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Cognitive load in remote simultaneous interpreting: place name translation in two Mandarin variants

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This study examined the accuracy of place name translation during remote simultaneous interpreting (RSI) when interpreters were required to use a different variant of their native language. Participants, professional English/ Mandarin from mainland China, were divided into two groups: the Taiwan group, using the Taiwanese Mandarin variant, and the control group, using the mainland variant. The source speech consisted of three lists of place names, some of which had the same Chinese translation in both the mainland China Mandarin variant and the Taiwanese Mandarin variant, while others did not. The two groups of participants performed RSI from English into Chinese. The analysis focused on the third item in each list, chosen due to the differences in Chinese translations between the two Mandarin variants. Results showed no significant difference in the number of incorrect translations for the first test item between the two groups. However, significant variations were observed for the second and third test items, potentially linked to progressive mental fatigue and increased cognitive demand faced by the Taiwan group participants. This suggests that using a non-habitual language variant can impact the accuracy of RSI.

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Introduction

The purpose of simultaneous interpreting (SI) is to facilitate communication between speakers and listeners. To achieve this objective, it is essential that interpreters understand their speakers and be understood by their listeners (Wehrmeyer, 2015; Albl-Mikasa, 2023). Languages such as Spanish or Mandarin Chinese have evolved into different varieties, each being used by different speaker groups. In the case of Mandarin Chinese, the Taiwan variety and the mainland variety are mutually comprehensible most of the time. However, these two varieties do differ in terms of phonology, syntax, and the lexicon (Yip and Matthews, 2010).

Because of the differences between the two varieties, Taiwanese interpreters working into Mandarin Chinese exclusively for a mainland audience may have to be extra conscious. This is to ensure that the use of the Taiwanese variant does not hinder listeners' comprehension. The same case applies for mainland interpreters working into Mandarin Chinese for an audience from Taiwan. The impact of this shift of using a different variant on the performance of interpreters is an area worth exploring, especially in light of the increasing accessibility of remote interpreting services.

In certain circumstances, market demands may compel interpreters to work with a variant they do not always use. This study defines an interpreter's habitual variant as the regional variant of a language that the interpreter routinely uses in a professional setting. Interpreters may also be recruited to interpret into a non-habitual variant due to limited interpreter availability and/or conference organizers' budgetary limitations. In the private sector of the interpreting market, interpreters may unexpectedly find themselves asked to interpret into a non-habitual variant before the beginning of an event or in the middle of the event. For instance, certain Mandarin interpreters, who habitually practice in the mainland variant of Mandarin, have been asked to interpret into the Taiwan variant due to an unexpected influx of Taiwanese participants at an event where a large number of mainland participants failed to show up. Sometimes, this situation arises because of organizers' lack of awareness regarding the listeners' language preferences. For example, some Mandarin interpreters have been asked to switch to another variant after listeners demanded that the SI be delivered in their preferred variant, even though organizers had initially specified a certain variant. This can be challenging for interpreters, as they may not have time to prepare.

How having to use non-habitual variants on interpreter performance remains an area with limited available research. SI is a demanding task that requires quick processing and communication of messages in real time. Having to interpret into a non-habitual variant may or may not pose difficulties. By identifying and addressing factors that hinder interpreters' ability to provide accurate and effective interpretation, we can gain a better understanding of the complexities of the SI process and improve the training and professionalization of interpreters.

Lexical access in SI

The relationship between working memory and lexical access in SI is complex and influenced by various internal and external factors. Working memory is the ability to temporarily hold and manipulate information while engaging in other cognitive tasks (Liu et al., 2004; Mellinger and Hanson, 2019), while lexical access is the process of accessing and retrieving words or phrases from long-term memory (Gile, 2009). Both processes play crucial roles in the success of SI. Working memory resources are believed to have limitations in terms of the amount of information they can store and process simultaneously. These resources may be further constrained if additional tasks are also being performed (van Merriënboer and Ayres, 2005). To overcome the increase of cognitive load during SI (Mead, 2015; Cheung, 2023; Pöchhacker and Shlesinger, 2002), one of the strategies interpreters develop is to have automatic lexical access for the quick and accurate retrieval of words from memory (Gile, 2009). Interpreters become adept at employing various tricks of the trade (Bartłomiejczyk, 2010), such as quickly retrieving stock phrases (Jin and Cheung, 2024) and formulaic sentence structures in their habitual variants (Wu et al., 2021). These techniques are internalized through experience and practice (Shlesinger, 2000; Riccardi, 2005).

