Filling the Silence:

How Mandarin Speakers Cope with Tip-of-the-Tongue Phenomenon

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1. Introduction

Have you ever experienced wanting to say a word but couldn't immediately recall it? This is known as the Tip-of-the-Tongue (ToT) phenomenon. Although it is a common experience across different language speakers, scientists are still investigating its causes and how it affects memory and speech retrieval. A growing amount of research has been focusing on the issue of ToT for elders since ToT has been found to significantly correlate with neuropathological changes (Kim & Yoon, 2020). By observing the ToT phenomenon, we might be able to spot early neurodegenerative diseases at an early stage. However, little has been conducted on the ToT phenomenon in Chinese, and most of the research we found focuses on the age effect and phonological description of the ToT phenomenon (Ouyang et.al, 2020; Chang et. al., 2022). These studies further confirmed that Chinese elders also experience similar ToT phenomena such as unnatural pauses, providing related descriptions but not the exact words. In addition, most of the ToT phenomena in the studies are elicited by naming tasks. The natural conversation extends far beyond simply naming a word. Therefore, it would yield fruitful results if we could examine the linguistic production of older adults over a longer period.

Our study seeks to understand how elderly Mandarin speakers manage ToT moments by gathering firsthand data through interviews. Examining longer discourse, we aim to explore the strategies these speakers use when encountering ToT and investigate whether these strategies differ in priority. Through this research, we hope to contribute to a better understanding of how language and cognitive processes interact during ToT, offering insights into both linguistic and psychological aspects of elders' speech retrieval.

2. Literature Review

2.1 Definition of ToT

The Tip-of-the-Tongue (ToT) phenomenon occurs when you know a word but cannot immediately recall it, even though you feel it's just out of reach. This experience is common, and after some time, the word usually comes back to mind. ToT is a normal part of memory function. According to Brown & McNeill (1966), the ToT experience happens when someone cannot remember a word, despite feeling like they know it. In their research, they presented participants with difficult word definitions, which increased the likelihood of experiencing ToT. Dahlgren (1998) suggests that older individuals may experience more ToT moments, not because their memory is declining, but because they know more information. She believes

ToT reflects that the word is stored in memory but is momentarily difficult to retrieve. These ideas highlight that ToT is a common part of memory function, especially as we age.

2.2 ToT in Mandarin Speakers

There are significant differences between Mandarin and English that influence how speakers process language and experience ToT. According to Liu et. al. (2011), Mandarin syllables tend to be simpler but offer fewer distinct options than English syllables, which are more complex. Additionally, Mandarin has many homophones, where a single syllable can have multiple meanings, whereas English syllables are more distinct. These structural differences impact how speakers of each language navigate ToT moments, particularly because Mandarin separates its sound system from the Chinese writing system more distinctly than English does.

2.3 ToT in Older Adults

Older adults tend to experience more frequent ToT moments than younger people. This means they may struggle to recall a word or a name temporarily, even though they know it. As people age, memory retrieval may slow down, making word-finding more difficult. Older adults might need extra cues or context to help retrieve the word. Although this can be frustrating, it is a normal part of aging. Older individuals may employ strategies such as describing the word or using related words to help jog their memory (Shafto, 2007).

3. Method

3.1 Participants

To examine both lexical retrieval and sentence structure, the present study involved 14 participants. Demographic information, including age, gender, and native language, was collected at the outset to explore potential patterns in language phenomena across different groups. All participants were over the age of 50, with four being over 65. The majority of participants identified Taiwanese as their mother tongue.

3.2 Research Design

Unlike most studies that employ specific proper nouns to induce ToT states, we implemented a more flexible approach based on the work of Burke et al. (1991). In this method, participants were asked to describe events from a short film in their own words, without being restricted to a particular vocabulary. A time limit was set to encourage participants to retrieve as much information as possible within a constrained period. This design enabled us to observe both lexical and sentence-level ToT occurrences in a naturalistic narrative task. The task consisted of four video clips, each approximately 3 to 4 minutes long.

