

The Influence of Speech Delivery Rates on Simultaneous Interpreter's Performance

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1. A Preliminary

The task of determining the factors that affect simultaneous interpreter's performance is rather difficult. By comparison with other fields on cognitive psychology, reported research on simultaneous interpretation (SI) is scarce. Perhaps the recent advent of this discipline is largely to blame, but also the complexity of the mental processes involved in SI has been a deterrent to researchers. It is not straight forward to design controlled experiments for the study of the cognitive processes concomitant with speech. It is doubly difficult to design such experiments for the study of simultaneous perception and production of speech in two different languages and the factors that affect the successful achievement of both.

Because of the scantiness of researchers on SI, this paper is organized around three topics: Defining SI, stating the parameters of SI, and how speech delivery rates (SDRs) as one of the parameters affects simultaneous interpreter's performance. It is worth noting that performance here is not used as a part of Chomsky's well-known dichotomies, but refers to the way interpreters act in real situations.

2. What is SI?

Almost all theories which set out to provide definitions of SI have been formulated within the context of three distinct fields: Linguistics, psychology, and translation theory. Humphrey and Alcorn (1995:12) define SI as the process of interpreting into the target language at the same time the source language is being delivered. The simultaneous interpreter renders the message in the TL as quickly as he can formulate it from the SL, while receiving and analyzing the subsequent source utterance.

According to Adams (1997:5-6), SI appeared after the World War II, at the Nuremberg trials in Germany. People, for thousands of years, were using consecutive interpretation CI (the oral transposing of sense of an orally delivered message from SL into the TL, with or without the help of note-taking. [Al-Rubai'i, 2009: 329]) to facilitate linguistic and communicative interaction between different linguistic communities. In using SI, time savings was realized

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since interpreters rendered the message at the same time they heard it uttered (Russell, 2000: 42).

There is a consensus among specialists that SI involves concurrent processing of both SL and TL discourses. Cognitive psychologists have repeatedly demonstrated the human ability to process two tasks at the same time, whether by practicing selective attention, or by the proper appropriation of mental processing resources, it is possible to listen to one language and to speak another at the same time. Goldman- Eisler (1972:136) argues that interpreters are "capable of performing the complicated operations of monitoring, storing, and possibly decoding while engaged in the encoding into the target language of previously received sequences". She speculates then that

"if attention is focused upon the active part of translating and encoding, one would imagine that the input is stored in the 'echoic memory' and is converted from sound image to meaning when its turn comes to be recorded into the target language". (ibid: 138)

Contrary to this opinion, Kade and Cartellieri (1971) claim that it is not quite correct that receiving the SL discourse and reproducing it in the TL occur simultaneously. They claim that the two processes are successive rather than concurrent, and that a phase shift with regard to the SL speaker is inevitable. They base this conclusion on the commonly observed fact that interpreters utilize SL pauses, interruptions, and redundant speech segments to 'eliminate' their lag. They claim that:

This will facilitate [the translator's] work. In such cases he does not need all the time for these parallel activities of receiving and reproducing, but often can start again at zero level, i.e., he will have to receive the source language text only. This process is repeated again and again.

(Kade and Cartellieri, 1971: 13)

This opinion can not be considered too serious because it lacks any experimental backing and contradicts all experimental evidence available at hand. One would assume that Kade and Cartellieri's intention was to describe a strategy that translators use rather than to prescribe how SI works on a cognitive level. It is doubtful that they intended to dismiss the high rate of simultaneity.

The very notion that interpreters reduce simultaneous listening and speaking time by filling SL pauses in the way suggested by Kade and Cartellieri and Goldman_ Eisler (1968) is disputable. Gerver (1976) questions the usefulness of such strategy. He points out the short duration of the majority of unfilled pauses will in itself render this strategy unworkable. There is very little that SI practitioners can do to avoid filling most SL pauses and the articulation rate were to be taken into account, the conclusion would then be that very few TL words can be crammed into SL pauses. Gerver points out that the duration of most pauses in English is one second or less according to the lowest estimate and those interpreters can squeeze hardly more than four words in a 2-second pause.

