehension task. The findings of the study revealed that the monolingual child outperformed the bilingual child both in morphological awareness and reading comprehension tasks. These findings supported Cummin's threshold hypothesis suggesting that a critical level of proficiency in L2 must be reached if bilingual advantages in cognitive and linguistic functioning are to develop. Besides, the findings verified the relation between the morphological processing skills and reading comprehension.

Keywords: morphological processing, monolingual, linguistic functioning, reading comprehension.

Introduction

Morphology is the study of the structure of words and the *morphemes* that are the smallest units of meaning and of grammatical function in a language. Derivational morphemes are affixes that are attached to root words –base/lexical morphemes- to construct new words. Derivational morphology is, therefore, concerned with the principles of compounding and producing distinct words from the base morpheme in different grammatical categories (Verhoeven & Perfetti, 2003; Wang, Cheng & Chen, 2006; Larsen & Nippold, 2007). For example, the word *unbelievable* is a morphologically complex word that is composed of three morphemes, the prefix *un-*, the root *believe*, and the suffix *-able*. The words *believe*, *belief*, *(un)believable* show a derivational pattern from a single base morpheme; and the suffix *-able* attached to the base change the grammatical class of the word from verb to adjective.

The linguistic processing of morphologically complex words is explained through the identification of multimorphemic words. The knowledge of base words and affixes can be used in the analysis of the meaning of unfamiliar words. This conscious ability of children to recognize and manipulate the structure of words is referred to as morphological awareness (Carlisle, 2000). This acknowledged definition of morphological awareness is in line with Taft's decomposition theory (1979) which claims that the meanings of complex words are constructed through the parsing of constituent morphemes and the base first, and then assembling the meaning from these components. According to this theory, the words derived from the same base are stored as a single lexical entry. The full-listing theories, on the other hand, claim that complex words have their own representations in the memory (Reichle and Perfetti, 2003). By this view, for example, *blackboard* is represented as a single entity with separate representations for *black*, *board*, and the word *blackboard*.

Development of the mental representations of prefixes and suffixes is recognized as an essential phase in children's morphological learning (Carlisle & Fleming, 2003). According to the affix discovery principle, as children encounter affixes frequently, they detect a pattern and form a concept for this pattern that is gradually associated with semantic and syntactic knowledge. Thus, when processing a complex word, they monitor their lexicon to find correspondences between the form of an affix and its meaning. However, when they encounter a word with unfamiliar constituent morphemes, the result may be a failure in morphological processing.

Studies on morphological processing in school-age children have frequently focused on recognition of word structures through decomposition (Jones, 1991; Carlisle, 2000; Carlisle & Fleming, 2003; Nippold & Sun, 2008). In a study that investigated the underlying representation of morphophonemic segments among 6-year old first graders, Jones (1991) used decomposition tasks that required learners to leave out a part of some words like *pressure* or *getting*, and comment on the meaning of the base word. The results showed that language-advanced first graders had better representations of morphophonemic segments compared to language-delayed first graders. The results provided evidence for the assumption that children's segments begin in early childhood at phonetic levels, and gradually become more abstract.

Similarly, some other research findings reveal evidence for the developmental increases in awareness of morphological structures and its relation to word meanings. In a series of experiments that assessed children's acquisition of relational, syntactic and distributional knowledge of the derivational morphology, Tyler and Nagy (1989) found that children develop basic knowledge of derivational suffixes before fourth grade. Children first

acquire the ability to recognize familiar base morphemes in unfamiliar derived forms. The knowledge of syntactic properties of derivational suffixes (eg. knowing that *regularize* is a verb by virtue of the suffix –ize) increases through eighth grade. The distributional knowledge (eg. knowing that –ness is attached to adjectives but not to verbs), on the other hand, is the most sophisticated level of knowledge. In a study conducted by Singson, Mahony & Mann (2000) the knowledge of derivational suffixes were found to increase with grade level, along with decoding ability and phoneme awareness. Freyd and Baron (1982) found that able fifth graders were superior to typical eighth graders at defining derived words due to their greater tendency to find the word meaning from the analysis of words into base and suffixes. Both groups of students were likely to base their definitions on the base words, ignoring or misinterpreting the suffixes. In another study that investigated school-age children’s ability to use morphological analysis to explain the word meanings, Larsen and Nippold (2007) tested 50 sixth-grade children with a dynamic assessment task that used a series of prompts. Each one of the children was asked to define 15 low-frequency complex words derived from a high-frequency root. The performance of the students on the dynamic task was found to be related to the literacy skills of these students. Although some of the students identified the morphological constituents of derived words to define the unfamiliar words with minimal assistance, some others needed prompts to a great extent to complete the task. Referring to the literature that shows evidence for the use of morphological analysis as a key word learning strategy by older children and adults (Nagy et al., 1993), Larsen and Lippold recommended training of low performing students on the use of morphological analysis.