3.3 Procedure

Participants provided demographic information (gender, age, native language) to control for factors influencing linguistic performance. They watched a 3 to 4-minute short film and were given one minute to orally recount the plot, aiming for an objective description. The experiment was audio-recorded to analyze ToT instances. After each recall, participants answered five short-answer questions about the film, with cues provided when necessary to distinguish ToT from forgetfulness. This cycle (film viewing, recall, and questions) was repeated four times with new films, allowing short breaks as needed. The total experiment lasted approximately 20 minutes.

3.4 Data Annotation

After data collection, researchers closely observed and documented instances of ToT. The audio recordings of the recall and question-answer tasks were transcribed for detailed analysis. Special attention was given to the strategies employed when participants encountered ToT. The present study identified the following seven types of strategies: (1) Lengthening syllables (2) Adding fillers (3) Adding unnecessary pronouns (4) Pausing (5) Clarification (6) Self-correction (7) Repetition. In the following sections, we will describe each strategy and provide proper examples.

4. Results and Analyses

To analyze the strategies employed by participants during ToT moments, we divided the 14 participants into two groups based on age, using 65 years as the threshold. The younger group consists of participants aged 50 to 65 (n=10), while the older group includes those over 65 years old (n=4). We examined which strategies were used most frequently and whether there were any differences in the strategies prioritized by each age group.

4.1 Definition and examples of the seven strategies in our study

4.1.1 Lengthening syllables (Strategy1/S1)

Lengthening syllables refers to deliberately extending a syllable to give the speaker more time to recall the intended word. It provided time to think and prevented interruptions, as pauses might suggest to the listener that the speaker had finished. For instance:

(1) 它的種子=散播出去；(2) 因為比較靠近水源的=草地

The speakers used lengthening to create the time of the verb and the place they wanted to mention.

4.1.2 Adding fillers (Strategy2/S2)

Adding fillers, like ㄟ or ㄛ, are similar to pausing but involve vocalized sounds that fill gaps in speech. These sounds, while buying time, also occupy cognitive space. For example:

(1) ㄟ因為護士要拿那個電鋸把它鋸掉; (2) 因為他覺得他不太可能....ㄛ一直往前走啊

In these sentences, the speakers used fillers to create time to complete the thought.

4.1.3 Adding unnecessary pronouns (S3)

Participants often used pronouns like 這個 or 那個 to give themselves additional time to recall the intended word. These pronouns indicate that the speaker is thinking of a particular entity. For example:

(1) 拼命要到那個灑水的地方; (2) 沒有那個堅持要活下去的那個毅力

In these sentences, the speakers used the pronoun 那個 to buy time while recalling the words they had in mind.

4.1.4 Pausing /Silent Pause (S4)

Pausing is defined as breaks without filler particles. While pauses are easy to execute, they disrupt the conversational flow, leading to awkwardness if they last too long.

(1) 但是牠..就是想辦法去克服這些困難; (2)然後他的種子是..開了三隻嘛

In the first sentence, the speaker paused to think about the next event he wanted to describe. The pausing after "是" shows the speaker struggled to recall the right verb to complete the thought.

4.1.5 Clarification (S5) & Self-Correction (S6)

Clarification and self-correction both involve adding new information to the sentence, but they differ in purpose. Clarification extends the original information, while self-correction replaces or corrects it. For example:

(1) 一個太陽花..向日葵

Here, the speaker initially used a general term, 太陽花, then clarified it with the more specific term, 向日葵.

(2) 兩個..不對，是三個

In this case, the speaker first gave an incorrect number, paused, and then self-corrected with the accurate number.

4.1.6 Repetition (S7)

Repetition involves repeating words or phrases. Unlike fillers, the repeated words contribute meaning to the sentence. However, repetition can hinder comprehension and does not necessarily help the speaker find the next word. For example:

(1) 第一個人第一個人就把褲管; (2) 一個水...水..水塘

In the first case, the speaker repeated "第一個人" to gain more time to think of the remaining words. Similarly, the speaker repeated "水" while struggling to recall the full word, using both repetition and pauses to finish the sentence.

