

Training Strategies for Short-Term Memory in Interpretation and Their Applications

Yanqi Xu

School of Foreign Languages, China West Normal University, Nanchong 637000, China

Abstract: This paper explores feasible short-term memory training strategies for interpreters. It analyzes memory barriers arising from instant information reception and sorts targeted drills including chunking, shadowing and logic retelling. Combined with consecutive and simultaneous interpreting practices, it verifies how these methods boost information storage and instant extraction, offering operable references to improve interpreters' on-site memorization efficiency.

Keywords: Short-Term Memory, Information Storage, Interpretation.

1. Introduction

Short-term memory, as the core link in the information processing of interpretation, directly affects the accuracy and fluency of translation. Based on the theoretical framework of short-term memory in cognitive psychology and combined with the characteristics of interpretation practice, this paper systematically analyzes the mechanism of short-term memory in interpretation, proposes training strategies such as hierarchical coding, logical reconstruction, and multi-sensory linkage, and discusses their specific applications in different interpretation scenarios. Research shows that scientific short-term memory training can effectively enhance interpreters' information retention ability and provide cognitive support for high-quality interpretation.

Interpretation, as an immediate cross-language communication activity, requires interpreters to complete the complex process of "listening in, understanding, conversion, output" within a very short period of time. Among this, short-term memory plays a crucial role in temporarily storing and processing information - interpreters need to temporarily store the source language information in their memory and simultaneously conduct semantic analysis and target language reorganization. According to Miller's research, the capacity of human short-term memory is typically several chunks, and the information retention time is only 10 to 20 seconds. This is in sharp contradiction to the high-load demand of "listening and interpreting simultaneously" in interpretation. Therefore, exploring targeted short-term memory training strategies has significant practical significance for improving the quality of interpretation^[1].

Most existing studies analyze the mechanism of short-term memory from the perspective of cognitive psychology, while the research on training methods for interpreting scenarios is not systematic enough. This paper, taking into account the particularity of interpreting practice, conducts research from three aspects: theoretical basis, training strategies, and application scenarios, providing interpreters with an operational training path^[2].

2. The Mechanism of Short-Term Memory in Interpretation

(1) The information processing mode of short-term memory 1)

According to Baddeley's working memory model^[3], short-term memory consists of the central executive system, the phonological loop, the visual-spatial template, and the episodic buffer^[4]. During the process of interpreting, the phonological loop is responsible for temporarily storing the phonetic information of the source language, while the central executive system coordinates the understanding, encoding, and conversion of the information. For example, in English interpretation, the interpreter needs to first capture the phonetic information such as "climate change" through the phonological loop, and then the central executive system associates its semantic connotation, ultimately converting it into the target language "climate change"^[5].

(2) Special Requirements of Interpretation for Short-Term Memory Unlike everyday memory, short-term memory in interpretation needs to meet three core requirements: First, it must be instantaneous^[6]. The source language information keeps flowing in, and the interpreter needs to complete the process of memorization and conversion simultaneously, with almost no time for review; second, it must be selective. When faced with complex information (such as numbers, technical terms, logical relationships), one needs to quickly filter out the key content; third, it must be resistant to interference. In interpretation scenarios, there are often background noises, accent differences, and other interfering factors, and the memory process needs to be stable. For example, in international conference interpretation, the speaker may interject multiple data (such as "GDP growth 5.2%, unemployment rate decreased 1.3%"), and the interpreter needs to accurately remember and convert in a noisy environment^[7].

3. Training Strategies for Short-Term Memory in Interpretation

(1) Information Hierarchical Coding Strategy

The capacity of short-term memory is limited. Through hierarchical encoding, scattered information can be transformed into ordered chunks, thereby enhancing memory efficiency^[8].

1) Specific methods include: Core Information Prioritization Method: During training, divide the information into the "core layer" (topics, viewpoints, conclusions) and the "auxiliary layer" (examples, modifiers). Prioritize the memorization of the core content. For example, for the

statement "Although the application of artificial intelligence in the medical field faces ethical controversies, it can significantly improve diagnostic efficiency", one should first focus on "Artificial Intelligence in Medical Applications: Controversies and Efficiency Improvement" as the core.

2) Symbol substitution method: Replace complex information with simplified symbols or images to reduce the memory load. For example, use "↑" to represent "increase", and "△" to represent "dispute". Quickly record them in the notes to assist short-term memory^[9].

3) Contextual Association Method: Link the new information with the existing context to form a semantic network. For instance, when hearing "the Federal Reserve raises interest rates", immediately associate it with background knowledge such as "dollar appreciation and capital repatriation", thereby enhancing the memory anchor.

(2) Logical Reconstruction Training

Logical relationships form the framework of information. Enhancing the ability to perceive logic can help translators quickly grasp the structure of information and reduce the burden of memory^[10]. The training methods include:

1) Logical Signal Recognition: Focus on identifying logical connectives in the source language (such as "however", "therefore", "firstly"), and use them to divide the information into different levels. For example, recognizing the structure of "firstly... secondly... finally" allows for sequential memorization of each key point.