These studies revealed the contributions of the ability to use the knowledge of familiar base words and affixes that increase with age and grade level to the successful processing of

morphologically complex words. Research findings report some factors that influence the successful use of this ability. First, frequency of the derived word and the base words used in other words are important factors that effect the lexical processing. (Taft, 1979; Reichle & Perfetti, 2003; Carlisle & Katz, 2006). For example, the word *security* that has a Standard Frequency Index value (SFI) of 49.1 is expected to be recognized more rapidly than the word *maturity* that has an SFI value of 35.3, because the value numbers show that *security* is more frequently encountered in print (Carlisle & Katz, 2006). Similarly, the word *friendship* should be easier to learn than the word *citizenship* as the base *friend* is typically learned earlier than the word *citizen*. Another factor that facilitates the morphological awareness is the phonetic structure of the derived words. There is some evidence that words derived with neutral suffixes like -er, -ize, -ment, and -less (e.g. *owner*, *regularize*, *enjoyment*, *homeless*, etc.) are easier to learn as they do not change the stress and the vowel quality of the word to which they are added. On the other hand, nonneutral words derived with suffixes like -tion, -ive, -ous and -ity that are attached to bound morphemes as in the examples of *deception*, *deceptive*, *studious*, and *nativity* can be more difficult to learn as they are not transparently related to their base (Tyler & Nagy, 1989; Carlisle, 2000).

The abstract nature of morphologically complex words is another important factor that affects morphological analysis. Research shows that concrete nouns like *blackboard* and *airplane* are learned earlier than abstract nouns like *conclusion* and *friendship* that do not have clear referents. Dual coding theory explains this by the fact that concrete nouns are supported both by verbal information and non-verbal information in the form of vivid mental images evoked by concrete nouns (Sadoski & Paivio, 2001 cited in Nippold and Sun, 2008). However, Nippold and Sun (2008) who investigated the knowledge of derived nominals and derived

adjectives in 10-year-old children and 13-year-old adolescents found that derived nominals were generally more difficult than the derived adjectives for both groups despite the more abstract nature of derived adjectives because of their semantic complexity. Although Nippold and Sun could not explain why derived adjectives were more difficult than derived adjectives, they emphasized the impact of frequency of exposure on knowledge of derived words with the examples of some high-frequency derived nominals that were found to be easier than low-frequency derived adjectives in their study.

Morphological awareness and reading

A growing body of research suggests that morphological awareness contributes to reading by allowing readers to parse and spell long words more accurately and rapidly (Tyler & Nagy, 1989) even across different orthographies (Deacon, Wade-Wooley & Kirby, 2007). Research also documented evidence for its close association with reading ability (Ku & Anderson, 2003) and reading comprehension. In Ku and Anderson (2003) study proficient readers outperformed less proficient readers in discriminating the word parts having the same and different meanings, recognizing morphological relations between the words, finding the meanings of low-frequency derivatives and compounds having high-frequency parts, and judging the well-formedness of novel derivatives and compounds.

In a study with third and fifth graders, Carlisle (2000) investigated children's morphological awareness with three tasks contributing to reading comprehension. Participants were first given an oral morphological awareness task that required either deriving a word from a base or decomposing a derived word. This task was followed by the tasks of defining morphologically complex words and reading derived words. Participants' reading comprehension was assessed through their answers to the multiple choice questions about the

short passages. The findings of the study showed that the ability to read derived words was the most important factor that contributed to the comprehension of third graders. Whereas, the awareness of structure, meaning, and grammatical roles of the words made the most significant contributions to fifth graders' reading comprehension. Morphological awareness for both graders was found to be the predictive of their reading comprehension at word and text levels as also confirmed by Carlisle and Fleming (2003). Similarly, Nagy, Berninger, Abbott, Vaughan, & Vermeulen (2003) also showed that morphological awareness uniquely predicted reading comprehension in at-risk second grade readers.

Despite the vast amount of efforts to investigate the impact of morphological awareness on monolingual reading, the studies with bilingual children are quite few. In order to investigate the impact of morphological awareness in Chinese-English biliteracy acquisition, Wang, Cheng and Chen (2006) conducted a study with Chinese second and fourth graders learning English using comparable compounding tasks in both languages. The study revealed the contribution of English morphological awareness of the compound structure to character reading and reading comprehension in Chinese despite the big difference between the orthographies of these two languages. However, Chinese morphological awareness was interestingly not related to reading comprehension in English.

