Using Terminology Management applications in E/A Consecutive Interpreting of Medical Discourse: An Empirical Study

(Yomna M. Breikaa- Instructor)
Faculty of Al-Alsun, Ain Shams University

Abstract

Consecutive interpreting of medical discourse is a stressful process, where interpreters face several difficulties. Thus, interpreters tend to use problem-solving strategies, such as omission, approximation, paraphrasing and consulting documents. Though such strategies are frequently and commonly used by interpreters, they cannot deliver a fully accurate meaning. The present study empirically introduces the use of a terminology management application, namely InterpretBank. It is proposed to be an essential tool for consecutive interpreters to deliver more accurate specialized terminology in interpreting the medical domain than traditional methods. The quantitative analysis of the empirical study depends on the Dynamic Quality Framework Error Typology by TAUS (GÖRÖG, 2014)

Keywords: Consecutive Interpreting, Computer-Assisted Interpreting tools, InterpretBank, Specialized terminology

استخدام تطبيقات إدارة المصطلحات في الترجمة التتبعية للسياق الطبي من الإنجليزية إلى العربية

ملخص البحث:

تعد الترجمة التتبعية للنصوص الطبية عملية شاقة، ونظرًا لمواجهة المترجمين الكثير من الصعوبات أثناء تلك العملية، فإنهم يميلون إلى استخدام استراتيجيات تساعدهم في حل المشكلات التي يتعرضون لها عند ترجمة مثل هذه النصوص؛ وأبرزها: الحذف، والتقريب، وإعادة الصياغة، والاستعانة بالمستندات. وعلى الرغم من استخدام المترجمين هذه الاستراتيجيات بشكل متكرر وشائع، فإنها لا تعطي المعنى الدقيق للنص. لذلك، في إطار الدراسة التجريبية الحالية، يسعى الباحث إلى إثبات أن استخدام تطبيق إدارة المصطلحات، المعروف باسم InterpretBank، يساعد المترجم التتبعي على ترجمة المصطلحات المتخصصة في النص الطبي بدقة تفوق الطرق التقليدية. ويعتمد التحليل الكمي لهذه الدراسة التجريبية على نظام تقسيم الأخطاء المبني على إطار الجودة الديناميكي لجمعية مستخدمي الترجمة الآلية (TAUS).

الكلمات المفتاحية: الترجمة التتبعية، أدوات الترجمة بمساعدة الحاسوب، InterpretBank، المصطلحات المتخصصة

1. Research Questions

Based on the presumption that a better interpreter's performance with fewer errors regarding the accuracy of lexical choices and the accuracy and amount of content information rendered into the target output in a correct form would raise the output quality, the following research question is investigated:

1. To what extent are the traditional emergency strategies used by consecutive interpreters sufficient to produce an accurate, correct, and fast target output in terms of specialized terminology?
2. To what extent are the features of the suggested terminology management tool, InterpretBank, efficient to overcome the difficulties of E/A consecutive interpreting of medical discourse in terms of specialized terminology?
3. How far is InterpretBank, which is primarily designed for simultaneous interpreting, efficient as a CAI Tool in consecutive interpreting?

2. Introduction

Consecutive interpreting is a very complex cognitive process. This complexity could result in problems where traditional strategies are not sufficient — and depending on ICT in interpreting as a problem-solving strategy still does not give the expected results in consecutive interpreting. Medical discourse is rich in specialized terminology (Askehave & Zethsen, 2017) and interpreting medical discourse depends on the accuracy of delivering such terms into the target speech. Thus, this consecutive interpreting becomes an incredibly challenging process; interpreters would resort to using some strategies when they are not capable of delivering the accurate meaning (Gile, 2009). Yet, such strategies are not sufficient in some way and do not deliver the most accurate outcome. This paper experiments the efficiency of using InterpretBank, a terminology management tool, as a problem-solving strategy in consecutive interpreting. This paper focuses only on specialized terminology as a problem-trigger and difficulty that consecutive interpreters encounter while interpreting and the strategies they use for overcoming such difficulty, including traditional strategies, or using a computer-aided interpreting (CAI) tool.