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The notion that that interpreters reduce simultaneous listening and speaking time by filling SL pauses, however, can be criticized on the grounds that this strategy is not always consciously practiced. Interpreters are governed by SL meanings, so their speech/ pause patterns are greatly influenced by the speech/ pause of the source language discourse. Goldman_Eisler (1972) identifies three ways by which interpreters segment the SL discourse: (i) identity of segmentation which involves rendering bursts within speaker's pauses (that is upon the completion of an SL burst); (ii) fission of segments where an interpretation is rendered before its SL equivalent is completed; and (iii) fusion of segments in which several SL bursts are interpreted together as if they are one unit. She discovered that 89% of the TL bursts in a large corpus of professional English_ French_ German interpretations are of the fission and fusion type. If it were true that interpreters consistently and consciously reduced their simultaneous listening and speaking by filling SL pauses, the identity of segmentation would have been more prevalent than 11%.

3. Parameters of SI

Various parameters of SI are typically discussed in translation discourse analyses, but equally they are researched in controlled psychological experiments. The present study focuses on those adopted by Hussein M. Yagi (1994: 32): SL discourse segmentation (chunking), TL pausing time, translators delay, cognitive load, speech delivery rates (SDRs), and prediction. Giving a definition for each and then examining the influence of (SDRs) on simultaneous interpreters' performance.

3.1 Chunking

In order to cope with the continuous flow of SL discourse, interpreters segment it into smaller units in accordance with their circumstances and the process is called "chunking". Chunking can be defined as "a type of analysis or segmentation of a sentence whereby adjacent words are grouped into chunks...chunks are the non-overlapping and non-recursive groups of words" (Al-Azzam, 2009:70). However, SL speakers segment their discourses in ways that serve their own purposes; they may follow the dictates of grammar, meaning, or rhetorical ways of expression. To highlight the importance of chunking Smith (1985:45) purports that " it takes no longer to put a rich and relevant chunk of meaning into long-term memory than it does a useless letter or word".

A distinction should be drawn between the terms 'chunk' and 'burst'. Bursts are stretches of continuous utterance that contain no perceptible pauses. Chunks, on the other hand, contain at least two bursts and any intervening pauses.

As previously mentioned, Goldman-Eisler (1972:136) notes that interpreters use three different ways of chunking SL discourse: identity, fusion, and fission. In identity, they encode an SL burst soon after it has been completed, while in

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fission they start encoding it before its completion, and in fusion they store two or more SL bursts and then encode them together in one TL burst.

Goldman-Eisler concludes that, in general, interpreters have a tendency to ignore speakers' chunking and to impose their own chunking patterns.

Although SL and TL chunking are not congruent, they do not necessarily need to be in conflict. Barik (1969:45) suggests that SL pauses may outline units of meaning for interpreters; thus speakers' chunking can assist them with the segmentation of SL discourse.

3.2 Pausing

A pause is a period of silence in speech. It has been found to be a tool for segmenting a message into phrases and such phrases are better learned than non-phrases. Furthermore, Johnson (1970: 38) finds in his experimental work that a phrase bound by two pauses can be learned and recalled as one unit.

Goldman-Eisler (1968) and Barik (1969) suggested that interpreters benefit from SL pauses by trying to crowd as much of their output as possible within them. Because most SL pauses tend to occur at the boundaries of meaning units and because these units supply interpreters with the input they need to render into TL. The most appropriate time to deliver the interpretation is the pause time.

Based on Goldman-Eisler (1968), Yagi (1994: 35-6) classifies pauses into two categories: grammatical and non-grammatical. Grammatical pauses are those periods of silence which occur at grammatical junctures in speech such as: punctuation points, before coordinating and subordinating conjunctions, before relative and interrogative pronouns, when a question is indirect or implied, before all adverbial clauses, and when parenthetical references are made. Non-grammatical pauses are those breaks in speech which occur at places that do not coincide with grammatical constituent boundaries: in the middle of a phrase, between repeated words, in the middle of a verbal compound, and where the structure of a sentence is disrupted by a reconsideration or a false start.

Another example of non-grammatical periods of silence is the hesitation pauses. One of the distinctive features of spontaneous speech is its frequent discontinuity and fragmentation.

3.3 Delay

Delay, or "ear-voice-span" and 'lag' are "the time difference between the delivery of an SL chunk and its translation" (ibid: 36). Delay can be divided into two types: onset delay, which measures the time difference between the onsets of equivalent SL/TL bursts, and offset delay, which measures the time difference between their endings (Ibid). An inappropriate delay is extremely detrimental to SI; extra long delays can lead to omission and confusion in interpretation, while too short delays can result in false starts and interpretation errors.

