The Difference in Pausing Intervals between Korean Learners of English and Native Speakers of English*

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Lee, Yong-cheol. 2007. The Difference in Pausing Intervals between Korean Learners of English and Native Speakers of English. *The Linguistic Association of Korea Journal, 15*(3), 257-284. This paper provides the differences of pausing intervals between native speakers of English (NSE) and Korean learners of English (KLE). An experiment has been performed to check the intuitions of twenty subjects. There were three data sets for the experiment. The first is a sequence of a verb and its complement. The second is a sequence of a verb and its adjunct. The last is a sequence of a verb in a relative clause and a main verb. After making recordings, the researcher measured the time between the boundaries of the target phrases using waveform analysis. With respect to the differences in measured times, similarities and differences between the subjects were mentioned. The findings of the current study are expected to provide some implications for teaching English in the classroom. In sum, this paper investigates whether Korean learners of English know where to give a pause by comparing with native speakers.

Key Words: Pausing interval, mean, complement, adjunct, relative clause

1. Introduction

English is a stress-timed language, whereas it is known that Korean is a syllable-timed one[1]. Therefore, we can assume that when Korean learners of English read English sentences, they have tendencies to read

1) Allen (1968, cited in Yom, 2006) largely categorized languages into two types: *stress-timed* and *syllable-timed*.

English sentences like Korean. It suggests that a transition phenomenon influenced by Korean is unconsciously taken into consideration when they read English. Hence, the significant differences implicit in each language differently construct rhythm patterns, especially pausing patterns and/or pausing intervals. Yom (2006) also pointed out that rhythm is a sole feature that we, human beings, have in contrast to other animals. Speech also contains its rhythm; however, different languages raise dissimilar rhythmic patterns and/or structures.

However, this paper focused mainly on pausing intervals. Depending on how we pause, the meaning might be different. In the following examples, we see a Korean classical example of a pausing interval.

(1)   Abeojikabangedeulegasinda[2].

At first, the researcher did not space each word in the sentence; reading will depend on readers. The possible sentences are as follows.

(2)   Abeoji-ka   bange   deulega-si-n-da
       Father-Nom   room-in   enter-Hon-Pres-Decl
       "My father enters a room."

(3)   Abeoji kabange   deulega-si-n-da
       Father bag-in   enter-Hon-Pres-Decl
       "My father enters a bag."

Let's now look at an English example on pause.

(4)   Johnputthebookonthetable.

Like a Korean example, the researcher did not space each word in this sentence. The possible structures are as follows.

_____

2) This is based on the Romanization system of Korean.

(5) John put the book on the table.

(6) John, put the book on the table.

As we can see, (5) is a declarative sentence, whereas (6) is a imperative one. If one places a pause between *John* and *put,* the meaning of the sentence will be altered. This example shows that differences in pausing intervals could yield a wrong delivery of the meaning. Accordingly, it is not inappropriate to say that pausing can be treated as one of the most crucial factors in learning a language.

The scope of the paper does not include the misunderstanding of communication. This paper, however, focused on whether Korean learners of English are good at English rhythm patterns or not. Thus, pausing intervals between phrases or words are taken into primary consideration. An experiment was conducted in order to compare pausing intervals between KLEs and NSEs by using a speech-analyzing program, Praat 4.2.07.

This paper is organized as follows: in Section 2 the theoretical background to the present study is discussed; Section 3 deals with the procedure how the experiment was conducted; in Section 4, the researcher discusses differences in pausing intervals between KLEs and NSEs based on the results of this experiment; Section 5 summarizes this paper and provides some implications for teaching English.

2. Theoretical background

2.1. Previous Studies

Cha (2006) clarified that pauses are divided into two categories: *filled* and *unfilled*. When it comes to *filled*, it is related to hesitation markers which emerge from different structures. She stated that the frequency and duration of such filled and unfilled pauses are connected with speech rate.

Based on Hakansson (1986, cited in Cha, 2006), a pause can help

language learners with better communication. It is attributed that the pause has an effect on delivery rate of our speech, which influences listening comprehension. What's more, Chaudron and Richards (1986) suggested that the pause gives extra time to keep track of speech. Consequently, the pausing intervals increase learners' awareness of the meaning of the speech.

Boomer & Ditmann (1962, cited in Cha) have illustrated the position of pauses. According to them, pauses can be classified into two classes: one is juncture pauses, the other is hesitation ones. They posed a vital distinction between juncture pauses regarding syntactic operation and hesitation pauses which could be all the pauses except the juncture ones. Keri et al. (2007) also supported that such juncture pauses are marked in syntax. Furthermore, Selkirk (1984, p. 313-314) claimed "rhythmic disjuncture reflects the surface constituent structure of the sentence". Thus, she asserted that syntactic structures can affect pause insertion. Cooper & Patia-Cooper (1980) upheld the assumption that syntax can play a crucial role in putting an input to PF (spell-out).

Pausing intervals have been investigated in this study based on syntax and laboratory phonology, especially using Praat 4.2.07. The co-relations between syntax and phonology have already been pointed out in Selkirk (1984, 1985), Büring (1997), Pierrehumbert (1980), Zubizarreta (1998), and Lee & Lee (2006).