In a study with Hispanic primary school children who are becoming bilingual in English, Carlisle et al. (1999) investigated the effects of native and second language vocabulary development and the degree of bilingualism on a task of defining words and the reading comprehension. The study showed that children's performance on the word definition task depended on their word knowledge in the language of task, not on their degree of bilingualism. Children's native and second language vocabulary and phonological awareness significantly

contributed to their reading comprehension. The study suggested that for children with limited native language development in the early stages of bilingualism, vocabulary knowledge and metalinguistic development at the word level should have the high priorities in bilingual education programs due to their significant contributions to second language reading comprehension.

In a more recent study conducted with a group of 58 French immersion children across grades 1-3 in the context of the Canadian French immersion program, Deacon, Wade-Wolley & Kirby (2007) examined the relation between performance on a past tense analogy task designed to measure morphological awareness and reading of English and French. The early measures of English morphological awareness was found to be significantly related to both English and French reading, while the early measures of French morphological awareness was found to be significantly related to French reading only. However, later measurements of morphological awareness in French were significantly related to reading in both languages. These results have supported the cross-linguistic contributions of morphological awareness to reading that can change as children develop their language and literacy skills.

Rationale for the Current Study

All studies reviewed so far have demonstrated that morphological awareness is a late linguistic attainment that depends on the presence of some cognitive capabilities like knowledge of word structure, ability to read, and some metalinguistic awareness as pointed out by Nippold & Sun (2008). As bilingualism has often been associated with a greater development of cognitive and metalinguistic abilities in comparison to monolingual children (Diaz & Klingler, 1991), bilingual children can be expected to have more advantages in morphological processing. A significant amount of research has already showed that bilingual

children outperformed monolingual children in some aspects of metalinguistic awareness including understanding the arbitrary relation between word and its referents (Ricciardelli, 1992), word identification (Bialystok, 1986), metalinguistic problem-solving and syntactic awareness (Bialystok, 1986; Cromdall, 1999), and some tasks on phonological awareness (Campbell & Sais, 1995). In these studies, bilingual advantages were explained through Cummins' threshold hypothesis (1979) suggesting that children must attain a critical level of proficiency in their native language if advantages in cognitive and linguistic functioning are to be achieved.

However, not much research has been conducted on bilingual children's performance of morphological analysis in comparison to that of monolingual children. Besides, to the best of my knowledge, there are not any studies conducted so far on morphological awareness in Turkish language despite its rich and complex agglutinative word structure that has many aspects to investigate. Therefore, the present study was designed to investigate the impact of bilingualism on the morphological analysis of complex words and on reading comprehension. More specifically the study aims to address the following questions:

1. Does an English-Turkish bilingual child have any advantages in the analysis of morphological structure of derived nominals and adjectivals in Turkish?
2. Does the participant who performs better on morphological awareness tasks also perform better on reading comprehension task?

Methodology

Participants

The data for the present study was collected from two participants. One of them is a 7:4 year old English-Turkish bilingual child, Cora, who was born into an English-speaking American family living in Turkey for the last three years. Cora, the first-born of three sisters, was almost four years old when she first came to Turkey with her family. A week after their arrival, her parents sent her to a kindergarten where she was first exposed to Turkish throughout the day during the week days. Currently, she attends the second grade of a private primary school in which she studies Turkish and English for 10 hours and three hours, respectively. As Turkish is the language of instruction in school, she also studies other school subjects in Turkish. The background questionnaire given to the parents has revealed that the child always speaks English with her parents and sisters at home. Although the parents can speak Turkish at an intermediate level, they prefer English with their daughters unless they help Cora with her school homework. According to her mother, Cora can read and write in Turkish quite well, although she experiences some difficulties in understanding the texts in some classes because of its difficult vocabulary. Therefore, she is encouraging her to do more reading in Turkish. Besides, Cora is almost never exposed to Turkish from television as the family does not watch it often. The children are only occasionally allowed to watch Disney Channel, which is usually in English. Therefore, Cora's exposure to Turkish at home is rather limited to her communication with her parents while working on school assignments. However, she always speaks Turkish to interact with her teachers and friends in school and during the play time.