2) Reverse Retelling Practice: After listening to a piece of information, retell it in reverse order to strengthen the memory of the logical chain. For example, if the original text is "A leads to B, and B causes C", the retelling should be "C is caused by B, and B is caused by A".

3) Mind mapping construction: While listening, construct a simple mind map in your mind, with the central theme radiating out to the branch points, presenting the logical relationship in an intuitive manner. This method is particularly suitable for training in speech-type interpretation.

(3) Multi-sensory Interaction Training

Activating multiple senses such as hearing, vision and touch to participate in memory can stimulate the coordinated processing of multiple brain regions, thereby enhancing the memory effect.

1) Shadowing Method: Follow the source language by 1-2 seconds in advance, simultaneously engaging both the auditory (receiving) and kinesthetic (voicing) senses, thereby enhancing the immediate memory ability of phonetic information. In the initial stage of training, slower news materials can be selected, and gradually transition to speech or debate content.

2) Visual Imagery: Transform abstract information into concrete images. For instance, when hearing "Supply chain disruption leads to shortage of goods", imagine in your mind the scene of "trucks idling and shelves empty", thereby strengthening memory through visual representation.

3) Gesture Assistance Method: Use gestures to simulate the logical flow of information (for example, use an upward gesture to represent "increase", and use an arrow gesture to represent "causal relationship"), thereby strengthening the memory trace through kinesthetic perception.

(4) Specialized Intensive Training

Carry out special memory training for the frequently occurring difficult information in interpretation: Digital memory training: Utilize "group memory method" (for example, divide "138927645" into "138 - 927 - 645") or

"meaning association method" (associate "2025" with "current year"), to enhance the accuracy of digital memory.

2) Term Cluster Training: Group and memorize terms within the same field (such as "carbon neutrality, carbon peak, carbon trading"), forming a term network to reduce the memory load of individual words.

3) Long sentence splitting training: For complex long sentences (such as English sentences with nested clauses), split them according to the "subject-verb-object" structure. First, memorize the main part, and then add the modifying components. For example, the sentence "The report that was released by the UN yesterday indicates that global poverty has decreased by 15% in the past decade" can be split into "UN report (released yesterday) Global poverty rate ↓ 15% (in the past decade)"^[11].

4. Application Scenarios of Short-Term Memory Training Strategies

(1) Conference Interpretation

Conference interpretation is characterized by dense information and rigorous logic. Key techniques to employ include "logical reconstruction" and "prioritizing core information". For instance, in academic conferences, a speaker might present a complete framework of "research background - methods - results - conclusion". Interpreters can identify logical cues (such as "however" "in conclusion") to delineate levels, prioritize memorizing the core viewpoints of each part, and then supplement the details. Additionally, for frequently occurring professional terms in the conference, a term cluster can be established in advance to reduce the pressure of on-site memory^[12].

(2) Escort Interpretation

The scenario of accompanying interpretation is flexible and often involves life-like conversations and unexpected information, requiring a focus on "multisensory interaction" and "anti-interference training". For example, in a business accompanying situation, both parties may discuss the itinerary in a noisy restaurant. The interpreter can assist auditory memory through visual observation (such as gestures and expressions), and at the same time use the "symbol substitution method" to quickly record key information (such as "3pm airport"). Moreover, digital information (such as time and amount) frequently appears in accompanying interpretation, and the application of the "group memory method" needs to be strengthened.

(3) Emergency Interpretation

In emergency scenarios (such as disaster rescue and medical emergency treatment), information is characterized by its urgency and fragmentation. Therefore, strategies of "rapid stratification" and "anti-interference" need to be employed. For instance, when medical staff explain to the family of a foreign patient that "an immediate operation is required and the risk rate is approximately 5%" to them, the interpreter must instantly grasp the "immediate operation" (the core) and "risk rate of 5%" (the key data), ignoring redundant expressions, to ensure the information is conveyed promptly.

5. The Practical Application in the Classroom This Semester

Throughout this semester's academic sessions, our curriculum incorporated specialized exercises focused on enhancing short-term memory capabilities specifically

tailored for interpretation purposes. The detailed methodology of this training involved an interactive format where our instructor would engage in bilingual dialogues with individual students, alternating between Chinese and English. Our primary task was to perform real-time bidirectional translation exercises, converting Chinese speech to English and vice versa. Notably, during these intensive practice sessions, I intentionally chose not to utilize any writing implements such as pens or notebooks, deliberately challenging myself to depend entirely on my short-term memory retention abilities. This approach forced me to concentrate intensely on mentally capturing the conversational content before swiftly executing the required language conversion. It's worth mentioning that the dialogue topics in these initial exercises predominantly revolved around commonplace daily scenarios rather than more complex professional business discussions. Nevertheless, this marked my inaugural exposure to short-term memory application in interpretation contexts, proving to be an immensely valuable learning experience that significantly contributed to my skill development in this specialized field of language interpretation^[13].