3. The Cognitive Complexity of Consecutive Interpreting

Consecutive interpreting is a very complex process, and several models of interpreting are tackled on different levels(Pöchhacker, 2016). Gile describes the cognitive efforts exerted by an interpreter during the

interpretation process. He divides the efforts according to the type of interpreting, whether simultaneous, consecutive, or sight translation. In addition, he describes the problems that face interpreters in each of the three aforementioned models and the strategies and tactics used.(Gile, 2009)

Gile(2009, pp. 175–179) divides the process of consecutive interpreting into two phases, namely listening and reformulation. The efforts of the two phases are as follows:

Phase 1: CI (Listening) = L + M + N + C

In this equation, he explains the efforts used in the first phase of consecutive interpreting as follows:

- L is the listening and analysis effort of the source speech; sometimes, the segments differ in length from sentence per sentence to larger segments.
- M refers to short memory; it takes place between the time when the source speech information is received and whether it is taken down or the interpreter keeps it in his memory to be used for interpreting.
- N refers to notetaking, which is a physical effort. The interpreter does not take word-for-word notes but writes in symbols and words that helps them remember the idea. Thus, it requires decision-making in choosing what to take down and what not to. Note-taking also depends on retrieving from the long-term memory to remember how to iterate the ideas chosen into symbols and words.
- C is the coordination between the different efforts exerted at the same time.

Phase 2: CI (Reformulation) = Rem + Read + P

In this equation, Gile(2009, pp. 176–177) explains the efforts used in the second phase of consecutive interpreting as follows:

- Rem means remember; the interpreter recalls the message sent by the speaker in order to be ready for interpreting.
- Read is the effort of reading the notes they had taken in phase 1 to help them recall the content and the information of the source segments. This effort depends on retrieval from long-term memory to recall the meaning of symbols and letters written.
- P is for production, is the 'output part.' It depends on the long-term memory, wherein the interpreter retrieves from their LTM what meets the meaning intended in the TL.

4. Specialized terminology as a problem trigger in medical discourse

Problem triggers could lead to a more exerted effort by the interpreter -whether listening and processing, memory efforts notetaking,

or others- which might still affect the interpreter's performance. For example, if the speech has multiple specialized terminology, an interpreter will focus more on delivering the terminology in the target language correctly, at the expense of listening and processing capacity of the rest of the source speech(Gile, 2009, p. 191). Another problem might occur, which is when the interpreter exerts more effort on maintaining their efforts' capacity and simultaneously decides which strategies to use and thus the interpreter could do their maximum effort capacity, reaching thereby to the 'tightrope situation'(2009, pp. 182–183).

Moreover, problem triggers do not necessarily cause actual problems (2009, p. 191), yet interpreters would be more prepared when they predict those triggers in mind while preparing and interpreting. Furthermore, this would be helpful for the development of interpreters as this knowledge would have the interpreters equipped with a set of strategies to smoothly solve the problems that they might encounter (Arumí Ribas, 2013).

This study focuses on the medical discourse and the English into Arabic language pair and specialized terminology as a problem-trigger. Medical discourse is well known by features like the extensive use of specialized terminology, abbreviations, acronyms, and numbers (Askehave & Zethsen, 2017). It requires absolute accuracy in the output, as a slight change in the content could give a different result. Medical set terms are conjugated from Latin origins (Andriopoulos, 2007) - like 'duodenum' and 'apical'- and Greek (2007) - like 'hormone' and 'mitochondria'; this could trigger a problem for interpreters. If they do not know the term and also cannot comprehend the terms' origin, they would not be able to render it correctly in the target speech.

5. Interpreting Strategies

Strategies are procedures and actions planned by interpreters in order to overcome or to solve one or more of the aforementioned problem triggers and deliver meaningful outcome content (Liontou, 2011, pp. 37–39). Strategic competence, the ability to decide and choose which strategy to use for which problem, is considered one of the important skills for a successful interpreter (Al-Salman & Al-Khanji, 2002).

This study focuses on emergency strategies used by consecutive interpreters; they are more of a last line of defense for interpreters. They tend to use them when all other strategies or tactics are of no use or help for the interpreter (Donato, 2003; Liontou, 2011). Emergency strategies

are omission, paraphrasing, approximation, and getting help by consulting documents.

5.1. Omission

Omission or skipping, or ellipsis is when the interpreter deletes parts of the message that are repeated, redundant or unimportant (Al-Qinai, 2004; Al-Salman & Al-Khanji, 2002).

5.2. Approximation

The interpreter would give a less precise meaning of a term or substitute a term for another when they find difficulty in retrieving the exact term(Al-Khanji et al., 2002; Gile, 2009; Ma, 2013). This substitution or approximation could be using a synonym or even a remotely related equivalent or a hypernym; for example, instead of interpreting 'HDL' as 'البروتينات الدهني عالية الكثافة', the interpreter would use the term 'الكوليسترول' which is a hypernym for the term(Al-Qinai, 2004).