3.4 Cognitive Load

SI is a cognitively demanding activity since it requires that practitioners listen and interpret at the same time. This load enhances when:

- SL speech rates are exceptionally high.
- TL is wordier than SL.
- Interpreters fail to find TL equivalents.

Facing such difficulties can affect interpreters overall performance. Many theorists' advice interpreters on how to overcome such difficulties and consequently reduce their large cognitive load; their advice being based on either personal experience or common sense. Chernov (1969: 78) purports that when interpreters experience information overload they tend to edit SL discourse, practice omission, render the discourse in a disrupted manner, or abandon interpreting altogether.

3.5 Speech Delivery Rates (SDRs)

There are two indices of (SDRs): speech rate (SR) and articulation rate (AR). The first can be measured by "averaging out the number of syllables per second of discourse", while the second is "the average of the number of syllables uttered per second of actual articulation" [Yagi, 1994:39]. SR takes into consideration both the number of syllables uttered and the duration of pauses, but AR takes into account only the number of syllables in a fluent burst.

SL and TL (SDRs) have been investigated by most researchers who, unfortunately, have measured rates in words per minute rather than syllables per second (the unit used by most psychologists when studying language processing). Using words as an index for these rates is imprecise, because linguists find it difficult to agree on how to define 'word'. Furthermore, words vary in length within the same language and vary even more greatly from one language to another. While 'word' might be comprised of one syllable or more in English and it forms one syntactic unit, a word in Arabic can be one complete sentence. For example:

أهديتكموها

اهدي - ت - كمو - ها

'it (feminine)' - 'you (pl., masculine)' - I - granted

I granted it to you

Notice that the Arabic expression is composed of the content word (the verb) اهدي with three suffixes. The first suffix is for the subject ت, followed by the suffix for the indirect object كمو, then the suffix for the direct object ها. If the 'word' is to be defined, as is frequently done, by being bounded by pauses, then the Arabic اهديتكموها qualifies as one word although it is translated into English as one sentence. By contrast, syllables are much less variable in duration. It is much more precise to measure speech delivery in syllables per second.

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Regardless of which unit of measurement is used for speech delivery, various assessments of speech and articulation rates will be reviewed and the relationship between speech delivery and interpreter performance will be discussed briefly.

Investigating what range of speech rate is suitable for SI; Gerver (1975:120-1) finds it to be 100 to 120 words per a minute, and what was perceived as an increase in the speed of speaking proved to be a decrease in the amount of pausing. Galli (1990) studies the effects of speech rate with three professional Interpreters translating between English and Italian, at speeds ranging from 106 to 156 words per minute. According to Galli speech rate correlated with an increase in omissions and mistakes.

SL speech rate and TL articulation rate are crucial factors in SI activity. They also influence the degree of simultaneity in a piece of discourse that when SL speech rate is lower, interpreters can utilize SL pauses to render speech bursts. However, interpreters' chunking is rarely identical to that in the SL.

Barik (1973:240) reports that high (SDRs) are always associated with fluency of discourse and that the nature of a language can influence speech rates. Examine the following example

No one shall be held in slavery or servitude; slavery and the slave trade shall be prohibited in all their forms.

لا يجوز استرقاق أو استعباد أي شخص، ويحظر الاسترقاق وتجارة الرقيق بكافة أوضاعهما

[Article 4 of the Universal Declaration of Human Rights 1948]

The English version is wordier and is reflected in lower SRs in the Arabic translation and higher when translating in the opposite direction.

According to Gerver (1969) and Barik (1973) the faster delivery resulted in a greater lag and generated more errors and omissions.

In conclusion, where interpreters are confronted with an SL discourse that is delivered at a speech rate faster than their own, they tend to experience long delays and consequently to resort to lexical and syntactic compression in order to reduce their delay. Speech rates, however, vary from one type of discourse to another. Barik (1973: 253) has discovered that when interpreters render prepared SL discourses spontaneously; their speech tends to be longer and more redundant than in spontaneous SL discourse.

3.6 Prediction

Prediction refers to “grasping and producing the intended constituent or meaning in the TL before the speaker has uttered the corresponding constituent or expressed the equivalent meaning in the SL” (Al-Rubai’I, 2002: 48).

