



**Evaluating the Effects of Short and Long-term Memory
in Interpreting Settings**

Siddig Mohammed

Department of English and Translation, College of Science and Arts
Qassim University, Ar Rass, Saudi Arabia
s.mohammed@qu.edu.sa

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ABSTRACT

A translation memory and related skills are essential for interpreting in many contexts, as recently investigated by David B. Sawyer, Frank Austermühl, and Vanessa Enriquez Rado (2019). The present study investigates the cognitive processes of context-specific memory and whether the interpretive ability is enhanced by employing both short-term and long-term memory. Based on this premise, this study examines how different types of memory affect interpretation. Short and long-term memory helps interpreters retain information and improve their interpreting skills. This research contributes to forming the schema necessary for rapidly retrieving information using long-term and short-term memory. Cognitive strategies are used for training interpretation, and short-term and long-term memory must be considered. In addition, many mnemonics of memory systems are examined in this study, including their properties, functions, and interactions—techniques and research for developing types of translation memories. After discussing the importance of long-term memory, the authors discuss cognitive factors that influence long-term memory. The results of this study demonstrate that training short-term and long-term memory and improving cognitive processes are essential for interpretation. The study concluded that long-term memory was less susceptible to interpreter training than short-term verbal memory.

Keywords: *sensory memory – episodic memory – memory strategy – memory effect*

1. Introduction

Unlike translation, interpreting has gained popularity recently and attracted many professionals and students. For prospective academics, interpreting is attractive because of its more comprehensive approach to evaluating research papers. Interpreting is characterized by its temporal limitations and transience. Interpreters often face complex materials and time constraints when interpreting orally using sight. In this regard, the ability of

a qualified translator to seamlessly transfer information from the source language (SL) to the target language (TL) has become increasingly important. Many researchers have devoted their entire professional lives to studying memory in interpreting. However, their research focuses almost exclusively on short-term memory and neglects long-term memory. I have been inspired by previous studies on memory research in interpreting and decided to venture into this field using appropriate techniques involving short-term and long-term memory. I have been inspired by previous studies on memory research in interpreting. I decided to attempt this field by using appropriate techniques involving short-term and long-term memory in interpreting.

1.1 Background of the Study

Interpreting information requires short-term memory (STM) and long-term memory (LTM). Long-term memory is usually different from short-term memory. Long-term memory requires recalling previously stored ideas for weeks, months, or even a lifetime. It is, therefore, of utmost importance to the interpreters' education. The data needs to be transmitted in a certain way to be accurate in the future. Practice can improve one's long-term memory. The span is different for each memory. The lifetime of an STM is thirty-second, which is different for each memory, Lawton, J. M., & Willard, E. (2018). Some psychologists believe that the span of short-term memory lasts 30 seconds, while others believe it lasts 6 and 12 seconds. If you are an interpreter, you may find it challenging to remember this information. After finishing one task, interpreters usually move on to the next task. Interpreters need to learn how to remember information. This study looks at the role of short- and long-term memory in sight translation. According to the following literature review, short-term memory plays no role in sight translation. Few studies have been done to date, and the results have been inconsistent and do not show clear trends. Long-term memory has evolved less than short-term memory. Because of this, people often forget about the importance of long-term memory. We may help interpreters negotiate the intricacies of sight interpreting by comparing long-term and short-term memory.

1.2 Objectives and research questions

The researcher discusses how long-term memory can be improved. Because the study is recent, it may spark interest in short-term memory and provide a wealth of information. Interpreters often go on to the next job after completing one, and interpreter trainees need to be able to hold onto information. This study explores the role of long- and short-term memory in developing sight translation.

Research Objectives

The present research aims to attain the following objectives:

1. Investigating the cognitive processes of context-specific memory in interpreting settings.

2. Stressing the role of STM as a vital category through improved interpretation.
3. Studying all categories of memories concurrently with sensory, short-term, remembering, and working memory.
4. Examining techniques used to reinforce translation memory.

Research Questions

1. How do short and long-term memories affect interpretation?
2. Is translation memory a factor in interpreting?
3. Which approaches can interpreters use to improve their memory?

2. Literature Review

Mellinger (2017: 312) articulates that sight translation is the act of saying out loud what is written in the target language. Sight translation is also called SI with the text. In this study, sight translation is used because interpreters provide verbal interpretations of written texts without the source text speaker being present. Sight translation (ST) is a translation at the interface between translation and interpretation. Agrifoglio (2004) states that it is an oral translation of written content. In other words, it combines two elements: image and sound. It combines the written (translation) and oral (interpretation) aspects. Lambert (2004) describes it as a text translation and linguistic interpretation subset.