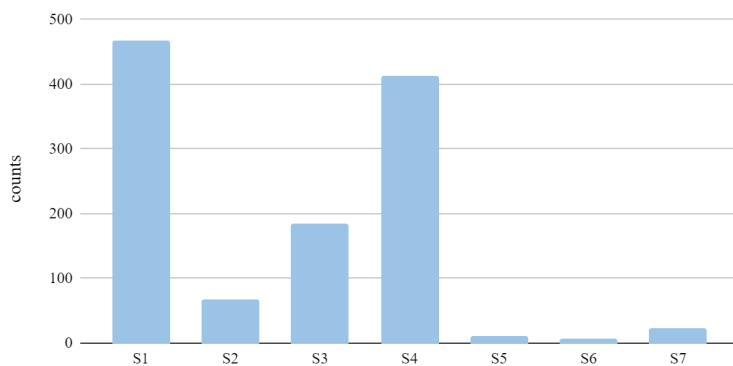## 4.2 Discussion: distribution of the strategies and the cognitive load

Figure1. Distribution of the strategies

According to Levelt's (1989) model of speech production, TOT moments occur at the lexical retrieval stage. When speakers face difficulty accessing a specific word, they employ various disfluency strategies to manage this increased cognitive load, aiming to maintain conversational flow while retrieving the missing word. In Figure 1, we observe that lengthening (S1) is the most frequent strategy, followed by pauses (S4), adding unnecessary pronouns(S3), fillers (S2), repetition (S7), clarification(S5), and finally self-correction (S6). From the perspective of information processing and disfluency strategies, this distribution forms a clear hierarchy, where the more frequently used strategies are those that impose a lower cognitive load.

Lengthening the word, the most frequent strategy is often an unconscious attempt to gain time during word retrieval. According to Levelt (1989), speakers manage speech planning by incrementally producing speech while retrieving the next lexical item. Lengthening words serves as a way to delay further production, allowing more time for retrieval while maintaining the flow of communication.

The second most frequent strategy is using pauses. Pauses are commonly employed when speakers encounter TOT, signaling an increased cognitive load (Hartsuiker & Notebaert, 2010). In this case, the speaker allocates more resources to lexical retrieval, leading to a temporary suspension of speech. This strategy aligns with the view that pauses act as a "replenishing" mechanism for working memory (Clark & Wasow, 1998). Moreover, in our data, we observe that the pauses are generally longer in duration, suggesting that when speakers experience more difficulty processing (i.e., higher cognitive load), they are more likely to use pauses rather than lengthening.

As the cognitive load increases, pauses alone may not be sufficient for the speaker to retrieve the desired word. In such cases, the speaker may introduce an unnecessary pronoun into the sentence. This strategy demonstrates the speaker's effort to maintain sentence cohesion, even when the retrieval process is momentarily stalled (Fox Tree, 2002). It is often more effective than using a filler because a pronoun implies that the speaker has some awareness of the nominal properties of the target word. We also observe that this strategy frequently co-occurs with lengthening or following pauses, serving as a way to gain additional time for word retrieval.

When the cognitive load becomes even greater, particularly when the information involves more than just a simple word (e.g., a specific event or anchored by a particular verb), the speaker may use a filler to buy more time. This strategy typically co-occurs with lengthening, as the syllabic structure of the filler is open (ending with a vowel). Fox Tree (2001) suggests that fillers act as verbal placeholders, allowing speakers to maintain their turn in conversation without abandoning the speech act. Furthermore, fillers help both speakers and listeners manage the conversational flow, providing the speaker with additional time to retrieve the correct word while signaling to listeners that the speaker intends to continue.

