

## Speech Proportion and Accuracy in Simultaneous Interpretation from English into Korean

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[See table of contents](#)

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Article abstract

This article examines the relationship between the speech proportion in the sentences of speaker and interpreter, and the accuracy of simultaneous interpretation from English into Korean. Audio tapes of simultaneous interpretations from TV broadcasts and international conferences by professional interpreters were analyzed with voice-editing computer software, and data were statistically processed. The results suggest that high sentence speech proportion in English had a negative effect on the accuracy of simultaneous interpretation; accuracy increased when the Korean interpreters maintained high sentence speech proportion in their simultaneous interpretation.

# Speech Proportion and Accuracy in Simultaneous Interpretation from English into Korean<sup>1</sup>

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## RÉSUMÉ

Cet article examine le rapport de la proportion de sons par phrase d'un orateur ou d'un interprète avec le degré de fidélité de l'interprétation simultanée de l'anglais vers le coréen. Pour ce faire, nous avons analysé, à l'aide d'un logiciel d'analyse vocale, les interprétations simultanées d'émissions télévisées et celles effectuées lors de conférences internationales. Nous en avons déduit des données statistiques, lesquelles révèlent qu'une proportion élevée de sons par phrase d'un orateur exerce un effet négatif sur l'exactitude de la prestation. Pour un interprète le résultat est opposé: plus la proportion de sons par phrase est importante, plus la prestation est exacte.

## ABSTRACT

This article examines the relationship between the speech proportion in the sentences of speaker and interpreter, and the accuracy of simultaneous interpretation from English into Korean. Audio tapes of simultaneous interpretations from TV broadcasts and international conferences by professional interpreters were analyzed with voice-editing computer software, and data were statistically processed. The results suggest that high sentence speech proportion in English had a negative effect on the accuracy of simultaneous interpretation; accuracy increased when the Korean interpreters maintained high sentence speech proportion in their simultaneous interpretation.

## INTRODUCTION

Involving interpreters and speakers, simultaneous interpretation (SI) is a process divided into intervals, speech and pauses between speaking. The speech proportion (SP) is the ratio that speaking time occupies within the total time of the SI. As articulation is the result of information processing by interpreters or speakers, the SP of each party is an important indicator of the speed of information processing. Pauses, which decrease SP, occur as speakers formulate sentences or retrieve words from their long-term memory. Garman (1990) maintains that pauses occur most frequently in pre-utterance and before major lexical classes. When speakers need pauses for planning an utterance, interpreters, working as listeners and speakers at the same time, also need the same pause space for their delivery of the interpreted version, while additional pauses will be necessary for listening comprehension and conversion.

Since speech with high SP has a small pause space and carries highly dense information, pauses in low SP speech provide time for the interpreter to process information. The SP of the speaker is thought to play an important role in deciding the speed of the interpreter's information processing, including understanding, converting, and delivering in SI. Therefore, the SP of speakers can be regarded as one of

the factors that determine the difficulty of the source language (SL), while the SP of interpreters can be viewed as the index of the dynamic information processing from comprehension of SL to delivery of target language (TL). It can be hypothesized that the higher the SP of the interpreter, the more faithful the interpretation. In the case of the interpreters, the efficiency of the information processing is dependent upon saving capacity in the understanding phase and the use of the savings in the converting and delivering processes.

This article will explore the following two points:

1. How does the individual sentence SP of English, one of the important characteristics of the original English speech, influence the accuracy of English into Korean SI?
2. How does the individual sentence SP of interpreters during SI influence the accuracy of English into Korean SI?