It is also a combination of oral interpretation (oral production) and written translation (written contribution) Leube (2000:178). Gerzymisch-Arbogast (2003: 272) defines ST as "a professional service that can request interpreters for conferences, business meetings, and court proceedings." According to Weber (cited in *ibid.*: 274), ST is the ideal preparation for consecutive and simultaneous interpreting because it teaches students how to perform rapid text analysis and public speaking and avoid transcoding. ST has an interpretative component since it is about oral production, and the range of interpretation is critical. It allows verbal conversation between speakers of different languages. It is a kind of direct translation activity for the benefit of people who want to communicate across language and cultural barriers, Pöchhacker, (2004: 25).

2.1 Interpretation and memory

It is necessary to explain the concept of memory as interpretation is very memory based. Many people think that translators have perfect memory. On the other hand, interpreters need to remember what was just said rather than distant memories, which requires a lot of working memory. Instead, long-term memory is needed to overcome short-term memory. According to Kintsch (1998: 217), memory is everything a person knows and remembers. Memory has long been believed to remember past events and actions, as well as people, objects, and situations that we have previously encountered (Matsumoto and Juang (2007: 75)). Bruno (2002:85) defines *memory* as the process of encoding, storing and retrieving cognitive information.

To improve your knowledge of memory, you need to understand the concepts of encoding, storage, and retrieval. STM is responsible for processing information in the brain as it makes sense and converts the sensory data received from the senses into meaningful signals. According to Roberts (2014), information ranging from 1-2 bits to more than 7 bits is stored for 15-30 seconds, sufficient time for reuse. Fernandez and Cairns (2010: 239) also suggest that short-term memory allows people to "remember 5 to 9 pieces of knowledge in a short period".

2.2 Types of interpreting memory

According to Carmen Valero-Garces (2013: 127), two types of memory need to be trained: short-term and long-term. Long-term memory (permanent memory) can be stimulated by reading, listening to the radio, or watching a program on a particular topic or field. All of these activities contribute to the development of this essential long-term memory. However, short-term memory (transient memory) can be improved by listening to the news, reading texts of different lengths, reading texts with specific difficulties, such as reading dates, addresses, names, and numbers, repeating, and interpreting. Listening again to analyze errors is a great way to develop short-term memory.

2.3 Mnemonics and memory tools

The concept of Mnemonics is the technique/tool used to remember information that is quite difficult to recall. These play a crucial role in the function of the brain to enable information to be restored and retrieved. The human memory works by association of ideas. We remember things when we relate them to things that are etched in our memory. Remembering things also depend on the types of information. Visualization is also considered a mnemonic tool. It is to remember by seeing or imagining. Sometimes we remember by rhyme and rhythm, by similarity and acronyms. Therefore, some exercises are needed to consolidate memory. Memory has property need to be understood before improving it. Memory is influenced by recency, the events that took place recently and not a long time ago. If you were asked about the type of dinner you ate yesterday, you would remember it; however, it is not possible to remember the dinner of the same day last year or even two weeks ago. Also, if you are required to remember ten words in a list, you may not be able to remember them. The vividness property is also considered an essential factor that impacts short memory. Ordinary events are not easy to remember; striking impressions and spectacular views are easy to recall. Probably we remember things like birthdays and special events. Words and names are hard to remember; however, striking picture will be easy to remember. The *loci* is another property of members; we remember things by specific location, mainly if used to travel by a particular route to work and regular places we used to visit. Furthermore, we remember concrete words more than abstract ones. Finally, frequency influences memory; we remember things by repetition more than things we experience for a while.

2.4 Sensory memory, short-term memory, and long-term memory

2.4.1 Sensory memory

Human sensory memory can temporarily store information before recognition and transfer it to short-term memory (Tripathy&Öğmen, 2018). It carefully records incoming sensory information for only a short period. In sensory memory, much information can be stored but cannot be processed. When a flashlight flashes rapidly in a circle in a dark room, the viewer perceives a circle of light rather than a specific area where the beam moves. As a result, the brain perceives circles because successive images of moving light are stored long enough in sensory memory. Symbolic memory is related to visual perception, and sensory memory is associated with auditory perception. In a nutshell, sensory memory is a perceptual phenomenon, as opposed to memory, that involves the recording of specific modalities of stimuli. Sensory memory stores small pieces of information for very short periods, Stanowski, M. (2021).