Accessing lexical units that they do not regularly use may burden interpreters' working memory and reduce the quality of their SI performance. During SI, different sub-tasks, such as listening and speaking, compete for limited cognitive resources. Lexical accessibility is linked to SI performance (Christoffels et al., 2006). Interpreters tend to access active lexical units to minimize their consumption of cognitive resources and avoid errors and omissions in their renditions (Gile, 2009). Therefore, interpreters tend to use simple and high-frequency words (Liu et al., 2023), as such words are more readily accessible than low-frequency words.

The need for conflict resolution may further increase interpreters' cognitive load. Bialystok et al. (2008) suggest that lexical access during speech production is more challenging for bilingual speakers than for monolingual speakers, because bilingual speakers must manage two active languages, while monolingual speakers only work with one. Resolving the conflict between two active languages may require cognitive resources to produce the desired lexical units in one language while inhibiting their equivalents in the other. An additional inhibitory step may be required when an interpreter needs to produce lexical units in a non-habitual variant of their working language. Findings in Kirk et al. (2018) suggest that people who speak two different language variants encounter difficulties when switching between them. Specifically, extra time was required when shifting from one variant to another. This delay could be because they need to consciously inhibit using one variant when their intention is to use different one. When performing SI, the need to inhibit one variant to allow for the production of rendition in a different variant may compete for cognitive resources thereby potentially leading to inaccuracies in the renditions.

Language variants in SI

In order to facilitate communication, interpreters may need to adapt their output based on the actual communication context (McKee and Napier, 2002). Some of these adaptations include modulating registers in the renditions (Martin and Herráez, 2014), toning down speakers' face-threatening utterances (Magnifico and Defrancq, 2016), and simplifying syntax in target language (Aguirre Fernández Bravo, 2022; Ma and Cheung, 2020). Interpreters may also be required to conform to the language norms of their target users to facilitate communication (Dayter, 2021). Language is closely tied to identity (Kung, 2021; Mazak, 2012; Messing, 2007). It can reflect and shape an individual's cultural, social, and personal experiences and play a significant role in how they perceive and interact with the world. This is also true for SI listeners, who may not be able to judge the accuracy of SI and often rely on formal features, such as accents, to determine the quality of SI. Studies show that listeners tend to react negatively when interpreters deviate from the norms of their languages (Cheung, 2022).

The discussion of regional variants in the interpreting literature tends to focus on how regional variants affect interpreters' comprehension of the source language. For instance, Hale (2004)

and Berk-Seligson (1990) suggest that Spanish speakers' use of words with multiple meanings in different variants may confuse interpreters. The use of English as a lingua franca in conferences is becoming very common (Cheung, 2022); however, when speakers use unfamiliar variants of English, interpreters' cognitive load may increase, potentially leading to sub-standard renditions (Ehrensberger-Dow et al. 2020). Therefore, Morell (2011) and Setton and Darwant (2016) stress the need for interpreters to be aware of the variants of their working languages. Likewise, interpreters are advised to avoid abstruse language and idiomatic expressions and to be mindful of the varying language abilities of their listeners when interpreting into English for relay (Shlesinger, 2010).

The task of interpreting into a language variant that differs from an interpreter's usual variant is not widely studied to date. This is likely due to the sensitivity of the topic. For instance, consider the challenges faced by a European French interpreter attempting to establish themselves in the Quebec French interpreting market, or vice versa. Furthermore, the rise of online conferences and remote SI has increased the need for all stakeholders to be aware of different language variants because conference attendees may come from very diverse language backgrounds. Interpreters may be recruited from regions that differ from the audience's location to interpret into a variant that is not their habitual one. This highlights the importance of further research in this area.

Studies of language variants and SI have both professional and theoretical implications. Many languages, such as Arabic, Chinese, English, French, German, Korean, Portuguese, Spanish, and Russian, have multiple variants. The International Association of Conference Interpreters (AIIC) is a professional organization whose membership comprises more than 3,000 conference interpreters from around the world. While the AIIC directory (https://aiic.org/site/dir/interpreters) indicates its members' language combinations, information about language variants is lacking. For example, AIIC directory makes no distinction between Brazilian Portuguese and European Portuguese, even though the two have lexical, lexical-syntactic and morpho-syntactic differences (Móia and Alves, 2004). Without this information, interpreters might be recruited to interpret into variants that differ from those expected by SI users.