2.2. Syntactic Bases

English sentences can be parsed. When parsing sentences, native speakers do not seem to parse randomly. Based on English pausing patterns, they give an appropriate pause in the sentence. Therefore, without knowing how to parse sentences, we cannot definitely pause well. Let's take three examples.

(7)   She depends on him.

In (7), *depends on* is called a phrasal verb. It denotes that the

preposition is strongly chained to the verb. Therefore, if we parse *depends on* into two parts, the hearer can feel unnatural to listen to it.

(8)　She depends / on him.

The NSE will never pause like (8) because *depends* and *on* form the same constituent, a VP. If we put a word between *depends* and *on*, the sentence will be ruled out like (9).

(9)　*She depends *completely* on him.

If we insert a word like (9), the sentence will be grammatically wrong. It indicates that nothing can be inserted between them.

(10)　He gave it to me.

In this sentence, we can pause between *it* and *to* because they belong to a different constituent. Therefore, we can parse *gave it to me* into two parts. One is *gave it*. The other is *to me*. But, even though readers can place a pause in this context, pausing is not absolutely required. It depends on the readers.

As mentioned above, although *to me* is an adjunct of the verb, the VP including the adjunct will be pronounced without pausing because the adjunct is within the VP-domain.

(11)　The man whom I love runs fast.

This sentence includes a relative clause. It could be a Garden Path[3] sentence to the readers. But, if we have a good syntactic knowledge,

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3) Garden Path means that readers have difficulty parsing the sentence. For example, *when she left the dog started barking* (Katamba, 1989, p. 245). At first sight, most people will parse the sentence like this *when she left the dog /started barking*. But this is not a good parsing. The right pause of this sentence is *when she left / the dog started barking.*

this sentence will not be difficult. In this sentence, the NSE will give a pause between *love* and *runs* in order to avoid giving confusion to hearers because verbs *love* and *runs* in this sentence are side by side. Like what Kim (1989, p. 18) suggested, "An ambiguity from a syntactic structure will be resolved by pause insertion between the two units in confusion". Accordingly, unless readers have structural knowledge of the sentence, they will have difficulty understanding the sentence and parsing it.

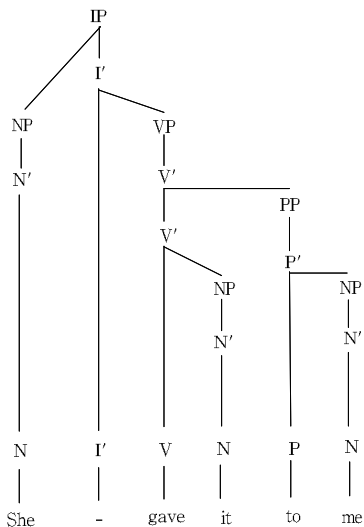The following tree diagrams can better explain these phenomena.

(12)
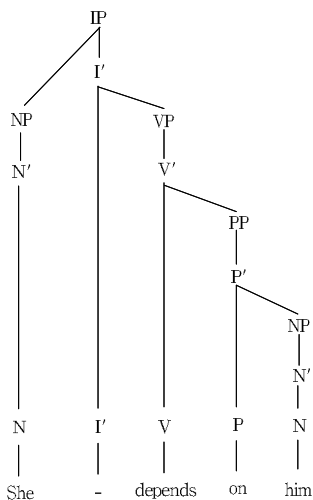
In (12), *depends* merges with *on* and constructs a VP where V is a head and P is a complement in the VP. The complement signifies that

it is firmly connected to the head. Therefore, when spelled out, V and P are pronounced as one unit. We cannot place a pause between them.

(13)

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                    IP
                    |
                    I′
                   /  \
          NP         VP
          |          |
          N′         V′
          |         /    \
          |       V′       PP
          |      /  \      |
          |    V′    NP    P′
          |    |     |    /  \
          |    |     N′  P′   NP
          |    |     |   |    |
          N    I′    V   N    P   N
          |    |     |   |    |   |
         She   -   gave  it   to  me
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In (13), the PP, *to me,* is an adjunct. Therefore, it is not a required element in this sentence. Even if we eliminate the adjunct in the sentence, the sentence will not be ungrammatical. It implies that we can pause before the PP. But, as mentioned above, the NSE will not place a pause in this context because the adjunct is within the VP-domain.

(14)
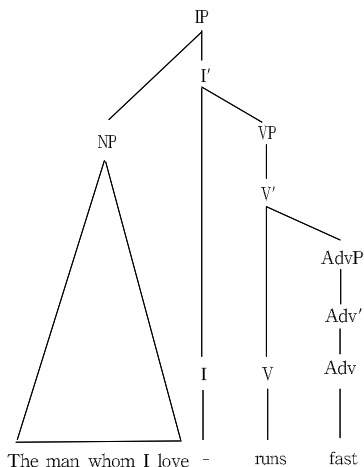
In (14), as can be observed, NP and VP belong to a different constituent. In this sentence, even though the verbs *love* and *runs* stand abreast, native speakers will pause between them because the verb, *love* in the relative clause is in the outer-VP.