2.4.2 Short-Term Memory

Short-term memory is the ability to store knowledge for a short period of time without forming the brain systems necessary for later memory. According to Mikkelson & Jourdenais (2015), the short-term memory approach recognizes the important role of both short-term and long-term memory in interpretation. About 20 seconds of sensory memory information is transferred to short-term memory. With practice, information can be stored in short-term memory for a long time. People repeatedly repeat new phone numbers to train and strengthen their short-term memory. Only seven pieces of information can be stored in short-term memory, plus and minus two. Individual numbers, letters, or sequences of words or phrases can be small or large data items. Short-term memory capacity can be increased by chewing. Creating considerable information from small pieces of information is called "chunking." In this regard, Jeffrey Paul Lantos (2015) concluded that short-term memory capacity is limited by a finite number of memory chunks or units.

2.4.3 Long-Term Memory

Long-term memory develops when neural pathways are established to store ideas and information that can be recalled weeks, months, or even years later. Setting up this line requires conscious encoding of information because we want to remember it later. Long-term memory is a process of accumulation. According to Terry Janzen (2005), long-term memory (LTM) and short-term memory (STM) or "working memory" (e.g., Baddeley 2000) are essential for language processing and interpretation.

2.4.4 Working Memory

According to Pochhacker (2015), working memory has emerged as an important topic in interpretive research. Psychologists now refer to working

memory as short-term memory. Unlike temporary data storage, working memory is an active system. When people process or study information, that information is stored in working memory. A person's working memory allows them to temporarily store and process visual images, recall information when making decisions, and memorize phone numbers long enough to record them. In both short-term and long-term memory, information can be transferred.

In many cases, the knowledge stored in long-term memory lasts for entire life. This does not mean that people can always recall information stored in long-term memory, and they may not be able to do that. In short, it has been proposed to limit working memory capacity. According to Cowan (2001), the average human can only comprehend four bits of information at a time. Thus, translators to develop this types of memory to be able to execute interpreting accurately by properly utilizing this memory. Other types of memory such as short-term and long term memory are usually compared.

Ackerman (1988) found that working memory plays an important role in learning processes where the automatic modes are not yet established and that it is a predictor of low levels of acquired skills.

2.4.5 Episodic memory

Tulving (2002) defines *episodic memory* as recalling distinct experiences in terms of content (what), time (when), and place (where). It enables you to mentally travel across subjective time from the present to the past and relive the previous events using your awareness. Endel Tulving (1972) created the term episodic memory to distinguish between recollection of previous experiences (episodic memory) and understanding of factual information (semantic memory). Semantic memory is concerned with broad-world information and encompasses facts, concepts, and ideas. In addition to semantic memory, episodic memory is a type of memory known as explicit or declarative memory.

2.4.6 Semantic memory

Semantic memory, as opposed to episodic memory, is vital in many facets of cognition, including language, reasoning, planning, problem-solving, and social interaction. Binder and colleagues (2009). In recent years, episodic memory has been reconceived as a person's ability to search the past and picture and envisage future situations, leading to a constructivist understanding of the sophisticated human cognitive activity. Maguire and Hassabis (2007). Thus, the term episodic memory, considered a subset of long-term memory, is essential in interpreting contexts and may be strengthened through various training activities such as games and exercises.

2.5 The Importance of LTM in Interpreting

Furthermore, the information stored in LTMs is essential to translator learning, as it can last from minutes to weeks, months, or even a lifetime. The duration of STM is concise, up to 30 seconds. Peterson (1959) defined it as between 6 and 12 seconds, and Atkinson and Shiffrin (1968) and Hebb (1949) defined it as 30 seconds. Memory is a limited resource for interpretation. After performers finish one task, they often move on to another using a different context, subject, and speaker. Consequently, the memory skill that the interpretive listener must master is the STM skill.

2.6 Short-Term Memory Training in Interpreting

Short-term memory (STM) interpretation training increases Understanding of the original language, allowing for more accurate interpretation. Lin Yuru et al. "Sequential interpretation memory consists only of understanding the meaning conveyed by words" (Lin et al., 1999, p. 9). Understanding is the first step to successful interpretation. Therefore, memory training should be introduced early in the translator training process. Because SI has a longer memory span, memory behaves differently in sequential and synchronous analysis. There are many ways to teach STM for CI and SI. The translation process begins by encoding the information provided by the original speaker. Interpreting is an STM-focused activity according to Giles' training model. The parsing process can be restructured as follows: Information is encoded in the source language, and information is saved, searched, and decoded in the translation language.