The theoretical significance of this study lies in the observation that although the factors affecting the performance of SI are considered in existing literature, few studies focus on how interpreting into a different variant of the same language may affect interpreters' performance. Most studies addressing the factors affecting interpreters' performance adhere to the dichotomy between native and non-native languages and tend to have participants interpret into their native languages (e.g., Korpal and Stachowiak-Szymczak, 2020; Defrancq and Fantinuoli, 2021; Cheung, 2023). Results of this study provide valuable insights into the complexities and challenges faced by interpreters when having to interpret into a non-habitual variant.

Place names

Conference speakers use place names to refer to specific locations. However, mistranslation or the use of a different translation that is unfamiliar to listeners may lead to confusion or misunderstanding. Foreign place names are common at multilingual conferences that require SI (Cheung, 2019), therefore, special emphasis has been placed on the training of place names for Chinese interpreters (Yang, 2002). Kumar (2017) reports anecdotally on the difficulties that trainee interpreters experience with place names. Chmiel et al. (2020) present one of the few empirical studies that investigates the difficulties caused by place names, among other problems that can arise. They suggest that the difficulties with names may be attributable to their non-contextualized nature (Nicholson, 1990). Place names are sufficiently challenging that they are often included in interpreters' bilingual glossaries when preparing for assignments (Jiang, 2013). Specific training in the translation of names has also been developed to help trainee interpreters cope with the potential challenges associated with names (Kuwahata, 2005).

Research into accuracy in SI is crucial to the understanding of the cognitive aspects of interpreting and has significant implications for the teaching and practice of interpreting. However, assessing accuracy could be problematic because of personal opinions of assessors. Both numbers and place names offer the particular benefits of being "sufficiently specific and objective" (Chmiel and Spinolo, 2022: 265) when assessing accuracy. Gile (2009) identifies both numbers and names in the source language as "problem triggers" (p. 171) that may increase interpreters' cognitive load, leading to errors and omissions in their renditions (Braun and Claric, 1996; Cheung, 2008; 2009; 2014; Korpal and Stachowiak-Szymczak, 2020; Song and Cheung, 2019) studied the challenges of numbers in SI. While Meyer (2008) explored the difficulties of interpreting place names in SI using corpus and survey methodologies, the literature currently lacks experimental studies on this particular topic.

Few studies address the issue of place names as a problem trigger in SI, because most place names are translated into different languages phonetically (Petitta et al., 2008). Interpreters can usually cope with phonetically similar translated place names without difficulty, by transcoding or mimicking the sound of the place name in the target language (Seleskovitch and Lederer, 1984; Pöchhacker, 2004). However, the transcoding approach may be unsuccessful when the name in the target language is phonetically different from the source language. A case in point in the difference between the English exonym "Greece" and the Chinese endonym-based name "xi-la" may pose a challenge for interpreters during SI from English to Chinese. This is because the English name does not phonetically resemble the Chinese one. Likewise, Japanese place names written in *kanji* (Japanese writing system adapted from Chinese characters) are often pronounced differently in Japanese and Chinese. The word "Hiroshima," referring to the Japanese city destroyed by an atomic bomb at the end of World War II, has four syllables in Japanese, whereas its Chinese equivalent, "Guang-dao", has only two syllables and does not reflect the Japanese pronunciation. Interpreters who rely solely on oral input may find it challenging to interpret these phonetically very different names into Chinese.

Tackling lists of foreign place names would be even more challenging. Lists are a common feature in oral presentations and could be challenging to conference interpreters (Yamada, 2019), who must interpret these presentations into another language under time pressure. Speakers use lists to "strengthen, underline, and amplify almost any kind of message" (Atkinson, 1984: 60). For instance, in a business conference, a speaker may mention a list of key markets in which their company is active. Alternatively, at intergovernmental conferences, speakers might list countries that have achieved certain agreed-upon goals and urge a different group of countries to strive towards the same objective.