The monolingual participant of the study, Esin, is a 7:10 year old child whose parents are native speakers of Turkish. Esin attends the second grade of a public school where Turkish is the only language used for instruction. Although her parents can speak English, they have never used that language for communication at home. Esin's only exposure to English was

when she was in kindergarten where she had English lessons 3 hours a week. Therefore, her knowledge of English is limited only to the knowledge of a couple of basic words and expressions. Her mother stated that Esin is especially good at mathematics, and drawing, but she also likes reading in her spare time. She has been recently reading *Peter Pan*, which is one of the outstanding classics in children's literature.

Data Collection Procedure and Analysis

Morphological awareness of the participants of the present study was assessed through two oral tasks of morphological structure: a derivation task and a decomposition task. These tasks were developed by the researcher after the determination of derivational morphemes to get focused on in the study.

Turkish agglutinative word forms consist of morphemes attached to a base morpheme or to other morphemes “much like beads on a string” (Oflazer, Say, Hakkani-Tur & Tur, 2003, p.2). As revealed by these researchers in a recent study with 250,000 words reviewed in news texts, more than 6,000 distinct morphological feature combinations are available in Turkish. Having considered the complex nature and generative capacity of these derivations in Turkish, the scope of the current study was decided to be limited to the investigation of morphemes that derive nouns and adjectives. After reviewing the full listing of Turkish derivational suffixes in the prominent work of Banguoğlu (2000), following suffixes were selected to be addressed due to their frequency and productivity in Turkish: Suffixes attached to N to derive N (-lik, -ci, -daş), N to derive Adj (-cı, -lı, -sız), V to derive N (-gi, -i, -im), and V to derive Adj (-gen, -ici, -ik).

After the selection of target derivational suffixes, the following tasks were designed to assess participants' knowledge of Turkish morphological structure.

Derivation Task: The derivation task for the present study was adapted from Carlisle (2000) and Carlisle & Fleming (2003). The participating children were given a base word (e.g., *göz*) and asked to complete a sentence (“Dün kendime yeni bir _____ aldım”) using the appropriate derived word (e.g., *gözlük*). The derivation task included 24 derived nouns (e.g., *yazı, kitaplık*) and 24 derived adjectives (e.g., *çalışkan, şüpheli*), with a total of 48 target words. Of twenty four derived nouns and adjectives, 12 were derived from nouns while the other half was derived from verbs. Thus, 4 words were selected for each of 3 suffixes within each 4 categories (see Appendix A).

Selection of words that contain target suffixes was made on the basis of frequency, simplicity, and age-appropriateness. Task included high-frequency (e.g. *arkadaş*) and low-frequency words (e.g. *vatandaş*) derived from high- and low- frequency roots in order to assess children's ability to use morphological analysis based on their knowledge of familiar roots or suffixes.

Decomposition Task: In the decomposition task that is also adapted from Carlisle (2000) and Carlisle & Fleming (2003), the participants were presented a derived word (e.g., *evsiz*) and asked to complete a sentence (“Bu geniş bir _____”) using the appropriate base form (e.g., *ev*). The task was developed following the criteria used in the development of derivation task. Thus, the decomposition task also included 48 different words (24 nouns-24 adjectives) derived from 12 suffixes used in the derivation task, with 4 words selected for each suffix (see Appendix B). The sentences in each task were developed not to allow the use of inflected forms.

Before the actual administration of derivation and decomposition tasks to the participants of the study, they were pilot studied with an 8:2 year old second grader to see if the sentences that will be completed by the participants elicit the expected words. After the pilot study, some of the sentences that allowed the correct use of two derived forms of the same root were changed so the participants can only generate the target form. To illustrate, when the child was given the base word *yaz*, he completed the sentence (“Bu ____ kimin?”) with the derived word *yazlık* instead of using the target word *yazı*. Therefore, the sentence was changed to (“Bu _____ okunmuyor”) to elicit the use of suffix *-ı*.

Data was collected on two different days within the same week, in a two-hour session with each child. Before collecting data, the participating children were given a 5-10 minute training and told not to use the inflected forms. When the researcher felt sure that the task was understood by them, the actual tasks were administered.

Reading Comprehension Task: In order to address the second research question, the participants were asked to read a few page story composed of 8 short paragraphs illustrated with pictures intended for pre-school children and answer 6 comprehension questions related to it (see Appendix C). The story was titled “Güzel ve Çirkin: Bella’ya Özel Bir Sürpriz” which is a follow-up of the original Walt Disney Classics “The Beauty and the Beast”. The first paragraph was used for some practice questions to make the task clear for the participants. The story used for reading comprehension included words (e.g., *özensizlik*, *bakımsızlık*, *ilgisizlik*, *sevgisizlik*, *canlı*, *coşku*) that were derived with the suffixes selected for the study. During this task, some prompts were provided to the participants when they start questioning the researcher in an attempt to find the correct answer.