2.7 Improving Short-Term Memory techniques

According to Pochhacker (2015), shadowing is widely used as an introductory exercise to learn to listen and speak simultaneously before going to SI. Shadowing involves repeating precisely what the speaker said in the same language. Usually, the interpreter follows the speaker with a word or two while saying what the speaker is saying. This time can be extended once the translator gains confidence. An interpreter often uses this exercise to prepare for simultaneous interpretation since it teaches them to listen and speak simultaneously.

2.7.1 Dual-Task Training and Shadowing

It is also ideal for memory development as it allows translators to retain and remember small groups of sounds, words, and relatively short information. However, this is difficult because the interpreter has to listen and speak simultaneously, where the interpreter remembers the last part while the speaker continues to speak. The text used in this exercise should be small but can gradually increase in size when you work alone, text, or talk on TV or radio. When working in groups, one person reads the text, and the other repeats it. Dual-task practice and the underlying assumption of shadow

practice is that difficulties in performing secondary tasks or shadowing consume more of the learner's attention, Gerver (2013).

2.7.2 Shadowing with a twist

According to Dastyar (2018), the shadows are distorted (i.e., after a short pause after the speaker's speech, repetition is performed, resulting in several lines along the shadows. As in the first exercise, this is a precise repetition of the speaker's speech. However, this exercise is similar to continuous translation, which is repeated after a pause for the speaker. Thus, simultaneously, listening and speaking problems are eliminated, allowing the interpreter to focus on memory. You can use the exact text for this exercise, but you'll need to break it up into smaller parts ahead of time.

2.7.3 The freer shadowing

Another shadowing is the freer shadowing with a twist. This exercise should only be done after completing the previous exercises and, most importantly, after you have learned how to repeat long texts without difficulty. Here the translator's sound and semantic memory are tested. In this exercise, the translator not only repeats what is said but tries to say the same thing in as many different words as possible. Generally, this original translation is not acceptable in legal contexts, as it is considered the first step towards a free translation. As memory training, this is not a problem.

2.8 Attentive listening for critical elements

Careful listening is an essential element for memory recall. If you have not listened to something carefully, it will be impossible to remember later. Identifying a speaker's key points is the first step in attentive listening. For example, listen to short narratives or descriptions and understand them answering the fundamental question, "Who? What? When? Where? Why? How?" While definitive answers are not always possible, the ability to answer most of them demonstrates that you paid close attention to the key points. In this exercise, any descriptive or narrative texts may be used, and you may record the text if you are practicing alone or ask a colleague to read it if working in a group.

2.9 Progressively expanding the capacity to recall

Strong memory should be developed gradually. This exercise is based on a speech of 50-60 words, first memorizing the main points, then gradually adding details to the second or third passage. First, the translator must listen to the text once and decide on a key idea. When the translator hears the text for the second time, he has to add more details to the main idea. During the final pass, the translator must remember every detail. Translators are more relaxed and remember more details than when they are nervous because they know they don't have to remember every detail from the beginning. As the translator's ability to remember improves, the

text can be read in half, and the text size can increase. Once heard, the ultimate goal is to capture every detail in a speech of about 50 words. Any descriptive or explanatory text can be used in this exercise and can be included if you are practicing alone or working in a group.

2.10 Using Visualization to Retain information

Memory is inevitably communal, characterized in semiotic terms as the ability to retain and reproduce information, as well as the ability to replicate information. First, visual information shows a deep influence on popular culture (Peters & White Peters et al., 2018, p. 58). Alternative image education can expand the educational space and overcome the boundaries of formal classrooms or pure cognitive education through learning to read sign language.

People learn best by seeing or hearing what is shown or primarily by reading it. Images stay in our minds much longer than abstract information. As a result, mnemonics advocates the use of visualizations to help retain different types of information through mental imagery. However, since this image is artificial, it will take time to generate and will not be helpful to the translator. However, some speeches naturally evoke visuals, so the performer must be able to identify and use them to recall and recall. For example, court interpreters are often asked to interpret the characteristics (position, feel, etc.) described by a witness.