The ways in which interpreters handle lists have not been extensively studied. Similar to numbers, lists can present difficulties due to their low redundancy and low predictability, which may hinder interpreters' allocation of cognitive resources. Therefore, lists, along with names and numbers, can pose major challenges for interpreters (Jones, 2002; Gile, 2009). Some interpreters handle lists strategically by omitting certain items, just as they may handle numbers by omission or approximation. Lists of place names may therefore be very challenging for interpreters

during the SI process. Forte (2012) suggests that training materials for interpreters should include lists of place names. Lists of place names were incorporated into the design of the present experiment.

Mandarin variants

Mandarin is a spoken lingua franca among most Chinese speakers. China has six non-Mandarin Sinitic languages that are mutually incomprehensible; they are officially labeled as dialects. However, speakers of Mandarin and non-Mandarin Sinitic languages share the written Chinese language. To overcome issues arising from incomprehensibility among speakers of these dialects, Mandarin was designated as the spoken lingua franca more than 100 years ago.

Mandarin has multiple variants, such as mainland Chinese Mandarin (mainland Mandarin), Taiwanese Mandarin, Hong Kong Mandarin, and Singaporean Mandarin (Lin et al., 2019). Mainland Mandarin and Taiwanese Mandarin are the two most widely used variants of the Chinese language (Huang et al., 2014). While speakers of either variant of Mandarin may understand each other effortlessly, the two variants differ in some lexical expressions. Therefore, to facilitate communication, some multilingual conferences offer SI by two Mandarin booths, one mainland variant the other Taiwan.

One of the lexical differences between mainland Mandarin and Taiwanese Mandarin is the way in which some foreign names are translated into Chinese. Due to sociopolitical differences, the two Mandarin variants differ in their translation of certain names of foreign individuals, such as entertainers and politicians, and places, such as countries and cities. Most interpreters are familiar with the Chinese translations of these names in either variant, but may not both.

Some translated foreign place names may be less challenging for interpreters when interpreting into a non-habitual variant, while some can be very problematic. Most names of foreign places are represented in Mandarin Chinese by means of transliteration, using a string of Chinese characters to represent the sounds in the original names (Luo, 1992). Many foreign places have identical translations in Taiwanese and mainland Mandarin, using the same characters or homonyms. For instance, the Chinese translations of place names such as "the United Kingdom" and "the United States" are the same in Taiwanese and mainland Mandarin. In some cases, however, the Taiwanese and mainland Mandarin variants use different characters with similar pronunciation to represent the same place. Because homonyms are very common in Mandarin, these lexically different translated names may sound very similar in the two variants. For instance, Chinese translations of the country name "Italy" differ lexically between the Taiwanese and mainland Mandarin variants but are very similar phonologically. In this case, it may not be difficult for interpreters to interpret the place name "Italy" into a non-habitual variant because the two versions sound the same.

The approach to translating some place names may differ between the mainland Mandarin and Taiwanese variants. For instance, mainland Mandarin adopts the translation approach to represent "Montenegro" in Chinese, using two characters: the first means "black" and the second "mountain." In contrast, Taiwanese Mandarin adopts the transliteration approach, using a set of five Chinese characters to mimic the pronunciation of the word "Montenegro." For an interpreter of one Mandarin variant to correctly translate place names such as these into a non-habitual variant, additional mental resources may be required.

Participants

All the participants were hired by a translation agency in mainland China. The experiment was open to professional Chinese/English interpreters based in mainland China. Potential participants were told that the experiment would focus on the accuracy of RSI. A total of 67 professional English/Chinese conference interpreters were recruited and participated in the experiment. However, due to technical issues or withdrawals after the experiment, only 52 recordings were analyzed. All participants satisfied the following inclusion criteria.

- Native speakers of mainland Mandarin;
- Born in mainland China;
- Completed primary, secondary and undergraduate education in mainland China and in Mandarin Chinese;
- Experience with RSI; and
- Physically present in Mainland China at the time of the experiment.

Table 1 Number and genders of participants.

	Taiwan	Control
Male	6	4
Female	19	23
Total	25	27

Table 2 Years of professional experience.

	Taiwan	Control
Below 10 years	22	25
Above 10 years	3	2
Total	23	27

As shown in Table 1, the participants were divided into two groups: a Taiwan group and a control group. The Taiwan group was instructed to use the Chinese translations of place names customary in Taiwanese Mandarin. The control group received no specific instructions. Monetary remuneration was provided to all participants, including those who withdrew their consent after the end of the experiment.

Table 2 shows the experience of the participants, most of whom had fewer than 10 years of professional experience.