5.3. Paraphrase

The interpreter would explain the intended meaning in the source speech instead of the exact interpreting of a term, a phrase, or an entire message (Al-Salman & Al-Khanji, 2002). For example, instead of interpreting 'intestinal cells' as 'الخلايا المعوية', the interpreter explained the intended meaning by rendering it as 'الخلايا في هذه الأمعاء'.

5.4. Consulting Documents

Interpreters could make use of glossaries and dictionaries in the reformulation process (Gile, 2009). Interpreters consult documents, whether a hard copy, a soft copy, or with the help of CAI Tools (Computer-Aided Interpreting Tools). This strategy could be a time-consuming one unless effectively managed (Ma, 2013).

In spite of the extensive use of strategies like omission, paraphrase, and approximation, as proven in the experiment, they still do not help interpreters deliver accurate and correct output. Thus, utilizing technology for developing the approach of this strategy would help reach a higher quality with less effort.

6. Information and Communicative Technology (ICT) in interpreting

The use of Information and Communicative Technology (ICT) in interpreting, like other aspects of life, has widely spread and is still spreading; it is expected to become more of an essential part of the interpreting industry. ICT in interpreting could be divided into three types: a) setting-oriented, where it helps ease communication like remote interpreting; b) process-oriented, like CAI tools where it helps ease the

process of interpreting itself for the interpreter whether in preparation or production (Fantinuoli, 2016) ; c) ICT in interpreting training (Kalina & Ziegler, 2015).

In this paper, the researcher focuses on the Process-oriented CAI tools, which will be called "Process CAI Tools". Fantinuoli (2016) divides Process CAI Tools into two generations. The first generation is using tools that were designed for interpreters to look up terminology during production. The second generation comprises more advanced tools that add preparation of terms and knowledge acquisition to looking up terminology during production.

Yet, the researcher suggested another classification for the Process-oriented CAI Tools. In the new classification those tools could be divided into three types, namely, preparation-oriented, production-oriented and hybrid process CAI tools.

6.1. Preparation-Oriented Process CAI Tools

Preparation-oriented process CAI tools are the tools used by interpreters for preparation only. For instance, in theme-based preparation, interpreters would use generic software applications for creating corpora, searching, and acquiring knowledge about the topic needed to be familiar with the subject field(N. Schnell & Rodríguez, 2009).

Whereas in the linguistic preparation, interpreters would start analyzing the material compiled and then start extracting terminology using terminology extractors that are designed for linguists and translators like OneClickTerm(RüTTEN, 2018), TermoStat Web 3.0(Antón, 2016) and SDL Multiterm Extract.

6.2. Production-Oriented Process CAI Tools

Production-oriented process CAI tools are the tools used by interpreters in production only. The tools are also divided according to their usage, whether for terminology management or notetaking applications.

First, the terminology management applications are software applications that would help the interpreter look up a term from a glossary prepared in advance. Some applications are generic like Microsoft Excel and Google Sheets.

While others are designed specifically for simultaneous interpreters like Interplex UE(Costa et al., 2014), Glossary Assistant, and interpreter's help(El-Metwalli, 2018). This kind of applications helps relieve the working memory effort in the interpreter's mind.

Second, as for the notetaking applications, there are two approaches to using software applications notetaking; both approaches are generic and are not specifically designed for interpreters.

The first approach used by consecutive interpreters is like Evernote, Penultimate, Inkeness, LectureNotes, and PenSupremacy(Costa et al., 2014), where interpreters use these applications to take down handwritten notes on their touch screen devices, whether smartphones, phablets, or tablets. Speech to text applications can also be used by interpreters for notetaking.

The second approach is called SimConsec; where interpreters record the source speech using their devices, whether digital or smart pens like Livescribe or recording applications on their touch screen devices, whether smartphones, or tablets and replay it on their headsets and then simultaneously interpret to the target audience(El-Metwalli, 2018; Pöchhacker, 2016).

6.3. Hybrid CAI Tools

Hybrid Process CAI Tools are tools that have both types together, preparation and production. They are software applications that provide preparation features like collecting corpora, terminology extraction, searching the web from the software application itself, and creating glossaries and term lists like InterpretBank and Flashterm. These two software applications offer preparation features for interpreters in addition to looking up terminology and documents during production.

7. Method and procedure of data extraction and analysis:

The analysis of the terminological accuracy of the target speeches of all four subjects is inspired by the error typology of the Dynamic Quality Framework by TAUS (GÖRÖG, 2014). This is implemented by tracing the subjects' output when dealing with specialized terminology in the source speech and the strategies used to deal with such difficulty.