As stated in (12), (13) and (14), pausing intervals are closely related to constituents in syntax. Thus, appropriate pausing patterns imply an understanding of the structure of the given sentences.

3. Experimental Design

3.1. Research Questions

Set 1 is about the sequence of a verb and a complement. It is called

a phrasal verb. Set 2 is about the sequence of a verb and an adjunct. Set 3 is about the sequence of a verb in the relative clause and a main verb. Based on these three sets, three hypotheses are suggested and will be tested through the research.

(15) Hypotheses

    a. Hypothesis 1: The NSE will not pause in Set 1 and Set 2 because a complement and an adjunct are all in the VP-domain.

    b. Hypothesis 2: The NSE will pause in Set 3 because two verbs in the sentence belong to a different constituent.

    c. Hypothesis 3: The KLE will not pause in Set 1, 2, or 3 because their reading is influenced by Korean.

3.2. Subjects

There were ten native speakers of English and other ten Korean learners of English. Therefore, they made up twenty in total. All native speakers (five male and five female) come from the United States, ranging in age from twenty four to sixty three. As for the Korean subjects, they were one male and nine female Korean university students. Two subjects graduated from university, whereas the other eight are now attending university, ranging from sophomores to seniors. All the subjects have learned and/or have been taught English in an EFL environment for more than eight years.

3.3. Data

The researcher made three sets of sentences. In each set of sentences, the target sentence is padded with other clauses. The researcher had each of the twenty subjects read these sets of sentences. Then, the researcher analyzed the sentences with Praat 4.2.07. The data was corpus-based because some linguists[4] (McEnery & Wilson, 1996; Jung, 1999; Sampson, 1992) pointed out that people who are studying

syntax use artificial data. Sometimes, the artificial data is too idiosyncratic to use in our daily life. In order to avoid the problem, the researcher purposely found corpus-based data from the Internet.

(16) Data set[5]

   Set 1
   a. Yes, I <u>agree to</u> the proposal. In fact, the board of the SFC is too concentrated on the lawyers.
   b. And, because she <u>depends on</u> him, he sacrifices everything to keep from letting her down.
   c. He is a happy baby, but then he <u>takes after</u> his mother: good natured, pleasant, and even tempered.
   Set 2
   a. At that time I had a rich client named Woods who was a great admirer of McKinley, and I told <u>him about</u> the matter. He immediately raised a fund of $5000.
   b. A friend of mine told me today that she gave this <u>book to</u> her niece and at the end of the book, her niece started to laugh.

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4) McEnery & Wilson (1996, p. 12), highlighted "Coprus-based observations are intrinsically more verifiable than introspectively based judgements". Moreover, Sampson (1992) asserted that linguistic evidence acquired by artificial data seems different from that of corpus-based one.

5) The Internet addresses used for the experiment are as follows.
   (i) Set 1
      a. http://www.hksfa.org/Publication/Newsletters/Newsletter_Spring_2005.pdf
      b. http://www.tonuabrown.com/blog/
      c. http://peterkaukonen.com/mt-archive/2005/05/anniversaries.html
   (ii) Set 2
      a. http://www.google.com/search?hl=en&lr=&q=%22I+told+him+about+the+matter.%22
      b. http://www.connectforkids.org/node/487
      c. http://s15.invisionfree.com/The_Most_Wanted_Mph/ar/t926.htm
   (iii) Set 3
      a. http://www.worldwideschool.org/library/books/lit/adventure/TheErrandBoy/chap12.html
      b. http://www.athelstane.co.uk/fwfarrar/ericlitl/erlit17.htm
      c. http://postgis.refractions.net/pipermail/postgis-users/2002-June/001154.html

c. It was her turn, so she runs <u>fast toward</u> the mat, jumps 50 feet into the air and lands perfectly with one knee planted.

Set 3

a. But she knew nothing of all this, nor did she dream that the boy whom she <u>dreaded was</u> the very next day to make the acquaintance of this despised relation.

b. I have no proof, and shall not therefore act on vague suspicion; but the boy whom I do <u>suspect is</u> one whose course lately has given me the deepest pain.

c. For reasons unrelated to this experiment, the table that I successfully <u>indexed was</u> larger than what I started out with.

3.4. Data Collection and Analysis Methods

Before making the recordings, three sets of sentences were given to twenty subjects in advance in order to make their speech more natural. Two sentences were laid on both sides of the target sentence. Then, the subjects were asked to read each set of sentences. An MP3 player made in MPIO was utilized. It was connected to a computer in order to use a default option, which functions as a recorder. The data sets were analyzed with Praat 4.2.07. The researcher also used a statistical program, SPSS 14.0k.

As stated above, the recorded data was analyzed with the speech-analysis program. In this paper. pausing intervals were examined between the target words. In other words, the researcher tried to find the boundary of the words. Figure 1 shows how to analyze the data.