Experimental materials

The experimental materials were based on an authentic presentation on the role of the private sector in achieving the United Nations' Sustainable Development Goals. The original presentation was part of an online event organized by a professional institute in Hong Kong for its members in November 2021. The organizer hired an English/Cantonese interpreter to perform RSI for the event and did not provide them with any preparatory materials. The speaker's slides showed maps accompanied by very little text. A similar PowerPoint file was created for the experiment. The researcher obtained and transcribed an audio recording of the original presentation in English and based the experimental materials on its transcription. To create the experimental material, an English-speaking Singaporean male delivered a 30-minute presentation on camera with an external microphone in a university studio. The average speaking speed of the presentation was 108 words per minute.

The experimental materials contained three lists of foreign place names. The original speech also contained similar lists of place names, these lists were edited to be more or less distant in the experimental materials. Table 3 shows the three lists of place names used for analysis and the time point at which each list was introduced in the presentation.

Each list contained three items as list constructions commonly found in oral speeches typically contain three items (Atkinson, 1984; Abdel-Hafiz Hussein, 2020). The third item in each list was the test item for that list. The first two items of each list were place names that had the same translations in both Mandarin variants. Meanwhile, the translations of the three test items differed lexically and phonologically between the two variants. Because of these differences, it was easy to determine audibly whether the participants' translations of the names corresponded to their designated target variants. Test items were not checked for frequency in a reference corpus, and such frequency can influence interpreters' familiarity with place names. However, because participants in both groups received a bilingual glossary prior to the experiment, which contained the Chinese translation of all test items in their designated variants. The glossary would have helped familiarize the participants with the place names they would be interpreting, potentially offsetting effects caused by not checking the frequency of these names in a reference corpus. Table 4 shows the Chinese translations of the three test items in the two variants.

Procedure

The experiment took place in July 2022. The participants received an email confirming their participation and group assignment a day before the experiment. The email included a bilingual glossary of 20 place names, including the nine place names from the three lists in the experimental material. The email stated that the speaker might mention places from the glossary during the experiment and that they should be interpreted as accurately and completely as possible. The Taiwan group received a glossary with translated place names customary in Taiwan, while the control group received a glossary with translations commonly used in mainland China. In the glossary, the place names were arranged alphabetically for ease of use, and the Chinese translated place names were written in simplified Chinese characters for both groups. No other preparatory materials were provided to the participants before the experiment.

The experiment was conducted online using a professional RSI platform and the participants were required to log in to the RSI platform one hour before the scheduled start of the recording. Two technicians were responsible for system and sound checks before the experiment, as well as collecting the RSI recordings. The participants accessed the RSI platform using their personal computers and Internet connections and performed a system test prior to the recording. During the RSI, the participants had both visual and auditory access to the presentation. Upon completion of the RSI, the technicians saved the Mandarin interpretations as MP3 files and sent them to the researcher for analysis.

Table 3 Three lists of place names.

List	Time points	Lists of place names
1	05′11″	"…South Africa, Sudan and Côte d'Ivoire…"
2	13′48″	"…Kosovo, Serbia and Montenegro …"
3	23′33″	"…Cambodia, Myanmar and Laos…"

The MP3 files were transcribed using the services of iFlyTek, a Chinese company that specializes in voice recognition software and services. Two research assistants manually verified the accuracy of the transcriptions against the audio recordings, with a focus on the three test items.

Results

This study examined the accuracy of the participants' translations of three specific place names into the variants that corresponded to their respective groups. All translations that differed from the designated variants were considered incorrect. As a result, translations by participants in the Taiwan group using the correct translation in the mainland Chinese variant and those by participants in the control group using the correct translation in the Taiwanese variant were marked as incorrect. Other instances of incorrect translation included mispronunciations, the use of source language names, omissions, and substitutions (e.g., substituting a test item with "and a neighboring country"). However, incorrect translations that were subsequently altered by their interpreters to the correct variant were considered correct. The sequential order of the place names in the translated lists was not considered in the analysis.