All data collection procedure was audio-recorded to be analysed. Participants' correct and incorrect answers were calculated to be expressed in percentages.

Results

Derivation Task: The analysis of participating children's performance on the derivation task revealed that Turkish monolingual child generated a greater number of successful derivations compared to English-Turkish bilingual child (see Table 1).

Table 1:

The Performance of English-Turkish Bilingual and Turkish Monolingual Child on the derivation task

Categories of Turkish Derivational Morphemes	Correct Suppl. N	No answer N	Correct; but Unacceptable N	Incorrect; and Unacceptable N
Noun to Noun				
E-T Bilingual	6/12 (50%)	6/12 (50%)	---	---
T Monolingual	9/12 (75%)	---	1/12 (8%)	2/12 (17%)
Noun to Adj.				
E-T Bilingual	8/12 (67%)	3/12 (25%)	1/12 (8%)	---
T Monolingual	11/12 (92%)	---	1/12 (8%)	---
Verb to Noun				
E-T Bilingual	6/12 (50%)	5/12 (42%)	---	1/12 (8%)
T Monolingual	11/12 (92%)	1/12 (8%)	---	---
Verb to Adj.				
E-T Bilingual	4/12 (33%)	5/12 (42%)	1/12 (8%)	2/12 (17%)
T Monolingual	6/12 (50%)	1/12 (8%)	1/12 (8%)	4/12 (34%)

When the percentages of correct answers are compared for each category, it is seen that Turkish monolingual child outperformed the bilingual child in all categories of derivational suffixes. In other words, in no category did the bilingual child score higher than the monolingual child. Interestingly, the monolingual child also provided more incorrect and unacceptable derivations

(e.g. *sırrım, meslekçi, girişik, yırtkan*) than the bilingual child did except for the V-to-N category.

The results of the derivation task also showed that the bilingual child was most successful in deriving adjectives with suffixes that are attached to nouns, whereas the monolingual child was equally successful in deriving adjectives from nouns, and nouns from adjectives. However, both participants were least successful in deriving adjectives with suffixes –gen, -ici, -ik attached to verbs. In this category they both had difficulty with the adjectives *yırtıcı, geçici, kaygan, üzücü*, and *atık*, while they could derive *çalışkan, açık, kırık*, and *bozuk*. This can be explained through the low-frequency of words they had difficulty with and the abstract nature of adjectives that do not have clear referents.

When participating children's answers in each category were closely examined, children, especially the bilingual child, were found to be more successful with the high-frequency words. For example, in the first category of N to N, the bilingual child could only derive the word *arkadaş* from the base *arka*, while she could not derive the less-frequent words *vatandaş, sırdaş, and meslekdaş* using the suffix –daş. Similarly, the monolingual child who could successfully derive the word *çalışkan*, could not derive the less-frequent word *girişken*.

Decomposition Task: The results of the decomposition task in which the participating children were asked to decompose the given derived words into their base revealed that the Turkish monolingual child showed a 100 % success in all categories. The performance of the bilingual child also yielded similar results demonstrating that the child could successfully decompose the words except for these two: *tartı* from V-to-N category and *çaresiz* from N to Adj category. The child unsuccessfully decomposed these words as *tar* and *çar*.

Reading Comprehension Task: As for the short reading task given to participants in order to assess their comprehension, the results revealed the outperformance of the monolingual child over the bilingual child in reading comprehension as (see Table 2).

Table 2:

The results of reading comprehension task expressed in numbers.

	Correct answers with no prompt	Correct answers with prompt	Incorrect answer	No answer
English-Turkish Bilingual Child	2 /6	2/6	---	2/6
Turkish Monolingual Child	5/6	1/6	---	---

As revealed by the table based on the transcribed data, the monolingual child answered all questions correctly by demanding some scaffolding from the researcher only in one question (Q1) of the task. The bilingual child, however, could answer 2 of 6 questions (Q5 & 6) correctly without getting any prompts, and 2 questions (Q2 & 3) correctly with some prompts from the researcher. She did not have any answer for 2 questions (Q1&4) despite some scaffolding from the researcher. The following episodes from the transcribed data illustrate the prompts provided to the participants.