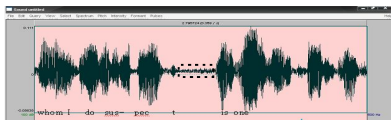Figure 1. whom I do <u>suspect is</u> one whose

Figure 1 is called a waveform. According to Ladefoged (2001, p. 276), "The vertical axis represents air pressure and the horizontal axis represents time". In figure 1, the dotted box indicates a pausing interval between *suspect* and *is*. Then, the time of the pausing interval was measured. For example, the above is 0.02 seconds. The NSE and KLE read same sentences. The researcher analyzed the data in the same fashion as above.

4. Results and Discussion

4.1. The Results of NSEs

In this section, not only will the researcher analyze the voice qualities of the ten NSEs, but also the first two hypotheses which this paper concerns will be dealt with. First, let's examine the results of the NSEs first. Table 1 talks about three sentences in Set 1.

Table 1. The results of three sentences in Set 1

	DPI[6] of the 1st sentence	DPI of the 2nd sentence	DPI of the 3rd sentence
NSE 1	0.035	0.000	0.011
NSE 2	0.020	0.000	0.025
NSE 3	0.055	0.000	0.020
NSE 4	0.045	0.000	0.014
NSE 5	0.049	0.000	0.009
NSE 6	0.037	0.000	0.016
NSE 7	0.019	0.000	0.011
NSE 8	0.045	0.000	0.017
NSE 9	0.045	0.000	0.030
NSE 10	0.050	0.000	0.008
Mean	**0.040**	**0.000**	**0.016**

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6) DPI stands for Duration of Pausing Interval.

Table 1 is included in Set 1. As stated in (15), the NSEs might not pause in Set 1. Let's enumerate the outcomes of Table 1. The mean of the NSEs in the first sentence is 0.04 seconds. The mean of the NSEs in the second sentence is 0 second. According to the results, it is foreseen that all the NSEs linked the phrase between *depends* and *on*. The average value of the NSEs in the third sentence indicates 0.016 seconds. Based on the outcomes in Table 1, it is forecasted that the NSEs did not seem to place a pause in Set 1. The next stage to consider is Set 2. Table 2 shows the data of Set 2.

Table 2. The results of three sentences in Set 2

	DPI of the 1st sentence	DPI of the 2nd sentence	DPI of the 3rd sentence
NSE 1	0.024	0.032	0.000
NSE 2	0.011	0.041	0.000
NSE 3	0.021	0.049	0.029
NSE 4	0.000	0.037	0.000
NSE 5	0.026	0.059	0.000
NSE 6	0.000	0.079	0.000
NSE 7	0.000	0.045	0.000
NSE 8	0.000	0.068	0.044
NSE 9	0.000	0.045	0.033
NSE 10	0.000	0.034	0.000
Mean	**0.008**	**0.049**	**0.011**

In Table 2, the mean of the NSEs in the first sentence is 0.008 seconds. The average value of the NSEs in the second sentence is 0.049 seconds. The mean of the NSEs in the third sentence indicates 0.011 seconds. It is predicted that the NSEs did not give a pause in Set 2. In this paper, the researcher hypothesized that the NSEs might not put a pause in Set 1 and Set 2. In order to prove it, the mean values of Set 1 and Set 2 was compared. The average value of Set 1 is 0.019

seconds, whereas that of Set 2 is 0.023 seconds. The average value of Set 2 is slightly bigger than that of Set 1. The difference between them doesn't seem that big. As Nunan (1992) pointed out, one needs to use statistical inference to know whether scores s/he amassed are really different or not. For this reason, the researcher performed a t-test in order to see the results are statistically significant. Table 3 demonstrates the results of the statistical analysis.

Table 5. The *t-test* results between Set 1 and Set 2

Group	N	M	SD	t	**p**
Set 1	30	0.019	0.018	-0.583	**0.565**
Set 2	30	0.023	0.024		

**p<.01

In this kind of experiment, *parallel-samples t-test* is an appropriate method. SPSS 14.0k has been used for this experiment. As you probably know, if a p value is equal to or less than .05, we can say that two samples are significantly different, however if a p value is bigger than .05, there is no difference between the two samples. Let's examine the results of Table 5. As you can observe, the p value between Set 1 and Set 2 is .565 which denotes that there is no difference between them. Therefore, we can conclude that the two values are not statistically distinguished; the NSEs did not seem to place a pause in Set 1 and Set 2. The next step to consider is Set 3. Table 6 reveals the results of Set 3.