As shown in Table 5, there was a significant difference in the number of incorrect renderings between the two groups for "Montenegro" and "Laos," but not for "Côte d'Ivoire." An independent t-test was conducted to compare the incorrect renderings of the three test items between the two groups. For "Côte d'Ivoire," there was no significant difference between the Taiwan group ($M = 0.88$, $SD = 0.33$) and the control group ($M = 0.96$, $SD = 0.19$) ($t(50) = -1.11$, $p = 0.14$). For "Montenegro," there was a significant difference between the two groups (Taiwan group: $M = 0.20$, $SD = 0.41$; control group: $M = 0.74$, $SD = 0.45$; $\mathbf{t}(50) = -4.55$, $p < 0.001$). For "Laos," there was again a significant difference between the two groups (Taiwan group: $M = 0.08$, $SD = 0.28$; control group: $M = 0.56$, $SD = 0.51$; $t(50) = -4.15$, $p < 0.001$). Figure 1 is a graphical representation of the number of incorrect translations of the three items between the two groups.

Discussion

For both groups, there was an overall increase in the number of errors in interpreting the place names over time, which was attributable partly to fatigue or reduced interest (Dillinger, 1994; Moser-Mercer et al., 1998). The experiment's results showed that while there was no significant difference between the groups for the first test item, there were significant differences for the second and third test items suggesting that the challenges of place names in SI may not be straightforward.

Approximately 5 min after the beginning of the experiment, the participants encountered the first list of place names, with "Côte d'Ivoire" as the test item. The lack of a significant difference for this test item between the two groups suggests that having to use a non-habitual variant at this point did not lead to significantly more or fewer errors in the Taiwan group than in the control group. The participants in the Taiwan group may have paid more attention to this particular test item as they were made aware of the differences in translation from the glossary they

Table 4 Chinese translation of test items in two variants.

Test item	Place names	Taiwan variant (Romanization in Mandarin)	Mainland China variant (Romanization in Mandarin)
1	Côte d'Ivoire	象牙海岸 (xiang-ya hai-an)	科特迪瓦 (ke-te-di-wa)
2	Montenegro	蒙特內哥羅(meng-te-nei-ge-luo)	黑山 (hei-shan)
3	Laos	寮國 (liao-guo)	老撾 (lao-wo)

received. However, the results for the other two test items yielded different insights.

The two groups differed significantly for both the second and third test items. At the mid-point of the experiment, the participants were presented with the second list, containing "Montenegro" as the test item. After working for over 20 min, they encountered "Laos" as the third test item. The Taiwan group made significantly more errors than the control group did for these two test items, suggesting that the translation of place names into a non-habitual variant became more challenging over time. Fatigue can reduce the availability of the cognitive resources required to maintain optimal performance in various cognitive tasks (Díaz-García et al., 2022). It is also possible that the use of a non-habitual variant made the task more difficult and increased the interpreters' fatigue, resulting in a larger number of incorrect translations. Moreover, the increased attention needed for the Taiwan group to inhibit the use of place names in their habitual variant might have created a sudden surge in the demand for cognitive resources, which had become depleted. To corroborate this point, data measuring interpreters' real-time cognitive loads would be needed.

The trade-off between fluency and accuracy is a critical consideration for some participants. While it is essential to render messages as completely and accurately as possible, professional interpreters often employ techniques such as compression, summarization, and omission to navigate the inherent challenges of SI (Russo, 1989; Shlesinger, 1995; Bartłomiejczyk, 2006; Barranco-Droege, 2015; Liu et al., 2023). These strategies help maintain the continuity and integrity of the interpreting task, especially when faced with difficulties. It is plausible that certain Taiwan group participants opted for an approach of "anything close enough to the target, without internally scrutinizing it too critically" (de Bot, 2000: 77) when having to translate place names into a non-habitual variant. Given their potentially limited attentional resources, this pragmatic choice could reduce an interpreter's cognitive load and enhance the likelihood of producing a fluent rendition (Song and Cheung, 2019). Conducting a post-task survey to explore how participants made decisions regarding the translation of place names may provide valuable insights into their motivation.

Table 5 Experiment results.

		Taiwan ($n = 25$)		Control ($n = 27$)	
Time points	**Place names**	**Correct**	**Incorrect**	**Correct**	**Incorrect**
05′11″	Côte d'Ivoire	22	3	26	1
13′48″	Montenegro	5	20	20	7
23′33″	Laos	2	23	15	12

Conclusion

This study is among the few to investigate experimentally how the use of a non-habitual language variant may impact interpreters' performance. This study's findings have both theoretical and practical implications. Theoretically, it included the concept of non-habitual language variants in the discussions about accuracy in RSI. By comparing performance in the translation of three place names at three different time points of a RSI task between two groups of participants, this study provides a more detailed understanding of how the use of a non-habitual variant and fatigue can affect the accuracy of place name translation. Practically, these findings can inform the professional development and training of conference interpreters by considering language variants in recruitment and training.