### **LISTENING COMPREHENSION OF ENGLISH AND SI**

When considering the information processing involved in SI, where understanding of the SL is closely followed by converting, uttering, and monitoring, it becomes clear that the failure of any one of these steps adversely affects the subsequent steps. In this context, interpreters, first of all, should process a certain amount of the incoming message before beginning their interpretation. It is, however, noteworthy that most simultaneous interpreters engaging in English into Korean SI are Korean native speakers. Thus, the context can be established that they listen to L2, English, and speak L1, Korean. Therefore, unlike listening to L1, the understanding of English (L2) is one of the most critical steps in satisfactory English into Korean SI. As pointed out by Weller (1991), comprehension of source text is the most difficult part in SI from L2 into L1. Particularly, Call (1985) mentions that the capacity of memory for L2 is smaller than that for L1. Griffiths (1990) further reports that memory capacity is nine words for the mother tongue and five words for L2. In addition to these shortcomings, it would be safe to assume that the long-term ability of Korean interpreters to remember English lexical, phonological and syntactical rules will be weaker than that of native speakers. All these factors will make the information processing capacity of Korean interpreters inferior to that of native English speakers.

With this limited capacity the interpreter receives English (L2) at the speed set by the speaker, not by the listener. This situation provides a totally different socio-linguistic setting for interpreters from, for example, reading, where the reader can pause or go back for further understanding. Neither is it like the general discourse between native speaker and foreigner in which the native speaker adjusts his speech by reading the foreigner's facial expression, or uses "foreigners' talk" to facilitate communication. As pointed out by Seleskovitch (1978), not being able to work at one's own speed is the most difficult constraint imposed on simultaneous interpreters.<sup>2</sup> Interpreters in this situation are left with only two choices: process the SL quickly or fail and omit portions in their interpretation.

Another difficulty apart from concurrent processes that include conversion into TL and delivery, is the fact that SI listening comprehension requires more information capacity than general listening comprehension. Of course, listening comprehension itself is not a passive process but an active, creative form of processing that utilizes the non-linguistic knowledge of listeners. Two forms of processing are known

to be involved in listening comprehension (Cele-Murcia 1991): bottom-up processing, the recognition of utterance from sounds, words and phrases; and top-down processing, which uses the listeners' background knowledge and expectations. These two processes interact, and lack of information on one level can be compensated for by checking against information on the other. Interpreters should optimize these two forms of processing at the maximum level in order to facilitate their understanding of the SL. Top-down processing, in particular, plays an important role for simultaneous interpreters since they cannot wait for the end of an incoming sentence before beginning to interpret.<sup>3</sup> Using this prediction mechanism, English into Korean interpreters must begin their delivery as quickly into the incoming sentences as they can. The prediction process carried out by interpreters is much more intensive than among general listeners and will necessitate more attention. During the process, interpreters also take the pre-prepared "jargon list", the summary of their own research, or colleagues' "note-taking" into account. Interpreters monitor their own utterance, strength of voice, syntax, context, and the number or length of pauses that should be kept to acceptable limits. Visual information such as the facial expressions of the speaker and a view of the conference hall are also considered part of top-down processing. Even audience reaction is monitored as it influences the information processing. By necessity, therefore, the interpreter carries out a complex processing of information to decode the incoming message. An immense capacity to process information is needed for this highly creative and dynamic process of comprehension despite the fact that it is only one aspect of SI. In reality, the interpreter cannot devote his or her entire processing capacity to comprehension alone, but must spare a certain amount of attention for other tasks, such as converting and uttering TL. This attention sharing system for multi-information processing is the most difficult obstacle an interpreter must overcome in order to achieve a successful SI.

### ENGLISH INTO KOREAN SIMULTANEOUS INTERPRETATION

As is the case with English into French or Spanish interpretation, English into Korean interpreters experience a unique difficulty in delivering the interpreted version because the Korean language needs more words than English to convey the same amount of information. Tae-hyung Lee (1995) reports that Korean needs 30% more syllables than English in the case of written translation, and 44% more for a dubbed movie. This was supported by an analysis of the US Presidential Debate (Oct. 6, 1996) in which the Korean written translation used 45% more syllables than the English. Korean interpreters, however, were found to reach about 80% SP of their total delivery (not sentence SP) at best. This means interpreters must devote at least 20% of the SI's total time to listening and conversion without any delivery. To conduct an omission-free interpretation, Korean interpreters would have to speak more than 310 syllables per minute in order to process 160 wpm of English speech, the normal speed of English natives. This is an impossible speed for interpreters to utter, especially when we consider research (Korean Language Studies Association of KBS, 1991) showing that Korean telecasters speak up to 330 to 350 syllables when reading previously written and rehearsed text. The number of Korean syllables could be cut down by using a facile, highly concentrated academic vocabulary instead of casual spoken expressions, but this kind of academic word use is not widely utilized in daily life.