The reason for choosing the TAUS DQF Error Typology, despite the fact that it is initially used for the quality assessment of written translation, is that it offers a standardized set of error categories and subcategories with the definition of each category and subcategory in addition to a standardized set of severity levels with the definition of each one.

DQF-inspired subcategories are also set under the terminology error category, and the severity of these errors on the accuracy of the meaning. Also, strategies used to deal with each specialized terminology are highlighted in addition to determining the severity of those terminology errors. The tables below elaborate the definition of the

terminology error category and subcategories in addition to the definition of the severity levels.

Error Category	Error Subcategory	Definition
Lexical Units "Terminology"	Inconsistent with Glossary	A term is used inconsistently with a specified glossary.
	Incorrect Terminology	
	Inconsistent use of terminology	Terminology is used in an inconsistent manner within the text.
Meaning Errors "Accuracy"	Addition	The target text includes text that is not present in the source.
	Omission	Content is missing from the translation that is present in the source.
	Mistranslation	The target content does not accurately represent the source content.
	Over-translation	The target text is more specific than the source text.
	Under-translation	The target text is less specific than the source text.

Table 1 – Terminology Error Criteria

Severity Level	**Definition**
Critical	Errors that may carry health, safety, legal or financial implications, violate geopolitical usage guidelines, damage the company's reputation, cause the application to crash or negatively modify/misrepresent the functionality of a product or service, or which could be seen as offensive.
Major	Errors that may confuse or mislead the user or hinder proper use of the product/service due to significant change in meaning or because errors appear in a visible or important part of the content.
Minor	Errors that do not lead to loss of meaning and would not confuse or mislead the user but would be noticed would decrease stylistic quality, fluency, or clarity or would make the content less appealing.
Neutral	Used to log additional information, problems, or changes to be made that do not count as errors, e.g., they reflect a reviewer's choice or preferred style, they are repeated errors or instruction/glossary changes not yet implemented, a change to be made that the translator is not aware of.
Kudos	Used to praise for exceptional achievement.

Table 2 - DQF Severity Levels

8. InterpretBank

InterpretBank is a hybrid process, CAI tool, for simultaneous interpreting which means that an interpreter could work on preparing and production processes using the same tool. The tool was developed by Dr. Claudio Fantinuoli as part of a doctoral research project at the University of Mainz/Germersheim. (Fantinuoli, 2016)

The application has multiple features; a) Collecting corpora and extracting terminology, b) Creating and managing glossaries, c) Memorizing terminology, d) Accessing terminology in the booth.