There are a few limitations of this study. First, this study lacks physiological measures to correlate with cognitive load and fatigue. Due to COVID-19 travel restrictions, the interpreters could not take part in the experiment in person. If the experiment had been conducted in person, physiological data could have been collected to provide insights into the cognitive processes involved in interpreting by identifying sources of cognitive load and exploring how the participants allocated their attention during the interpreting task. However, conducting the experiment remotely allowed for the recruitment of a larger number of participants from different parts of mainland China, saving time and resources. Additionally, the use of the RSI approach probably allowed for a more ecologically valid setting, as RSI continues to be used post-COVID-19 (Li and Cheung, 2023). Second, future studies could check test items for frequency in a reference corpus. Because frequency can influence participants' familiarity, which could potentially impact the accuracy Third, this study lacks a post-task survey, making it challenging to determine the reasons behind how participants handled specific test items. Finally, the study could have benefited from a larger participant pool, which would have enhanced the statistical validity of the research and potentially led to more definitive conclusions The number of participants could also be increased in future studies.

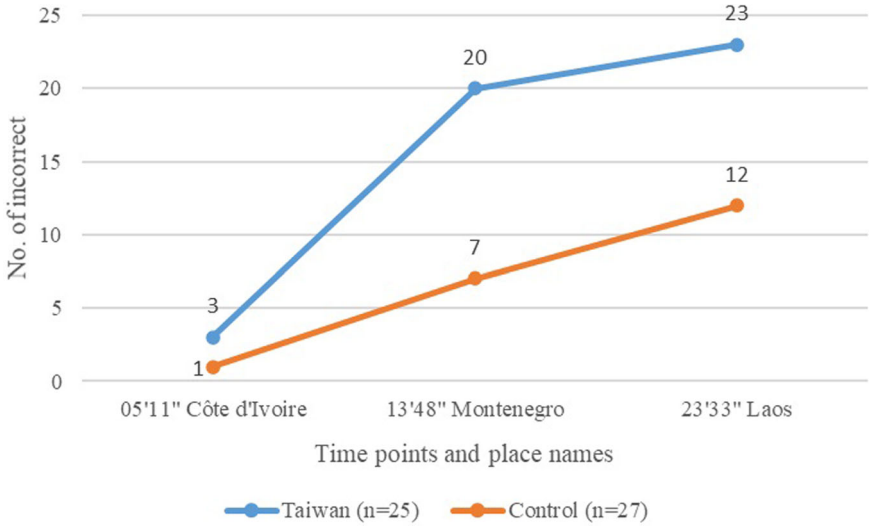

Fig. 1 Number of incorrect translations between Taiwan and Control groups.

The generalizability of this study may be limited due to the unique characteristics of the Chinese language, where different variants exhibit variations in the translation of foreign place names. Future research should involve languages with similar complexities to provide a more comprehensive understanding of the impact of having to use non-habitual variants on the performance of SI. For instance, interpreters working with English, a lingua franca in many international conferences, may therefore face a broader range of challenges related to language variants either as a source language feature or as a target language requirement. To enhance generalizability, future research should examine the link between different English variants and interpreters' performance. Additionally, interpreters and professional organizations that represent them could consider specifying language variants, especially for languages with multiple variants that differ lexically. This could help improve SI performance by reducing the cognitive load associated with using non-habitual variants and by allowing interpreters to specialize in a particular variant or multiple variants. Specifying an interpreter's language variants may advance the professionalization of interpreter training and the practice of interpreting by establishing clear standards for and expectations of language proficiency and interpreting skills.

Data availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Competing interests
The author declares no competing interests.

Ethical approval
The data was collected by a third-party translation company that this data available to other research projects that request access, following their own data sharing policies. All participants provided informed consent to participate in the study. The authors received the data directly from the translation company.

Informed consent
All participants were adult professional interpreters who signed and returned a consent form to the recruiting translation agency. They were fully informed about their roles and understood that their simultaneous interpretations would be recorded and evaluated. The form also permitted the use of their anonymized interpretations for non-commercial purposes. Participants were given the right to withdraw their consent and prevent the use of their interpretations after the engagement.

Additional information
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