Consequently, retrieval of these expressions from long-term memory would take more time than common words and create additional pauses in SI. This option is therefore not a good choice for Korean interpreters.<sup>4</sup> The other option of increasing SP beyond 80% will directly decrease both listening and converting time, which is also unacceptable. As research shows that the ideal speed for interpretation is 100-120 wpm (Seleskovitch 1978), slowing down speech for accurate SI might appear to be a last resort, although in real SI situations speed is impossible to control. With this handicap, English into Korean simultaneous interpreters have no choice but to miss a portion of the information expressed in English despite their best efforts at utilizing the redundancy of the original message.<sup>5</sup> It would seem that interpreters engaging in English into Korean SI are labouring with a severe structural handicap from the start.

It becomes very clear, therefore, that the way the original speech is inputted is critical for a quality English into Korean SI. In other words, certain temporal factors, such as speech rate and SP, can render the original speech beyond the interpreters' capacity because of inadequate time for information processing on the part of interpreters.

## MATERIAL

Twenty-five English into Korean SI samples by 14 professional conference interpreters and 25 English speeches delivered by 15 speakers from TV broadcasts and actual conferences were chosen for analysis. The length of each sample was 3 to 5 minutes, and a total of 590 English sentences were included. These live audio tapes were good material for analyzing what was happening in actual SI, and the samples proved to be important naturalistic data for the study.

## PROCEDURE

Transcripts of both the original and interpreted version were made, and the sound was recorded into an IBM PC equipped with voice-editing software which can measure up to 1 millisecond.

Regarding the SP, the length of each pause in the sentence was measured individually. Silences exceeding 250 msec were judged as pauses based on the criteria proposed by Goldman-Eisler (1973) and the length extracted from the total time of the sentence. Silences just under 250 msec that occur phonetically in a word were found, and a number of pauses just over 250 msec were also detected. After measuring the individual sentence SP, the average sentence SP of the sample was obtained. Each sentence SP and the average sentence SP of the sample were measured instead of simply calculating the SP of a sample as a whole by extracting the sum of total pauses from the total length of speaking time. This was because the same speaker showed different SP from sentence to sentence in a sample, thereby causing the difficulty of the incoming sentences for the interpreter to vary. The influence of these different SPs on the final interpretation was analyzed.

Each interpreted Korean sentence was compared for accuracy with the English sentence by adopting a seven-point scale based on word correspondence. Acceptable omissions such as the personal pronoun in Korean in the case of English into Korean translation were ignored, but errors that influenced the quality of interpretation

decreased the scores, and omission of the entire original English sentence in interpretation was counted as 0. After calculating the accuracy of each sentence, the average accuracy of the sample as a whole was calculated. This process produced 25 average sentence SPs for each sample and 25 average accuracy scores. These were statistically processed with SPSS/PC+.

## RESULTS

Interpreters showed lower SP than speakers for average sentence SP: 86.2% for speakers, 79.6% for interpreters. Statistically significant negative correlations were obtained between 25 average sentence SPs of speaker and average accuracy of 25 interpreters ( $r = -0.421$ ,  $p < 0.01$ ), proving that high sentence SP decreases the accuracy of the SI.

In order to confirm this, a t-test was carried out on the SPs of speakers of 590 sentences from 25 samples. Significant differences in SP were found between accuracy 7 sentences (SP= 86%) and accuracy 1 sentences (SP= 93%,  $p < 0.001$ ), confirming that high SP of the speaker is detrimental to the accuracy of SI.