Table 6. The results of three sentences in Set 3

	DPI of the 1st sentence	DPI of the 2nd sentence	DPI of the 3rd sentence
NSE 1	0.054	0.357	0.063
NSE 2	0.039	0.078	0.039
NSE 3	0.080	0.046	0.290

NSE 4	0.463	0.408	0.358
NSE 5	0.368	0.243	0.058
NSE 6	0.031	0.100	0.050
NSE 7	0.008	0.074	0.063
NSE 8	0.034	0.471	0.190
NSE 9	0.046	0.381	0.039
NSE 10	0.021	0.381	0.033
Mean	**0.114**	**0.254**	**0.118**

As stated in (15), the NSEs will give a pause in Set 3 in order to avoid confusion because the two verbs in the sentence belong to a different constituent. To illustrate the outcomes of Table 6, the mean of the NSEs in the first sentence is 0.114 seconds. The average value of the NSEs in the second sentence is 0.254 seconds. The mean of the NSEs in the third sentence indicates 0.118 seconds. Unlike Set 1 and Set 2, the pausing interval between the target phrases in Set 3 seems to be longer than those of Set 1 and Set 2. Hence, the NSEs might show tendencies to give a pause in these contexts. In order to see its significance, the researcher carried out a *repeated ANOVA* and compared all the values in Set 1, Set 2, with those of Set 3. Table 7 shows the results of the statistical analysis, *repeated ANOVA*.

Table 7. The results of *repeated ANOVA*

SS	df	MS	F	p
0.414	1	0.414	45.821	.000**

$**p<.01$

As mentioned before, Table 7 is the results of *repeated ANOVA* where the target phrases in Set 1, Set 2, and Set 3 were all tested to see if they are significantly and/or statistically different or not. To explain Table 6, the p value of length is .000. Since the value is less than .05, we can say that the three values are significantly contrasting. On the other hand, as it is said in Table 5, the values in Set 1 and Set

2 were not statistically different. Therefore, we can say that there might be significant differences between the values of Set 1 and 2 and those of Set 3. In other words, the values of Set 3 might be considerably different from those of Set 1 and Set 2. In order to prove this statistically, the researcher conducted a *post-hoc* test (*parallel samples t-test*). Table 8 indicates the results.

Table 8. The *t-test* results between Set 1 and Set 3

Group	N	**M**	SD	t	**p**
Set 1	30	**0.019**	0.018	-4.793	.000**
Set 3	30	**0.162**	0.159		

**p<.01

As you can see, the p value between Set 1 and Set 3 is .000 which signifies that the two samples are significantly different. Moreover, when we reflect on the mean value, we can find that the value of Set 3 is much bigger than that of Set 1. These outcomes support the researcher's hypotheses: the NSEs pause in Set 3 because the two verbs in the sentence belong to a different constituent; they do not place a pause because a complement and an adjunct are all situated in the VP-domain. In the next section, we look at the results of KLEs.

4.2. The Results of KLEs

As it is said in (15), the KLEs will not pause in Set 1, 2, or 3 because their reading is influenced by the Korean language. In this section, the researcher will analyze the results of the KLEs and prove the third hypothesis. If the hypothesis that the KLEs do not place a pause in Set 1, Set 2, and Set 3 is plausible, the data in Set 1, Set 2, and Set 3 will not be statistically distinguished. Another statistical analysis, *repeat ANOVA* was carried out in order to verify the assumption. Table 9 demonstrates the results of the *repeated ANOVA* process.

Table 9. The results of *repeated ANOVA*

SS	df	MS	F	p
0.414	2	0.186	3290	.044*

*p<.05

In Table 9, the p value signifies that the three values of the KLEs look significantly different. Therefore, the researcher executed a *post-hoc* test (*parallel samples t-test*) in order to figure out which values in which set are contrasting one another.

Table 10. The *t-test* results from Set 1 to Set 3

Group	t	p
Set 1–Set 2	−2.106	.044*
Set 1–Set 3	−2.020	.053
Set 2–Set 3	−1.524	.138

*p<.05

In Table 10, the p value between Set 1 and Set 2 reveals .044 which indicates that there are statistical differences between them. However, the p value between Set 1 and Set 3 denotes .053. The two values are not significantly different. Last, the p value between Set 2 and Set 3 is bigger than .05; the values in Set 2 are not statistically different from its counterpart. These outcomes in Table 9 and 10 imply that all the subjects didn't produce similar results which forecast that the results of the KLEs might be complicated across the values. Table 11 talks about the results of the three sentences in Set 1.

Table 11. The results of three sentences in Set 1

	DPI of the 1st sentence	DPI of the 2nd sentence	DPI of the 3rd sentence
KLE 1	0.077	0.000	0.026
KLE 2	0.045	0.000	0.023

KLE 3	0.093	0.000	0.079
KLE 4	0.116	0.000	0.063
KLE 5	0.116	0.000	0.015
KLE 6	0.064	0.000	0.024
KLE 7	0.077	0.000	0.037
KLE 8	0.079	0.020	0.023
KLE 9	0.083	0.000	0.701
KLE 10	0.043	0.000	0.018
Mean	**0.079**	**0.002**	**0.101**

In Table 11, the mean of the KLEs in the first sentence is 0.079 seconds. The mean of the KLEs in the second sentence is 0.002 seconds. The average value of the KLEs in the third sentence indicates 0.101 seconds. According to the results, the values of DPI of the third sentence were bigger than those of the first and second. Some data (0.116 (KLE 4), 0.116 (KLE 5), 0.701) look skewed in this table. These values indicate that the results of the KLEs were quite scattered from the mean. The next stage to consider is Set 2. Let's look at the results of Set 2.