Regarding the last three strategies—repetition, clarification, and self-correction—we are unsure which typically comes first, likely due to limitations in the sample size. Nevertheless, it is clear that these three strategies, especially clarification and self-correction, are the least frequently used. Levelt (1989) noted that introducing a new clause into the discourse, such as in clarification attempts, might help the speaker by providing additional contextual information to assist with word retrieval. However, this approach runs the risk of confusing listeners, which is why speakers may prefer to avoid these strategies whenever possible.
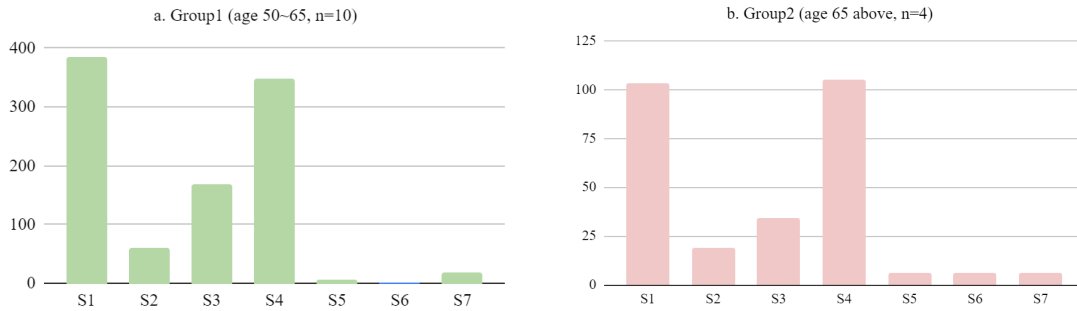
Figure2. Comparison of the distribution of the strategies between two age groups

In Figure 2, we compare the strategies used by two age groups. Although the sample sizes for each group are not perfectly balanced, some notable trends can still be observed. Firstly, the group aged 50 to 65 primarily relies on lengthening words to manage TOT moments. As discussed earlier, this strategy suggests that the information awaiting retrieval imposes a relatively lower cognitive load on the speaker. This indicates that individuals in this age group retain relatively efficient lexical access and working memory, although they may require slightly more time for retrieval as cognitive speed declines with age (Burke et al., 1991).

In contrast, the group aged above 65 tends to use pauses more frequently, doing so as often as they use lengthening. The increased reliance on pauses suggests a greater cognitive load during word retrieval, as pauses typically indicate more significant processing difficulties, as mentioned previously. Pauses allow speakers to allocate more cognitive resources toward word retrieval compared to lengthening, reflecting the age-related decline in processing speed and working memory (Salthouse, 1996). Additionally, the older group shows increased use of clarification and repetition, which may point to more pronounced challenges in lexical retrieval and may act as a compensatory strategy to gather contextual cues or reframe the conversation to assist in the retrieval process (Levelt, 1989).

5. Conclusion

This study examined how elderly Mandarin speakers manage the ToT moments, focusing on two key issues: (1) the overall use and hierarchy of strategies employed during ToT, and (2) potential differences in strategies between two age groups. The findings were insightful. First of all, the strategies formed a hierarchy based on cognitive load, supporting the notion of language universality, indicating that information processing demands may outweigh linguistic differences. Additionally, the hierarchy suggests that noun retrieval is easier than verb retrieval, as verbs are often tied to events. Secondly, speakers aged 50 to 65 primarily relied on lengthening words, indicating a lower cognitive load during word

retrieval. In contrast, those over 65 more frequently used pauses, as well as increased clarification and repetition, reflecting higher cognitive challenges and compensatory strategies for managing word retrieval difficulties.

The present study's limitations include a small sample size and unequal group distribution, which restrict the generalizability of the findings. Future studies should aim to include larger, more balanced samples to confirm these results. Additionally, longer observation periods could offer deeper insights into strategy use over extended discourse. Investigating the neurological basis of ToT in Mandarin speakers and how these strategies might correlate with early neurodegenerative signs would also be valuable. Further research into cultural and language-specific factors influencing ToT phenomena would help enrich our understanding of this cognitive process.

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