Since the SP of the interpreter alone is meaningless, the ratio of interpreter's sentence SP/speaker's sentence SP was measured from 25 samples. Positive correlations ( $r = 0.461$ ,  $p < 0.01$ ) were obtained between the ratio and accuracy, showing that accuracy increases when interpreters maintain higher sentence SP than speakers in SI. Similar positive correlations were found between the ratio of interpreter's speech rate (syllables per minute)/speaker's speech rate and average accuracy of 25 interpreters ( $r = 0.523$ ,  $p < 0.01$ ).

## DISCUSSION

The results show that interpreters speak for a smaller proportion of time than speakers. This implies that interpreters need a greater ability for processing than speakers as they engage in far more complex processing than the latter. As mentioned earlier, interpreters listening to L2 must mobilize their predictive mechanism along with converting, uttering TL and monitoring, all of which require great processing capacity. This complex information processing seems to be responsible for the added pauses and, in turn, the decreased sentence SP.

Drop in accuracy of SI for speeches with high SP confirmed our hypothesis that pauses in original speech facilitate SI. A possible explanation for this is that speeches with high SP are those with a small number of pauses or with pauses of short duration. This leaves inadequate time for the interpreter to mobilize top-down processing and other types of processing, including converting into Korean and monitoring. As mentioned earlier, the pauses provide interpreters with a real space for multi-processing, thereby facilitating the process. However, the use of multi-processing systems will stretch interpreters to the limits of their capacity for information processing when interpreting a high SP speech. As a result, those parts beyond the capacity of the interpreter will not be given enough attention and there will be an inevitable reduction in the accuracy of interpretation. What makes the situation even worse is that Korean interpreters with limited information capacity must also utter more syllables in Korean than were contained in the original English.

Even though interpreters have a certain linguistic competence, excessively high SP will exhaust their capacity and lead to a poor linguistic performance. In short, there is a limit in the capacity of the interpreter. Weber (1990) uses the term "absorption threshold" to describe this phenomenon:

Listeners normally have a natural "absorption threshold" beyond which they can no longer absorb and process information. This threshold may be higher if they are listening to their native language and lower when listening to a foreign language. Conference interpreters will certainly be familiar with this phenomenon, as they are usually listening to a foreign language in the booth and interpreting into their native language.

Gile (1991) asserts that SI can be performed if the total processing capacity is equal to or bigger than the sum of efforts for listening to and analyzing SL, producing TL, and accessing short-term memory. When the SP of the speaker exceeds the capacity of the interpreter, the situation can be regarded as overload or exceeding the absorption threshold. Korean interpreters listening to L2 are more affected by this phenomenon than those listening to L1. Therefore, in spite of the general capacity of the interpreter, temporarily increased difficulty such as high SP will make the processing vulnerable because the interpreter is denied the minimum room for processing. As a result, subsequent processes up to the utterance of the TL will suffer. In this context, pauses at the end of meaning units of the original speech undoubtedly work as a lubricant for information processing, a fact proven by Blau (1990), who reported high understanding of text with inserted pauses. Therefore, for Korean interpreters who are non-native speakers of English, pauses in SL are necessary for proper processing, including top-down processing.

With regards to the sentence SP of interpreters, results indicate a positive correlation between the SP of the interpreter and the quality of interpretation. The literature confirms this fact, Chernov (1992) pointing out that:

According to available findings (Chernov 1973), the ratio of interpreter's relative hesitation (or verbal density) to that of speaker equals or is more than 0.8 when the quality (in terms of rendering the meaning and sense structure of the TL message) of interpretation is satisfactory, and less than 0.8 when the quality is inadequate.

In turn, Barik (1973) reports that verbosity means uncertainty of interpretation:

The greater verbosity of T in relation to S can be understood to reflect the added uncertainty of expression which is necessarily associated with translation since T does not control the development of the message or its content, and this may result in circumlocutions or inappropriate expressions needing retracing.