The second classroom practice activity involved a challenging memory exercise where our teacher instructed us to memorize an extensive sequence of numbers. Initially, this task appeared quite daunting to me, as the numbers seemed random and disconnected. However, through persistent effort, I gradually uncovered an effective memorization technique. I realized that by employing my creative imagination, I could transform the seemingly meaningless numerical string into vivid mental images and engaging associations. For instance, I might visualize certain number combinations as familiar dates, phone numbers, or even convert them into visual patterns. This innovative approach not only made the memorization process more manageable but also significantly more enjoyable, turning what initially seemed like a tedious task into an imaginative and rewarding learning experience.

In addition, the teacher also asked us to translate a meeting report on the spot and so on. I think this also tests the on-the-spot response and short-term memory. We need to understand the meaning conveyed by the Chinese in a very short time and quickly think of the corresponding and correct English expression. In the process of practice, I found that even if the expression was quickly thought of in the brain, the mouth couldn't keep up with the brain and couldn't form a complete expression to smoothly convey the information I wanted to convey.

6. Conclusion

In interpretation, short-term memory is like a "temporary notepad", having its useful aspects as well as some troublesome problems. To put it simply:

For advantages, the most obvious one is the quick response. Once you finish listening, you can immediately remember the information and help the translator continue. For example, if someone says "There will be a meeting at 3 p.m. tomorrow in the third-floor conference room", the short-term memory can instantly store this string of information. The translator doesn't have to wait; they can translate it into another language right away. Moreover, it focuses on the key points and doesn't cram everything into your mind. For instance, if someone drags on for a long time, saying "This project... Our team stayed up three nights in a row, revised eight plans, and finally passed", the short-term memory will automatically

grasp the core "project passed", and won't waste effort remembering the details. The translation won't go off track. Additionally, it can also "process" information temporarily. For example, if you hear "The temperature dropped by 5 degrees and the wind is very strong", the short-term memory will quietly combine these two sentences into "It's cold and windy", making the translation more natural.

However, the drawbacks are quite obvious. Firstly, "it can't hold too many". For instance, someone might say "The attendees include Zhang San, Li Si, Wang Wu, as well as Alice from the United States and Bob from the United Kingdom. There are a total of 12 people." With so many names, short-term memory is prone to confusion and one or two names might be missed. Moreover, it forgets quickly. If the speaker speaks rapidly, the second half of the sentence comes out before the first half is finished, and the first half might become blurry. During translation, one might get stuck. Also, it is particularly afraid of being disturbed. If someone coughs, speaks, or the speaker has an accent in the room, short-term memory might mix up the information. For example, "Invest 3 million" might be heard as "5 million", and this mistake is made during recording, leading to problems in translation.

Overall, this "temporary notepad" is a must-have in interpretation, but we need to find ways to address its shortcomings, such as practicing to remember key points and resisting distractions, in order to use it smoothly.

Short-term memory, serving as the fundamental and pivotal component in the cognitive process of interpretation, necessitates comprehensive training approaches that meticulously integrate solid theoretical foundations with practical application requirements. The innovative strategies presented in this paper, including but not limited to hierarchical information coding, logical framework reconstruction, and multi-sensory collaborative stimulation, effectively optimize memory performance by targeting various aspects of information processing mechanisms.

References

- [1] Hornby, A. S. (1992). *Oxford advanced learner's dictionary of current English*. Oxford University Press.
- [2] Baker, M., & Malmkjær, K. (2001). *Routledge encyclopedia of translation studies*. Routledge.
- [3] Bassnett, S., & Lefevere, A. (1998). *Constructing cultures. Multilingual Matters*.
- [4] Bassnett, S., & Lefevere, A. (1990). *Translation, history and culture*. Cassell.
- [5] Chen, S., & Kunwar, U. B. (2025). Chinese tea: An overview on culture, commerce and globalization. *Asian Journal of Advances in Agricultural Research*, 25(7), 126–132.
- [6] Cronin, M. (2013). *Translation and globalization*. Routledge.
- [7] Hu, G. S. (2020). *Eco-translatology*. Springer.
- [8] Hall, E. T. (1976). *Beyond culture*. Anchor Books.
- [9] Katan, D., & Taibi, M. (2021). *Translating cultures: An introduction for translators, interpreters and mediators*. Routledge.
- [10] Newmark, P. (1988). *A textbook of translation*. Prentice Hall.
- [11] Nida, E. A. (1993). *Language, culture, and translating*. Shanghai Foreign Language Education Press.
- [12] Nord, C. (1997). *Translating as a purposeful activity*. Routledge.

[13] Venuti, L. (1995). *The translator's invisibility: A history of translation*. Routledge.