8.1. Collecting Corpora and Extracting Terminology

This feature is designed for the preparation phase where the

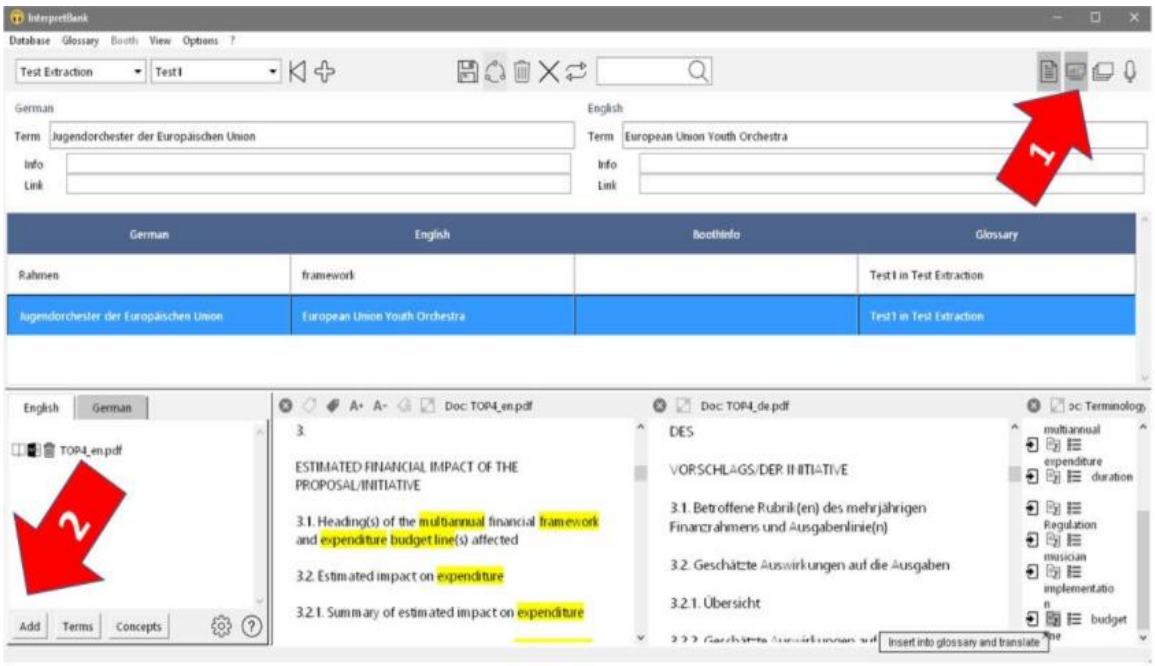

Figure 1- Collecting corpora and extracting terminology: https://blog.sprachmanagement.net/new-term-extraction-features-in-interpretbank-and-interpretershelp/

interpreter would need to compile as much specialized texts about the topic in need as possible, and then they would extract the terms in order to create a glossary later. InterpretBank automatically compiles parallel corpora using the Internet through using small setup queries like for example “types of cholesterol”. Then through manual or automatic terminology extraction interpreters would be able to create a list of terms about the topic in need from the compiled corpora.

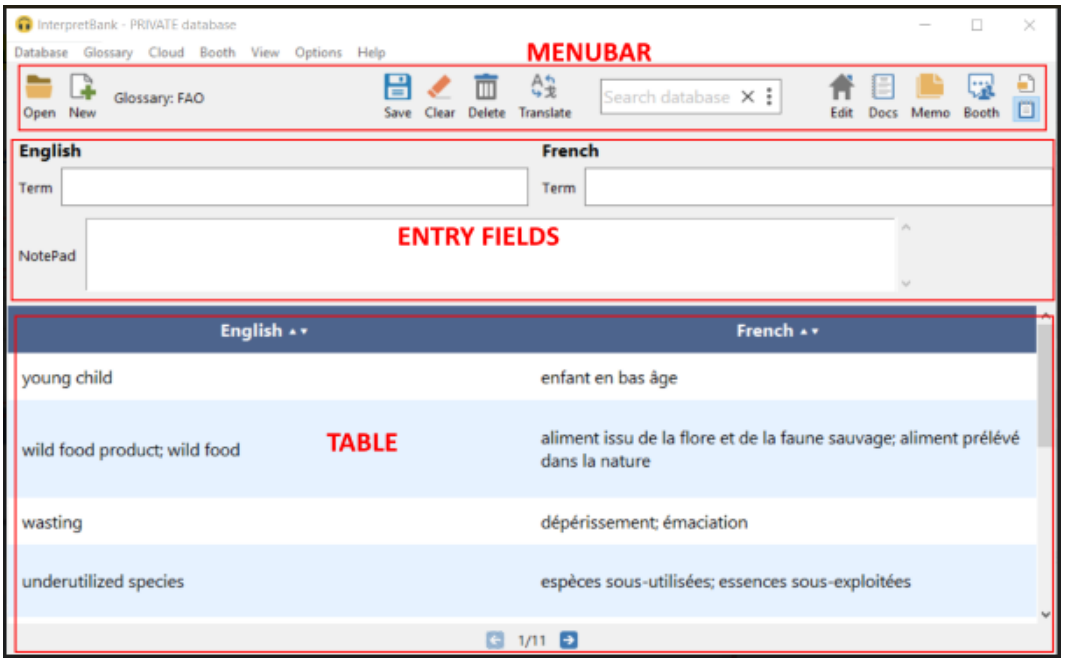

Figure 2- Creating and managing glossaries: https://interpretbank.com/site/docs/docs-page.html

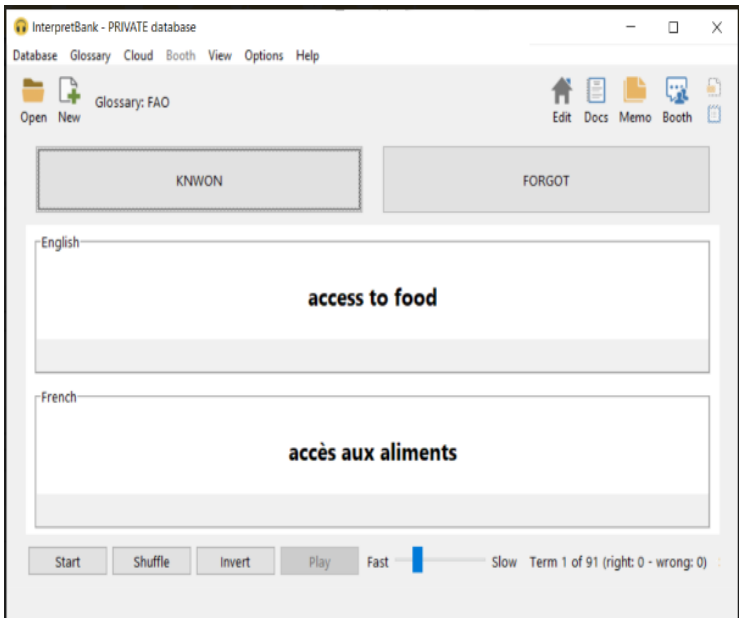

Figure 3- Creating and managing glossaries: https://interpretbank.com/site/docs/docs-page.html