If we apply these theories to the results obtained in the current study, it is reasonable to suppose that relatively high SP of Korean interpreters to speakers reflects efficient information processing rather than poor interpretation. In other words, the interpreter who is using many Korean words and maintaining a relatively high sentence SP is controlling the interpretation within his or her capacity. It becomes clear that the opposite is true when the SP of the interpreter is reduced during the kinds of difficulty that may arise from syntactic uncertainty, complex jargon, or too much time spent retrieving Korean equivalents. In these cases, interpreters can employ two strategies. The first is to continue to utter the Korean version even with the incompletely processed data, thereby displaying poorer linguistic performance than linguistic competence. The second is to distribute more capacity to the incoming message in order

to grasp a clear understanding while leaving some pauses in the interpreted version. Of course, decreased sentence SP of the interpretation would be unavoidable. Given these two alternatives, well trained professional Korean interpreters will choose the latter, as seen by the analysis of interpreters reported in this article. These interpreters instinctively distributed more attention to difficult incoming messages rather than waste limited processing capacity on the utterance of wordy circumlocutions. The resulting occurrence of pauses and decreased SP of interpretation was the price paid. When there was a danger of giving audiences the appearance of incompetence, however, interpreters added padding words that required little attention consumption.

Cases of extremely high SP by interpreters were noticed in the early part of Gulf War coverage on domestic TV, even with very difficult SL. In other extreme cases, interpreters paused as long as 10 seconds in their SI, apparently as a result of devoting their whole capacity to understanding the incoming message. It turned out that those interpreters were not professional interpreters at all, just good English speakers whose accuracy was far from satisfactory. Their tasks were taken over by professional interpreters after these incidents. These professional interpreters employed the strategy of slowing delivery in order to comprehend dense incoming material.

An interpreter trained in the principles of SI is assumed to have mastered the ability to unconsciously balance automatized attention distribution over several processing modules at once. This is in line with Sylvie Lambert's (1995) suggestion of highly automatized tasks. Like an acrobat walking on a tightrope who controls the length of a bar for balancing himself, interpreters unconsciously distribute more energy where the load is heavy, while at the same time taking energy from less loaded parts. This stems from the fact that SI is automatically a multi-processing system. Therefore, if a well trained professional interpreter shows high SP in his delivery by uttering many words, we can safely assume that unless the utterance is erroneous or there is addition or substitution, proper information processing is being carried out for the sentence in question and preliminary preparation is being made for the following sentence. By the same token, lowered SP on the part of the interpreter due to frequent long pauses seems to indicate that the interpreter has failed to develop the minimum capacity for understanding. As a result, the attention needed for conversion and delivery is spent instead on understanding.

The above findings point to a new criteria for improving the training of interpreters. This would include training for automatic rather than controlled distribution of processing capacity, and the strengthening of predictive capacity in order to reduce the energy needed to decode incoming messages.

#### NOTES

1. Part of the data analyzed in this article is from *A Psycholinguistic Analysis of English into Korean Simultaneous Interpretation* (in Korean), an unpublished doctoral dissertation submitted to Hanyang University, Korea, in 1995.
2. The interpreter can use a 'slow button' in the interpreters' booth to signal the speaker to slow down. There is, of course, no guarantee that the speaker will do so.
3. It is almost impossible to wait for the end of an English sentence to simultaneously interpret into Korean as the syntax is totally different; therefore, SI should begin as soon as the interpreter has a minimum amount of information available. In this article, the time lag between original speech and interpretation was 4.24 seconds. It is reasonable to assume the time lag is actually around 3 seconds when we exclude the long time lag that results from note-taking. This indicates that interpreters begin their interpretation after listening to about 40% of the words in the original sentence.



4. Besides the above-mentioned reason for reducing the number of syllables, interpreters engaging in English into Korean SI feel a need to use relatively formal words to convey the dignity of the original speech. This also is one of the major criteria used by the audience in rating the quality of the SI.
5. When Korean interpreters are expected to engage in listening comprehension alone, their language capacity is good enough to process speech faster than 160 wpm. However, the need to distribute their capacity among several tasks makes processing extremely challenging.

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