Table 12. The results of three sentences in Set 2

	DPI of the 1st sentence	DPI of the 2nd sentence	DPI of the 3rd sentence
KLE 1	0.000	0.106	0.000
KLE 2	0.129	0.180	0.000
KLE 3	0.138	0.141	0.000
KLE 4	0.054	0.122	0.000
KLE 5	0.000	0.334	0.000
KLE 6	0.030	0.047	0.000
KLE 7	0.057	0.094	0.000
KLE 8	0.036	0.250	0.000
KLE 9	0.293	0.234	0.665
KLE 10	0.032	0.132	0.045
Mean	**0.077**	**0.164**	**0.071**

In this table, the mean of the KLEs in the first sentence is 0.077 seconds. The mean of the KLEs in the second sentence is 0.164 seconds. The average value of the KLEs in the third sentence indicates 0.071 seconds. In Table 12. the values of DPI of the second sentence were larger than those of the first and third sentence. When we investigate the consequences in Table 2, several values are far away from the mean value like Table 1. To illustrate this in detail, the following values (0.129, 0.293. 0.180, 0.334, 0.250, 0.234, 0.132, 0.665) seem to be outliers. It's carefully foreseen that this phenomenon is attributed to the fact that the KLEs might not be accustomed to reading or they might encounter awkward vocabulary[7]. The next table enumerates the KLE results in Set 3.

Table 13. The results of three sentences in Set 3

	DPI of the 1st sentence	DPI of the 2nd sentence	DPI of the 3rd sentence
KLE 1	0.054	0.000	0.716
KLE 2	0.042	0.136	0.000
KLE 3	0.041	0.064	0.069
KLE 4	0.078	0.112	0.414
KLE 5	0.081	0.294	0.000
KLE 6	0.037	0.085	0.061
KLE 7	0.074	0.043	0.285
KLE 8	0.027	0.089	0.000
KLE 9	2.259	0.114	1.036
KLE 10	0.018	0.117	0.063
Mean	**0.271**	**0.105**	**0.264**

In Table 13, the mean of the KLEs in the first sentence is 0.271 seconds. The mean of the KLEs in the second sentence is 0.105 seconds. The average value of the KLEs in the third sentence indicates 0.264 seconds. The results in Set 3 also show that each value is widely

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7) This will be further dealt with in Section 4.4.

different from one another. When we look at the skewed values (2.259, 0.294, 0.716, 0.414, 0.285, 1.036), it is predicted that the speech production of each participant was disparate. Moreover, the KLE results suggest that the KLEs might not know where to pause. However, this is not a simple matter. It might be related to whether the KLEs understand the meaning of the given texts or not. Besides, it might be also related to how long the subjects have studied English. The following table shows such correlations between meaning and speech production. It also provides the study period of the KLEs.

Table 14[8]. The correlations between meaning and speech production

S (KLE)	SP (yrs.)	TS1		TS2		TS3		TS4		TS5		TS6		TS7		TS8		TS9	
		M	PI	M	PI	M	PI	M	PI	M	PI	M	PI	M	PI	M	PI	M	PI
1	8.5	O	X	O	X	X	X	O	O	O	O	O	O	X	X	X	X	O	X
2	8	O	X	O	X	X	X	O	O	O	X	O	O	X	O	X	O	X	O
3	11	O	X	O	X	X	X	O	O	X	O	O	O	X	O	O	O	X	O
4	10	X	X	O	O	X	X	O	O	X	O	X	X	X	X	X	X	O	O
5	8	O	X	O	X	X	X	O	O	O	O	O	X	X	X	X	X	X	X
6	8	O	X	O	O	O	O	O	O	O	O	O	O	X	O	O	O	O	O
7	8	O	O	O	O	X	O	O	O	O	O	O	O	X	X	O	O	X	O
8	8	X	O	O	O	O	O	O	O	O	O	O	O	X	O	X	O	O	O
9	8	X	X	O	X	O	X	O	O	X	X	O	X	X	X	X	X	X	X
10	8	O	X	O	X	O	X	O	O	X	O	X	O	X	O	X	O	X	O

In Table 14, at first, we can find that each participant has learned English at least for eight years. The researcher conceded that individual levels might be diverse across the subjects; however, 8.5 years (an

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8) The explanations of the terms in table 14 are as follows.
　(i) a. S: subjects
　　　b. SP: study period
　　　c. TS1: target sentence 1
　　　d. M: meaning
　　　e. PI: pausing interval
　　　f. O: subjects understand the meaning and/or where to pause.
　　　g. X: They do not understand the meaning and/or where to pause.

average value of the study period) are not a short period. At least, the subjects of this experiment have been exposed to English for a long period.

To elaborate Table 14, in the column of TS1, seven subjects understood the meaning of TS1, whereas six answered they didn't know where to pause. In TS2, all the subjects understood the meaning, but only six knew where to pause. In TS3, only four answered they understood the meaning of the sentence. In this sentence, the reason the number was small is because not that many people knew the phrasal verb, *take after*. In the sentence, three subjects recognized where to pause. Based on these results, we can also predict that pause (speech production) might not be directly linked to understanding meaning.