8.2. Creating and Managing Glossaries

Interpreters could create glossaries using the term lists created by the application. Also, they could add previously prepared glossaries in Excel and Word formats. In addition to adding terms with their translations in the glossaries, users could store extra information on each term like genres, term levels, definitions, etc. The glossaries could be accessed through the features of memorizing terminology and accessing terminology in the booth.

8.3. Memorizing Terminology

This feature helps interpreters memorize their glossaries in a simple way. The terms are shown alternatively in the source and in the target language as electronic flashcards. Users can move on to the next term manually or automatically by setting the desired speed. Terms could be marked as "Forgotten" and they would rehearse them again. This flashcard software helps users to transfer terms into long-term memory.

8.4. Accessing terminology in the booth

Interpreters would look up terms in the existing glossaries in the software application. What distincts this feature from other terminology management tools is that it considers the time constraints and the cognitive load in interpreting. As the application accepts partial words that could contain spelling errors and without affecting the reliability of the results.

Also, it reduces the number of keyboard strokes where the interpreter would look up a term without the need to click enter, as the matches would appear automatically, or deleting the term to make a new search afterwards. In the experiments, the researcher created the glossaries for the experimental group, and the experimental group members only used the feature of accessing terminology in the booth.

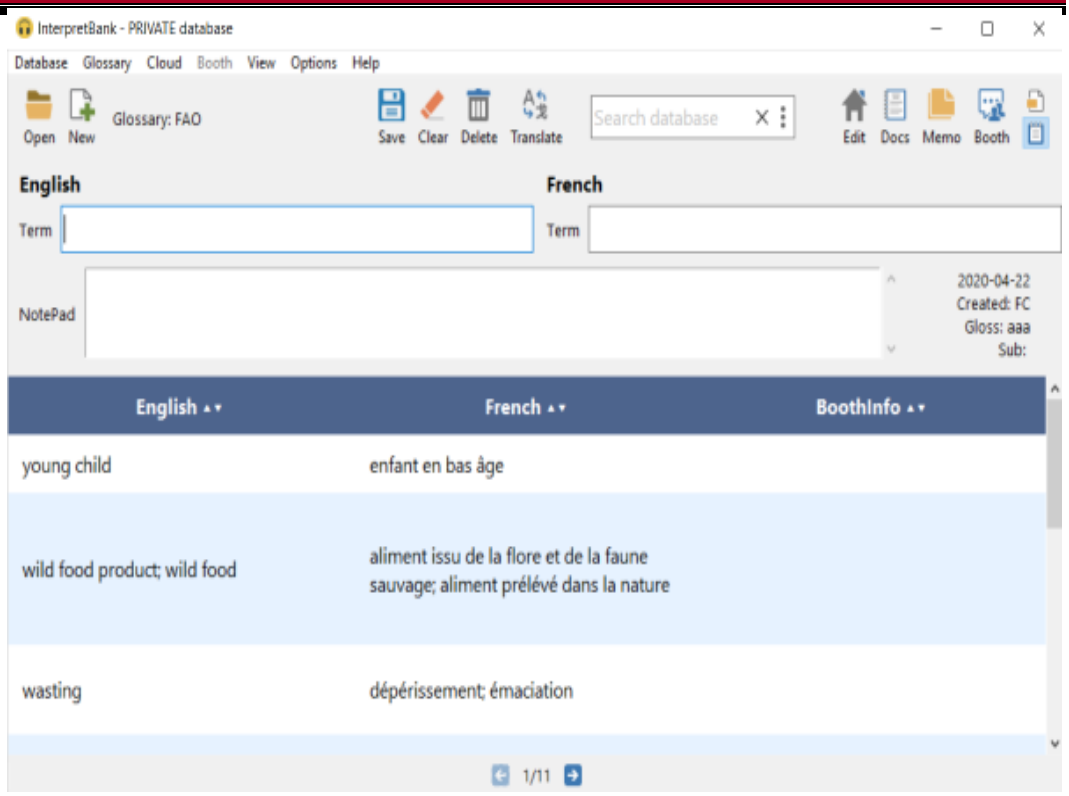

Figure 4- Looking up terms: - https://interpretbank.com/site

9. Experiment Setting

This study experiments on medical and economic discourses, one video for each discourse. Both videos are retrieved from YouTube. The video of the medical discourse is about cholesterol (https://www.youtube.com/watch?v=PkKH8lTxvzA). Video's duration covers 11 minutes, divided into 23 segments, 30 seconds for each segment. Speed of delivery is about 121 words per minute.