Example excerpt from monolingual subject:

R: Çirkin niçin yıllardır gitmediği seraya gidiyor?
[Why is Beast going to the greenhouse after many years?]
E: eeee ... Sera nedir?
[Um.. What is greenhouse?]
R: Her tarafı cam olan, içinde yaz kış bitki, sebze yetistirilebilen yer.
[A structure made of glass where one can grow plants and vegetables.]
E: Anladım. Niye gitti bilmiyorum?
[I got it. I don't know why he went.]
R : Bella neden bahsediyordu?

[What was Bella talking about?]

E: Kış! Kışı seviyo ama... çiçek istiyoy... Yani çiçek almaya gidiyo...

[Winter! He likes winter but ... he wants flowers ... I mean he goes there to get flowers.]

A similar prompt was provided for the bilingual child:

R: Seradaki çiçekler nasıl yıllarca kurumadan kalabilmişler?

[How do you think the flowers in the greenhouse have remained fresh for so many years?]

C: Bakmış çiçeklere, kurumasin diye.

[He took care of them]

R: Kim bakmış?

[Who took care of them?]

C: (referring back to the text to read aloud) bir küreğe dönüşmüş olan bahçıvan ve sulama kabı ile makasa dönüşmüş iki yama...iki yamağı... *Yamağı* ne demek?

[the gardener who transformed into a spade and the watering can who transformed into a pair of scissors, twoWhat is *yamağı*]

R: Yamak! Yardımcı, hizmetçi.

[*Yamak* is assistant, servant.]

C : Onlar baktı...

[They took care of them]

To summarize, the analysis of the findings of the study demonstrated that, first, Turkish monolingual child performed much better than the English-Turkish bilingual child in derivation task that requires them to derive nouns and adjectives with suffixes attached to verbs and nouns. Second, both participants were more successful in decomposition task than they were in derivation task. Although the monolingual child outperformed the bilingual child in this task as well, the bilingual child also completed the task with good success. Third, their results obtained from the reading task revealed that the monolingual child who was better at deriving and decomposing tasks was also better at reading comprehension.

Discussion and Conclusion

The present study aimed to investigate an English-Turkish bilingual child's performance of morphological analysis in comparison to that of a monolingual child in order

to see if bilingualism has any advantages in morphological awareness. The study also aimed to find if morphological awareness has any impact on reading comprehension.

The data obtained through the tasks of morphological structure provided evidence for early school-age children's ability to recognize word structures through decomposition and derivation as suggested in earlier studies conducted by Jones (1991), Carlisle (2000), and Nippold & Sun (2008). Both bilingual and monolingual child showed some degree of morphological awareness by successfully generating words from the provided base words using the target suffixes and decomposing the words into their base. The performance of the participants also showed that the frequency of the derived and the base words was an important factor affecting their processing as pointed out by Carlisle & Katz (2006). Both children were more successful at the processing of high-frequency words that are supposedly learned earlier as they are more frequently encountered in daily interactions, school materials and in print.

Bilinguals are expected to have more advantages in morphological processing due to their better development of cognitive and metalinguistic capabilities as a result of close contact with two language systems (Diaz & Klingler, 1991). However, the bilingual participant of the study was less successful than the monolingual child in all tasks because of her limited vocabulary and low proficiency in Turkish. This can be explained through the fact that her dominant home language is English, and she is exposed to Turkish only outside of home, mainly in school. In that case, the findings of the study support Cummin's threshold hypothesis suggesting that a critical level of proficiency in L2 must be reached if bilingual advantages in cognitive and linguistic functioning are to develop. In other words, since the bilingual participant did not attain a certain level of proficiency in Turkish, she could not benefit from the positive effects of bilingualism.

The findings of the data coming from the reading task revealed that the monolingual child who achieved better in the morphological awareness tasks also scored better at comprehension. In other words, the present study verified the findings of the studies in which the morphological awareness is found to be the predictive of reading comprehension at word and text levels (Ku & Anderson, 2003; Carlisle and Fleming, 2003; Carlisle, 2000).

Finally, the present study aimed to explore the morphological awareness of an English-Turkish bilingual child and a Turkish monolingual child, an issue that has not been investigated in related studies before. Therefore, its findings cannot be directly compared to the conclusions of the previous morphological awareness studies that are generally conducted with monolingual subjects and within the context of other languages. Besides, it should be noted that these conclusions are based on some small-scale data collected from 2 participants, one bilingual and one monolingual, and no generalizations can be made by any means for other than the described participants and context. Therefore, further studies with greater number of bilingual and monolingual children are strongly recommended in order to verify and expand the findings reported in this study.