In TS4, all the subjects knew both the meaning and where to pause. Hence, we expect that they would engender unified outcomes. Let's get back to Table 12. The results are as follows: 0.000, 0.129, 0.138, 0.054, 0.000, 0.030, 0.057, 0.036, 0.293, 0.032. According to these outcomes, we can find that the following values (0.129, 0.138, 0.293) are much bigger than the mean value (0.077). On the contrary, the value (0.000, occurred twice here) is much smaller than the average value. These outcomes imply that even though speakers understand both the meaning and where to pause, in reality, their speech production is another question.

In TS7, no one knew the meaning of the sentence since they didn't know the word, *dreaded*. However, four subjects recognized where to pause. In TS8, three subjects answered they understood the meaning, whereas six knew where to pause. In TS9, the number of the people that knew the meaning was four; however, seven subjects recognized where to pause. In TS7, TS8, and TS9 (Set 3), the subjects who knew where to pause outnumbered their counterparts. (See Table 13 for more details). These outcomes also bolster the claim that speech production (pause) is not largely related to knowing the meaning[9].

4.3. The Differences between KLE and NSE

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9) This claim is only limited to this experiment. The results might not be admitted in all the studies.

So far, we have examined the results of the KLEs and NSEs. However, the purpose of this paper lies in finding the differences and similarities between the KLEs and the NSEs. In order to inspect the purpose, the researcher compared all the values of the KLEs with those of the NSEs by using statistical process (*parallel samples t-test*). Table 15 exhibits the results.

Table 15. The *t-test* results between KLEs and NSEs

Group		N	M	SD	t	p
KLE	Set 1	30	.06080	.126516	−1.908	.066
NSE	Set 1	30	.01862	.018406		
KLE	Set 2	30	.10397	.142252	−3.005	.003
NSE	Set 2	30	.02258	.023861		
KLE	Set 3	30	.21369	.446337	−.569	.574
NSE	Set 3	30	.16222	.158798		

In Table 15, the p value between KLEs and NSEs in Set 1 is .066. It suggests that they are not statistically distinct. Next, the p value between them in Set 2 is .003 which means the two values are significantly distinguished. Last, the p value in Set 3 is .574. Because the value is bigger than .05, we can find that they are not significantly different. Based on the NSE results of Set 3 (Table 6), the NSEs showed tendencies to place a pause between the target phrases. Therefore, it is forecasted that the KLEs might also give a pause between the phrases. However, we need to scrutinize the SD (standard deviation) values. "The standard deviation is the most important measure of dispersion, giving us information on the extent to which a set of scores varies in relation to the mean" (Nunan, 1992, p. 28). Therefore, we can find the degree of dispersion through the SD values. The SD value of the NSEs in Set 1 is .018406, whereas that of the KLEs is .126516. The latter value is about six times bigger than its corresponding item. The SD values of the NSEs and the KLEs in Set 2 are .023861 and .142252 respectively. The value of the KLEs is much larger than that of the NSEs. Last, the SD value of the NSEs in Set 3

is .158798, whereas that of the KLEs denotes .446337. The value of the KLEs is also bigger than its matching item. Hence, we can say that the values of the KLEs in Set 3 were scattered. Since the KLEs produced irregular and/or disparate outcomes, we can't say that they might place a pause between the target phrase in Set 3.

The findings in 4.3 indicate that statistical methods are not useful in this experiment to explain the differences and similarities[10]. However, given the results, we can find that the KLEs did not produce analogous outcomes. Since the reading of the KLEs is influenced by the Korean language, this paper assumes they might consider English as Korean. However, the results of this experiment suggest that there might be more variables to illustrate the features of the KLEs' English reading.

4.4. Discussions

So far, we have examined the acquired data sets. Based on the results, we first need to match the consequences with the three hypotheses in (15). As mentioned above, the native speakers might not pause when reading the data in Set 1 and Set 2 because both a complement and an adjunct are within the VP-domain, whereas the NSEs might place a pause in Set 3 because the two verbs in the sentence belong to a different constituent. These two hypotheses have been proven by using statistical methodologies. The differences between Set 1 and Set 2 were not statistically distinguished (p = .565). On the other hand, the values of Set 1 and Set 2 indicated significant differences (p = .000). Furthermore, the values of Set 3 were bigger than those of Set 1 and Set 2. These facts insinuate that the NSEs showed tendencies to put pause insertion between the target phrases and/or sentences[11] in Set 3.

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10) It's attributed that the KLEs produced dissimilar results.

11) The target sentence is a Garden Path sentence which could have a long subject. Katamba assumed the reason why speakers put pause insertion in this kind of sentences. His explanation is as follows (p. 241):

The next thing we have examined was whether the KLEs know where to pause or not. Therefore, the researcher hypothesized that the KLEs do not place a pause in Set 1, Set 2 and Set 3 because their reading is affected by the Korean language. In order to get the answer for this, statistical processes were carried out. According to the results, the p value between Set 1 and Set 2 denoted that there were significant distinctions (p = .044). On the other hand, the p value between Set 1 and Set 3 was not smaller than .05; thus, the two values were not statistically different (p = .053). Last, the p value between Set 2 and Set 3 is also bigger than .05; thus, there were no significant differences (p = .138).