These qualities make them ideal for improving memory through visualization. The images should be presented step by step so that the performer can simulate the whole scene. Visual exercises can be completed by verbal recall or, in some cases, by drawing. In other words, recalling memories does not always have to be verbal. You can use descriptive or explanatory text for this exercise. You can record texts if you are practicing alone or have a partner to read for you if you are working in a group.

2.11 Segmentation exercise

This exercise is based on keeping several small pieces of information available rather than one or two dense pieces of information. Segmentation involves dividing a larger piece of information into two or smaller pieces. This exercise can be done with both oral and written text, and the divisions can be both oral and written. The sentence should be read once and divided into several parts, and the text should contain long sentences and extensive information.

2.12 Recognizing incoherent or ambiguous messages

The speaker is often ambiguous, and it is challenging to remember every day, uniform, and ambiguous words. This task is designed to help detect inconsistencies or ambiguities in speech as a memory aid. After listening to a relatively disconnected and unclear text, you should be able to identify which parts are disconnected or unclear and explain why. Joo, for example, told Miguel to stay put, and there is no indication whether "he" is João or

Miguel. Once inconsistencies or ambiguities are identified, they can be recalled and resolved during the production phase of the implementation. This exercise tries to identify and remember ambiguous or unrelated segments and does not handle them in any particular way. Collect examples because you need ambiguous or inconsistent sentences or phrases.

2.13 Confirmation Bias

Individuals with confirmation bias tend to favor information that confirms their beliefs or assumptions. Bias occurs when people selectively collect or recall information or interpret information biasedly. Even if a person tries to interpret the evidence objectively, this information can be selectively retained. This effect is called "selective memory," "positive memory," or "accessible memory." In short, it is more difficult to remember information that contradicts our beliefs. One way to deal with such information is to put yourself in the speaker's shoes. In other words, remove yourself from the picture and identify with the speaker. Because then you can hold back your personal beliefs and prejudices in your favor. For this exercise, start by summarizing the controversial text and avoid shadows.

The review of the related literature mentioned above indicates that the theoretical role of short-term memory in sight translation is unclear and that the few actual investigations conducted to date have shown conflicting results and no discernible trends.

3. Methodology

This research aims to look into the usage of interpretive memory in various contexts. Researchers have used different types to study the role of memory in interpretation. Because this study is relevant to the current study, we use a descriptive-analytical method. Researchers have looked at several sources to investigate questions about the correct type of memory. Data collection and processing were performed sequentially to achieve the study's objectives. The collected data were analyzed and structured in a descriptive form of the study, and the results and discussion were presented.

4. Results and discussion

Current research is technically structured, and research shows that translation memory is essential and translators cannot function without translation memory. However, short-term memory is the optimal type of memory to use when interpreting parameters. This type is supported by other types of memory, including sensory, working, long-term, and episodic. Translators from different backgrounds face many memory problems. Translators, for example, use long-term memory, which requires background knowledge in various situations when they begin to translate. However, visual interpretation and consistent forms of short-term memory save the day. Simultaneous interpretation takes time because there is no room for notes or other strategies or techniques to ensure accurate translation. However, in all cases, training is needed to enhance the

translating memory, which requires many activities, many translating tasks, and games.

5. Conclusion

The present research explored the issue of short and long-term memories in interpreting and its relation with cognitive processes and the strategies used to improve translation memory. Active memory capacity is relevant to performance interpretation. Current research shows that trainee interpreters and non-bilinguals outperform experienced interpreters in terms of the challenges they face. Memory is rarely recognized as necessary in research. A professional interpreter provides simultaneous interpretation based on short-term and long-term memory. These couples of memories were compared and related to other types of memories, including sensory memory and working memory. Several techniques to improve interpreters' memories were introduced. The standard techniques included mnemonics, visualization, associations, and notetaking. The demonstration of short-term memory-specific properties, such as temporal decay and a chunk capacity limit, is required before the distinction between long-term and short-term memory can be made. The two memories affect interpretation in different context and these factors are the important ones. Moreover, there is growing support for the concept of a maximum chunk capacity. The study concluded that interpreting cannot happen without memory. However, long-term memory is needed besides short-term memory, where the latter is needed more and supported by notetaking and other techniques. Finally, future research recommends developing tools to assess this type of memory and focusing on analyzing the translator's prior knowledge, education, and experience with specific types of translation. The findings' significance depends on the participants' background knowledge, including their educational level and language skills, experience, and other methodological details. Selecting methods and procedures to better assess thematic memory translation and testing is a potential study design factor that may influence these results.

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