The experiment took place at a proper interpreting lab setting at the Faculty of Al-Alsun, Ain Shams University. The Subjects are four post-graduate Interpreting students, who have completed a 3-semester consecutive interpreting courses.

Subjects were sent English and Arabic resources about the topic they would interpret, which is Cholesterol, one week before the experiment. They were divided into two groups; the experimental group used InterpretBank on a tablet with a keyboard attached as the experimental terminology management tool, while the control group did not use any kind of CAI tools or hardcopy glossaries.

The results are based on quantitative analysis. The analysis of the source speeches and interpreters' output covers the accuracy of transferring the specialized terms to the target output and the strategies used when encountering such problem. Only a few examples are mentioned in the paper, while a full account of the results of the four subjects is in the analysis sheet devised by the researcher in the appendix. The analysis sheet has a special feature of filtering the results into multiple lists, such as the performance of each subject or each group, the strategies used by each or all subjects and the errors with each category and sub-category of each or all subjects.

The results are based on 16 segments only because some of the subjects from the two different groups could not provide one or more segments for different reasons, amongst which is lack of focus, a problem in the notes (the pen and papers), whether they were not able to read their own notes, or they were not able to take down proper notes, or had a problem with the pen and papers they were using, or they were fully saturated and could not come up with any output. The total number of specialized terms in the 16 segments used in the analysis is 90.

10. Quantitative Sample Analysis and Discussion

Using a terminology management tool in medical discourse helps consecutive interpreters maintain the accuracy of medical terminology. For example, interpreters in the experimental group managed to use the accurate medical terms, like HDL which is in Arabic البروتينات الشحمية ذات الكثافة العالية with an average accuracy percentage of 65.3% while the control group managed to use the accurate terms with an average percentage of 28.74%.

Both groups had their fair share of terminology errors due to the extensive amount of specialized terminology in the source speech. Yet, the number of errors that had critical or major severity that has affected the quality of the output was more in control then critical major errors made my experimental group.

The control group had committed 186 errors; 82.8% of those errors were Accuracy-related and 17.2% were Terminology-related. The Accuracy, 154 errors, errors were mistranslation, omission and under translation. And the terminology errors were inconsistent with the glossary and incorrect terminology. Most of the errors' severity were either critical or major which had a profound effect on the output quality. Many segments in the output missed key information and in some cases were incomprehensible due to the specialized terminology errors. Table 3 shows the count and percentage of these errors and their severity:

Error Category	Error-Subcategory	Severity Level	Count	Percentage
Accuracy	Mistranslation (4.55%)	Critical	4	57.14%
		Major	3	42.86%
	Omission (94.81%)	Critical	117	80.14%
		Major	8	5.48%
		Minor	15	10.27%
		Neutral	6	4.11%
	Under-translation (0.65%)	Critical	1	0.65%
Terminology	Inconsistent with Glossary (21.88%)	Critical	5	71.43%
		Major	2	28.57%
	Incorrect Terminology (78.13%)	Critical	24	96.00%
		Major	1	4.00%

Table 3 Control Group - Errors' subcategories and severity levels

10.1. Examples of Mistranslation Errors by the Control Group

Source Text	Target Text
H.D.L.	الدهون عالية الكثافة
L.D. L	الدهون منخفضة الكثافة
Glucose	صوديوم الجلوكوز

10.2. Examples of Under-Translation Errors by the Control Group

Source Text	Target Text
H.D.L.	الكوليسترول

10.3. Examples of Incorrect Terminology Errors by the Control Group

Source Text	Target Text
Apoprotein	الليبوبروتينات
Lipoproteins	البروتينات
Phospholipids	الحمض الفسفوري
V.L.D.L.	البروتينات الدهنية ذات كثافة منخفضة
V.L.D.L.	الدهون جد منخفضة
Tissues	الخلايا