Lederer (1978:331) classifies anticipation into two types: anticipation based on sense expectation i.e. semantically based, and the other is based on language prediction i.e. lexico- grammatically based. In the former case, the interpreter “predicts the appearance of words that frequently occur together in speech,” whereas in the latter, he expects the speaker’s intended meaning.

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Chernov (1979:281) purports that SI may contain utterances which appear highly predictable, but their endings had been changed to what interpreters could not predict. This might lead to misinterpretation or some omission due to a belated awareness of the wrong plan or the inability to alter because of the lack of time. The results of Chernov experiments show that surface syntactic relations are rendered more readily than deeper semantic relations. If utterance is syntactically well-formed but does not make sense, it will result in overloading the information processing mechanism without being able to be rendered simultaneously. A similar thing happens when the semantic structures of words in an utterance do not combine with each other, because of a lack of common semantic primitives among them "due to the practical utterance, the mechanism of SI would partially or completely break down, with hesitation pauses and errors resulting in the TL speech"(Lederer, 1978:280) .

4 Influence of SL (SDRs) on Interpreters' Performance

SL (SDRs) can be considered sources of problems for interpreters. Quite often, poor performance is due to speakers' high (SDRs). High delivery speed has been the object of research, the results of which tend to be somewhat contradictory. Galli (1990) studies the effects of speech rate with three professional interpreters translating between English and Italian, at speeds ranging from 106 to 156 words per minute. According to Galli speech rate correlated with an increase in omissions and mistakes. Shlesinger (2003) conducted an experiment with sixteen professional interpreters who translated the same six source texts twice, in two sessions, with an interval of three weeks. The source texts were presented at two different speeds: 120 and 140 words per minute. In other words, each interpreter translated each text at two different presentation speeds. Shlesinger attributes this to the fact that the higher speed allows less time for source text items to decay. Chernov (2004: 17) shows "that the interpreter's speed does not increase proportionally with the speaker's. In fact, as if 'fighting' the speaker's accelerating pace, the interpreter brings her own rate of speaking down to 71%, 73%, and 74% of the rate of the SL [...], while her speech approaches the speaker's own most closely (87%) at the normal or optimal input of 120 wpm".

5 The Experiment

5.1 Questions

The present paper tries to investigate the strategies simultaneous interpreters tend to use when they face an SL discourse faster than their own. And why the interpretation of those who can not cope with the SL speaker is considered unacceptable.

5.2 Subjects

The study was carried out with the help of 20 interpreters (6 men and 14 women). Sixteen of them have a BA degree in translation and interpretation and work in the private market. Whereas four of them have their MA degree and

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work as lecturers at the university. Their ages ranged from 28-37 years old. All of the participants are of Iraqi origins and have Arabic as their SL language whereas English as their TL language.

5.3 Material

At the time of the experiment the 22 Arab summit was held on the 27th of March 2010. Part of the speech of the UN secretary general Ban KI moon was selected. Among many issues, Ban KI moon praised Iraq parliamentary elections which took place 20 days before that. This text was chosen to be read at a relatively high speed. The text –as shown below- contains (233) words and (350) syllables.

Your Majesties, Excellencies,

Let me turn now to a number of critical regional challenges.

In Iraq I welcome the holding of national elections earlier this month- another milestone in the country's political transition.

The strong voter turnout, despite threats and attacks, was a testament to the people's will to support stability over confrontation and violence. The challenge now is to form a new government. That government will still need strong support from the international community, and its neighbors.

In Sudan, we are entering a critical phase, with elections next month and the referenda next year. A top priority will be to ensure that the national elections give all Sudanese people a real voice. With respect to the referenda, these should also allow the people of Southern Sudan to freely determine their own future. The United Nations, together with the international community, will respect your choice.

There should be no let-up in our work to settle the conflict in Darfur.

I am encouraged by recent developments, and grateful to the Government of Qatar for its support.

In Somalia, the meeting of the International Contact Group, which the Arab league has generously agreed to host, will help prepare for the international recovery conference in May in Istanbul. The threat from insurgent groups such as Al-Shabaab remains profound. I appeal to the Arab states to join us in helping establish accountable stable governance in Somalia.

The reading took 100 seconds, i.e. (166) words per minute, or (3.5) syllables per second.