The researcher posed a question. Did the KSEs give a nondiscriminatory pause throughout the experiment? No, they showed divergent results. This is attributed to the following assumptions[12]: the KLEs might not be familiar with reading (especially, pausing patterns and/or pausing intervals here) or they might meet unfamiliar vocabulary. However, the nine examples don't seem good enough to illustrate such complexities generated by the KLEs. Accordingly, the researcher measured an extra sentence in order to support the claim of this paper.

In Table 16 (below), each pausing interval of the given sentence was measured. DPI 1 indicates the pausing interval between *A* and *friend*. DPI 2 denotes the interval between *friend* and *of*. This method is equally applied to each interval. In Table 16, the mean values of DPI 1, DPI 2, and DPI 3 show quite similar results. (They also have skewed data.) Yet, we can find lots of off-center outcomes which imply that the KLEs did not yield analogous consequences[13]. Therefore, we can

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The widespread tendency to drop pitch as the end of an utterance approaches might have a physiological explanation. Possibly, as the speaker gradually runs out of breath, there is less and less air to cause the vibration of the vocal cords and consequently they vibrate more sluggishly and the pitch of the utterance goes down.

12) The assumptions might be notoriously complex. There might be lots of variables about the phenomena. The researcher left these problems for further research.

13) The researcher performed an interview in order to pose a question that whether

buttress up the claim that the KLEs produced dissimilar results.

Table 16. The results of *A friend of mine told me today that*

	DPI 1	DPI 2	DPI 3	DPI 4	DPI 5	DPI 6	DPI 7
KLE 1	0.010	0.000	0.085	0.152	0.116	0.268	0.111
KLE 2	0.000	0.028	0.000	0.035	0.000	0.424	0.396
KLE 3	0.000	0.050	0.000	0.059	0.017	0.104	0.672
KLE 4	0.000	0.031	0.075	0.379	0.492	0.422	0.255
KLE 5	0.102	0.000	0.000	0.148	0.074	0.124	0.384
KLE 6	0.000	0.000	0.000	0.040	0.000	0.061	0.044
KLE 7	0.000	0.000	0.000	0.020	0.072	0.086	0.087
KLE 8	0.024	0.000	0.000	0.089	0.000	0.199	0.158
KLE 9	0.092	0.093	0.000	2.210	0.137	0.470	0.036
KLE 10	0.000	0.000	0.027	0.077	0.047	0.060	0.046
Mean	0.023	0.020	0.019	0.321	0.096	0.222	0.219

5. Implications and Conclusion

In this paper, the researcher tried to closely examine the pausing intervals, especially by comparing the differences in pausing intervals between Korean learners of English and native speakers of English. the researcher made three sets of data to record the subjects' voices. The reseacher put two sentences before and after the target sentences. The data was corpus-based. There were ten native speakers and ten Korean learners of English. Before making the recordings, the researcher showed the data to the twenty subjects in advance to acquire natural voices, and analyzed their voice qualities with Praat 4.2.07.

There were three sets of data for the recordings: Set 1 included the sequence of a verb and a complement; Set 2 showed the sequence of a

the KLEs have been trained or taught on pause from their teachers. Unfortunately, all the subjects negatively answered that they have never been taught where to pause. According to this interview, their English reading might be influenced by psychological factors. The researcher also left this matter for further studies.

verb and an adjunct, Set 3 indicated the sequence of a verb in the relative clause and a main verb.

The experimental methods were as follows: the researcher tried to find the word boundary of the target phrases. Then the time in pausing intervals between the word boundaries was measured. The researcher analyzed the time of the sets. Furthermore, SPSS 14.0k was used to prove whether the results are statistically significant.

Based on the results, we can predict that the NSEs did not pause when they read sentences in Set 1 and 2. They, however, placed a long pause in Set 3. On the other hand, the results of the KLEs were not similar. Moreover, the KLEs did not seem to care about where and when to make pauses in their reading. They yielded irregular outcomes throughout the experiment.

Some pedagogical implications for teaching English can be drawn from the findings. The teacher, using the information on the difference, can design and use activities to raise students' awareness on syntactic structures of English sentences, especially phrasal verbs. The findings can also be used when the teacher explains explicitly the difference between Korean and English. It is suggested that the explanation can raise Korean students' awareness both of the structure of English and of pausing intervals and/or patterns. The teacher can also use the information in teaching other skills of English. The information can be used in teaching listening skills as difference in pausing intervals might affect the meaning the speaker intends to convey.

Even though this paper revealed interesting facts concerning the pausing intervals between the NSEs and the KLEs, further research needs to be carried out concerning the given topic. First, the sample size was small, and a larger sample would allow a better generalizability across a variety of groups. In the case of the KLEs, they did not engender consistent outcomes. It is assumed that there might be complexities inherent in pausing intervals and/or pausing patterns. For this reason, it is suggested that we need to further examine the intricateness of the KLE results with more subjects and/or data.

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