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Appendix A: Derivation Tasks

- Practice:** a. (Çiçek) Amcamın bir _____ dükkanı var. [çiçek-çi]
b. (Hediye) Gittiğim yerlerden _____ eşya almayı çok severim. [hediye-lik]

Noun + suffix= N (-lik, -ci, -daş)

1. (göz) Dün kendime yeni bir _____ aldım. [göz-lük]
6. (kitap) Bu odaya daha küçük bir _____ koymalıyız. [kitap-lık]
10. (asker) Kardeşim bir süredir _____ yapıyor. [asker-lik]
14. (tuz) Masada _____ var mı? [tuz-luk]
18. (kira) Bu daireye güvenilir bir _____ arıyoruz. [kira-cı]
22. (iş) Bu fabrikada çalışan iki _____ tanıyorum. [iş-çi]
26. (yol) Otobüsten iki _____ indi. [yol-cu]
30. (süt) Tereyağını bu sabah _____ getirdi. [süt-çü]
34. (arka) Mehmetle kısa sürede _____ olduk. [arka-daş]
38. (sır) Ablam bana her zaman iyi bir _____ oldu. [sır-daş]
42. (vatan) Ülkene faydalı bir _____ ol. [vatan-daş]
44. (meslek) O bize her zaman yol gösteren iyi bir _____ olmuştur. [meslek-
daş]

Noun + suffix= Adj (-cı, -lı, -sız)

2. (yalan) O, tanıdığım en _____ çocuk. [yalan-cı]
4. (kavga) O adam kimseyle geçinemeyen _____ biri. [kavga-cı]
12. (şaka) O hep etrafındakileri güldüren _____ biri. [şaka-cı]
16. (şüphe) Polisler _____ insanlardır. [şüphe-ci]
19. (akıl) Oğlum kafası iyi çalışan _____ çocuktur. [akıl-lı]
23. (neşe) Orada geçirdiğim günler hayatımın en _____ günleriydi. [neşe-li]
27. (güç) Arkadaşın bunu da atlatır, o _____ biri. [güç-lü]

31. (boy) Kim o uzun ____ ____ adam? [boy-lu]
35. (tat) Çok kötü! Yediğim en ____ ____ elma! [tat-sız]
39. (ses) O, derste pek konuşmayan _____ öğrencilerden. [ses-siz]
43. (huy) Ahmet sürekli ağlayan _____ bir çocuk. [huy-suz]
45. (uygun) Bunlar öğretmenin hoşlanmadığı ____ __ davranışlar [uygun-suz]

Verb + suffix= N (- gi, -i, im)

3. (çal) En sevdiğim _____ mandolindir. [çal-gı]
7. (öv) Yaptığı güzel yemeklerle misafirlerinden bol ____ ____ aldı. [öv-gü]
11. (sev) Çocuklar için en önemli şey ____ ____ görmektir. [sev-gi]
15. (dol) Dişime _____ yaptırdım. [dol-gu]
17. (yaz) Bu _ _____ okunmuyor. [yaz-ı]
21. (sor) Bu cevaplamanız gereken bir ____ ____ değil. [sor-u]
25. (tak) Düğüne altın _____ götürdüm. [tak-ı]
29. (ört) Bu masa için daha büyük bir ____ ____ gerekiyor. [ört-ü]
33. (bak) Bahçeye biraz _____ yapmalı. [bak-ım]
36.(doğ) Kadın birkaç saat içinde _____ yapacak. [doğ-um]
41. (seç) Sınıf başkanlığı için ____ ____ yapılacak. [seç-im]
46. (böl) Bu şarkıda en sevdiğim ____ ____ burası. [böl-üm]

Verb + suffix= adj (-gen, -ici, -ık)

5. (çalış) Bunlar benim en ____ ____ öğrencilerim. [çalış-kan]
8. (kay) Dikkat et! ____ ____ zemin! [kay-gan]
9. (çekin) Ali sınıfta pek konuşmayan, _____ biri. [çekin-gen]
13. (giriş) Hayatta daha başarılı olanlar genellikle _____ insanlardır. [giriş-ken]
20. (yirt) Bunlar _____ kuşlar. [yirt-ıcı]
48. (üz) Bu yaşadıkların çok ____ __ olaylar. [üz-ücü]
24. (yor) Taşınmak _____ bir iş. [yor-ucu]
28. (geç) Bunlar işe yaramayan _____ çözümler. [geç-ici]