5.4 Procedure

To examine how interpreters follow the SL speaker, an attempt was made to measure the speed of the original speaker in terms of syllable per second and the time the interpreter needs to produce a meaningful interpretation. Then to find out whether it is important for the interpreters to follow the SL speaker literally or to resort to other emergency strategies such as omission of redundant information or tailing.

6 Discussions of the Results

Nine out of the twenty interpreters seem to have a strategy and made an acceptable interpretation, five made an unacceptable interpretation and six remain doubtful.

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Those who made an acceptable interpretation spoke at a speed of (158-162) syllables/second making full use of pauses such as those required to move from one issue to another stated in the text, for instance when the speaker moves from Iraqi elections to the Sudanese one. The study had also examined whether interpreters prefer to follow the ST word by word or they prefer to restructure, 12 out of 20 said that they can restructure to produce natural version while still keeping up with speaker. Like in the following example:

"But there are still many who have not been touched by these developments"

Instead of interpreting this sentence into:

"بيد أن هناك الكثير ممن لم يظلم التطور بعد" 12 of the interpreters rendered this sentence into: "لا يزال الكثير ممن لم يتطورا".

This means that the interpreter can resort to omission while still making an acceptable interpretation. The other said that restructuring can result in a lack of cohesion.

Unacceptable interpretations were due to one or more from the followings:

A/ Due to fast speech delivery, three of the interpreters have left important part(s) of the text untranslatable. Examine:

"With respect to the referenda, these should also allow the people of the Southern Sudan to freely determine their own future."

Three of the interpreters interpreted this sentence into:

ومع الأخذ بنظر الاعتبار نتائج الاستفتاء، فإن الانتخابات يجب أن تتيح لشعب السودان حرية تقرير مصيره.

Obviously, "Southern" is a keyword that signaling out historical fact and a 20-years conflict between northern and southern Sudan. Neglecting this word is a great mistake in producing meaningful interpretation because UN Secretary General was trying to emphasize the right of the people in Southern Sudan to determine their future and put an end to the longest civil war in Africa.

One of the interpreters has left the phrase "from the international community and its neighbors" un-translated. This part was very important when talking about forming a new government in Iraq and should not be neglected.

B/ The speed of the interpretation remains below the average. One of the interpreters could not cope with the ST speaker producing (1.8) syllables/second.

C/ Although one of the interpreters tailed the speaker and kept up with his delivery speed, but the interpreted part lacks cohesion. Examine

"In Somalia, the meeting of the International Contact Group, which the Arab league has generously agreed to host, will help prepare for the international recovery conference in May in Istanbul".

في الصومال، فإن الاجتماع لمجموعة الاتصال الدولية المستضاف بكرم من قبل الجامعة العربية سوف يساعد للتحضير لمؤتمر نقاهة دولي في أيار في اسطنبول.

This interpretation brings syntactically ill-formed sentences, so that it is considered unacceptable. Acceptable TT can be:

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في الصومال فان اجتماع مجموعة الاتصال الدولية الذي تكرمت الجامعة العربية بالموافقة على استضافته سيمهد للتحضير لمؤتمر مصالحة دولي في أيار في مدينة اسطنبول.

As pointed out before, six of the interpreters produced doubtful interpretations. The delivery speed of two of them was ranging from a very high -that they sometimes exceed the speaker- to a one below the average. The other was using synonymous words to show his skillfulness in interpretation, so that he could not cope with the speaker, as in: "**despite threats and attacks**" was interpreted into:

برغم التهديد والتحديات والهجمات وأعمال العنف.

Two of the interpreters tried to omit the adverbs of time (earlier this month, next month and next year) in order to keep up with the speed of the speaker. And the last one was using the Arabic word (الوضع) extensively as in: "in Iraq" (الوضع في العراق), and the same with "In Somalia" (الوضع في السودان), "In Sudan" (العراق),

7 Conclusions

Beside comprehension and analysis, (SDRs) are cited as problems facing interpreters' performance. This paper has come to a conclusion that successful interpretation is strongly related with SL (SDRs). These rates when made rather slow, there was a notable reduction in omission, whereas higher TL delivery is associated with higher omission, interpretation errors and delay.

To investigate this, an experiment was made on 20 interpreters. SL (SDRs) were controlled in a highly formal text produced in an exceptionally high speed. This poses special hardship because interpreters are expected to render the text meaningfully roughly at the same time. The findings of this experiment revealed that successful interpretation is produced when the interpreter tails the speaker and utilize SL pauses as much as possible.

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