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The experimental group had committed 93 errors; 86.02% of those errors were Accuracy-related and 13.98% were Terminology-related. The Accuracy, 80 errors, errors were mistranslation, omission and under translation. The terminology errors were inconsistent with the glossary and incorrect terminology. Most of the errors' severity were either major or minor and others did not affect the quality of the output, especially in the cases of omission as the subjects were capable of delivering the meaning correctly without rendering each specialized term. This a significant effect on the output quality as many segments, unlike the control group, and had most of the key information in the source speech and comprehensible. Table 4 shows the count and percentage of these errors and their severity:

Error Category	Error-Subcategory	Severity Level	Count	Percentage
Accuracy	Mistranslation (2.50%)	Major	2	
	Omission (92.50%)	Critical	31	41.89%
		Major	12	16.22%
		Minor	9	12.16%
		Neutral	22	29.73%
	Under-translation (5.00%)	Minor	4	
Terminology	Inconsistent with Glossary (7.69%)	Critical	1	
	Incorrect Terminology (76.92%)	Critical	6	60.00%
		Major	4	40.00%

Table 4 Experimental Group - Errors' subcategories and severity levels

10.4. Examples of Incorrect Terminology Errors by the Experimental Group

Source Text	Target Text
Fatty acids	الحمضيات الدهنية
V.L.D.L.	البروتينات الشحمية أو الدهنية ذات الكثافة المنخفضة
Lipoprotein	البروتينات

Due to the density of the medical terms in the experiment speech, the subjects of both groups used problem-solving strategies and tactics as omission, approximation, and paraphrase strategies. Also, they have resorted to using the English term as it is in the Arabic (target) speech, i.e., borrowing. Table 5 elaborates the count and the percentage of the strategies used by each group:

Strategy name	Control Group	Experimental Group
Omission	148 (56.7%)	73 (27.24%)
Paraphrase	1 (0.38%)	1 (0.37%)
Approximation	11 (4.21%)	12 (4.48%)
Borrowing	10 (3.83%)	5 (1.87%)

Table 5: Strategy count and percentage of both groups

It is noticed that the control group has used more omissions than the experimental group which of course adds substantial impact on the output quality. In addition to the aforementioned strategies, the experimental group stated that they have depended on consulting the terminology management tool, InterpretBank, as a problem-solving strategy. The experimental group has stated that the terminology management tool has relieved the efforts of working memory and long-term memory, though they did not know a lot about Gile's effort model. The experimental group has stated that the terminology management tool has helped them shift their focus on processing the source speech itself, rather than exerting extra mental and cognitive effort of retrieving the meaning of the specialized terms from their long-term memory.

Furthermore, the control group has stated that they have found difficulty in retrieving all the specialized terminology of the source speech. They have also stated that this difficulty had negatively affected their focus on the informative content of the source speech, which consequently affected the target output.

11. Conclusion

In answer to the first research questions the control group subjects have extensively used the omission and consulting documents strategies. And the experimental group depended on InterpretBank as an upgrade of the consulting documents strategy. The control group subjects were not able to provide an accurate and correct output when compared to the experimental group subjects in terms of dealing with specialized terms.

In answer to the second research question, using InterpretBank in looking up terms in consecutive interpreting of medical discourse was proven to be a successful strategy and was a successful use of the consulting document strategy. It helps relieve the cognitive load of recalling specialized terminology from the long-term memory. Yet, such strategy needs to be developed in order to meet the needs of consecutive interpreters as looking up specialized terminology is not the only problem that that face is consecutive interpreters.

In answer to the third research question, using InterpretBank as a CAI tool in consecutive interpreting is efficient in dealing with specialized terms only, yet there are multiple setbacks for using it in consecutive interpreting. There are other problems or problem triggers and difficulties in the source speech, such as proper nouns, numbers, abbreviations, non-specialized terminology, or terminology that is not available in the ready-made glossary by the interpreter, the fast pace of the speaker, and long sentences of the source speech. Using a computer aided interpreting tool that comprises multiple features to help overcome such difficulties, in an attempt to develop the strategy of consulting documents would be helpful.

12. Recommendations

A need arises for a computer aided interpreting tool that is designed specifically for consecutive interpreters. This tool would allow the interpreters to perform a multi-term search and put multiple tools in one workplace, in addition to simplifying the workplace. Instead of using pen and paper for note taking and a separate application for terminology management, a tool that comprises these features in addition to the usage of automatic speech recognition would provide interpreters with a toolkit designed to increase and upgrade their productivity.

Furthermore, the researcher recommends using the analysis method and the analysis sheet devised by the researcher in further interpreting empirical research projects, as they could ease the quantitative analysis for other researchers and help in data extraction through filtering and categorizing strategies and errors of the participating subjects.

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