32. (aç) Bu saatte lokantalar _____ olmaz. [aç-ık]
37. (kır) İşte rüyamda gördüğüm _____ ayna! [kır-ık]
40. (at) Bunlar denizlerimizi kirleten _____ maddeler. [bat-ık]
47. (boz) Ne kokuyor burada, _____ süt mü? [boz-uk]

Appendix B: Decomposition Tasks

Noun + suffix= N (- ci, -lik, -daş)

1. (kayalık) Bu, rüzgarın etkisiyle oluşan bir __ _____. [kaya]
5. (çiçeklik) En güzel hediye bir demet _____. [çiçek]
9. (kömürlük) Bu, kış için aldığımız kömür _____. [kömür]
14. (buzluk) Çocuğun dolaptan istediği şey _____. [buz]
17. (saatçi) Bu bana aldığı yeni _____. [saat]
22. (tarihçi) En sevdiğim ders _____. [tarih]
26. (odacı) Bu üç kişilik, geniş bir _____. [oda]
28. (sözcü) Bu nasıl _____. [söz]
32. (yoldaş) İşte takip edeceğin _____. [yol]
36. (soydaş) Bu, atalarımızın geldiği _____. [soy]
40. (sesteş) Kadife gibi yumuşacık bir _____. [ses]
45. (yurttaş) Ne güzel bir _____. [yurt]

Noun + suffix= Adj (- cı, -lı, -sız)

2. (yardımcı) İhtiyacım olan şey biraz _____. [yardım]
7. (inatçı) Bu gereksiz bir _____. [inat]
12. (kinci) Bu ne bitmeyen bir _____. [kin]
14. (akşamcı) Mezuniyet törenimiz bu _____. [akşam]
21. (kararlı) Bu benim için zor bir _____. [karar]
24. (suçlu) Başkasına ait olanı izinsiz almak büyük bir _____. [suç]
27. (öfkeli) Bu ne bitmeyen bir _____. [öfke]

28. (azimli) Başarısının sırrı sahip olduğu _____. [azim]
34. (çaresiz) Ameliyat en son ____ ____ ! [çare]
37. (evsiz) Bu geniş bir ____ _____. [ev]
43. (susuz) Yaşamak için en gerekli şey ____ _____. [su]
44. (habersiz) Bu kutlamamız gereken bir ____ _____. [haber]

Verb + suffix= N (- gi, -i, im)

3. (sorgu) Bilmediğin şeyleri bana _____. [sor]
8. (görgü) Sinemeye git, o filmi ____ _____. [gör]
11. (bulgu) Kaybettiğin atkıyı ara ve _____. [bul]
13. (saygı) Her zaman küçüklerini sev, büyüklerini _____. [say]
19. (yapı) Ödevlerini lütfen zamanında _____. [yap]
20. (korku) Artık benden ____ ! [kork]
29. (ölçü) Yemek yaparken kullanacağın malzemeyi _____. [ölç]
33. (tartı) Parasını ödemededen önce aldıklarını _____. [tart]
42. (çözüm) Şimdi bu problemleri _____. [çöz]
39. (tutum) İpin bu ucunu sen _____. [tut]
41. (sayım) Yüze kadar _____. [say]
47. (kesim) Banyodan sonra uzun tırnaklarını _____. [kes]

Verb + suffix= adj (-gen, -ici, -ık)

4. (değişken) Sen de zamana uy ve _____. [değiş]
6. (konuşkan) Problemi çözmek için onunla ____ _____. [konuş]
10. (unutkan) Sana söylediklerimi ____ _____. [unut]
16. (üretken) Boş durma, sen de ____ _____. [üret]
18. (kalıcı) Lütfen gitme, biraz daha ____ _____. [kal]
23. (yakıcı) Akşam oldu, ışıkları ____ _____. [yak]
25. (uyarıcı) Hata yaptığımda lütfen beni ____ _____. [uyar]
31. (çekici) Sandalyeni biraz öne ____ _____. [çek]

35. (yarık) Odunları baltayla _____. [yar]
38. (ezik) Püre yapmak için patatesleri iyice _____. [ez]
46. (yırtık) Bir parça bez _____. [yirt]
48. (kesik) Bu renkli kağıtlardan değişik şekiller _____. [kes]

Appendix C: Reading Comprehension Questions

1. Çirkin yıllardır gitmediği seraya niçin gidiyor?
2. Çirkin seraya giderken niçin endişeli?
3. Seradaki çiçekler nasıl kurumadan yıllarca kalabilmişler?
4. Bella uyandığında niçin şaşırıldı?
5. Çirkin Bella yı nereye götürdü?
6. Çirkin yaptıklarının karşılığında Bella'dan ne istedi?