Computer-Assisted Consecutive Interpreting and Its Impact on Student Interpreters: An Empirical Study Using iFLYTEK Hearing

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Abstract: With the rapid advancement of artificial intelligence technology, the application of Computer-Assisted Interpretation (CAI) in the field of Consecutive Interpretation (CI) has become increasingly prevalent. Existing research predominantly focuses on the synergistic effects of AI tools and professional interpreters in Simultaneous Interpretation (SI) scenarios, while the efficacy of CAI for student interpreters in CI tasks remains underexplored. This study employs empirical analysis to address two core questions: (1) What impact does CAI have on the interpreting quality of student interpreters in CI? (2) What underlying factors mediate this impact?

Adopting a controlled experimental design, the study recruited 11 third- and fourth-year English majors (all with less than 12 months of interpreting training) as participants. Each participant performed two interpreting tasks of comparable theme, length, and difficulty, with the variable being "use or non-use of CAI tools." Quantitative and qualitative analyses were conducted using iFlytek Hearing for real-time transcription and ERNIE Bot for quality evaluation assistance. Questionnaires and semi-structured interviews were utilized to measure and collect participants' experiential feedback. Data were analyzed using SPSS software, yielding the following conclusions: Findings suggest that while CAI did not significantly improve overall interpreting quality, it partially supported memory and accuracy. However, cognitive overload and interpreter anxiety limited its effectiveness. These results provide empirical evidence for refining CAI integration in interpreter training. However, this experiment, with no training exposure and a rather small sample size, is more of an exploratory study.

Key Words: consecutive interpretation; English-Chinese interpretation; computer-assisted interpretation; interpretation technology

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1. Introduction

1.1. Background of the Study

The rapid development of Artificial Intelligence has promoted the advancement of Computer-assisted Translation, CAT, which is developed based on linguistics, mathematics, and computer science. The deep-learning ability has enabled CAT to deliver translation with better coherence and structure. As computer software conducts well-delivered translation, high-quality interpretation is output by neural-machine software, including Microsoft Translator, IFLYTEK, Otter, etc. Computer-assisted interpretation (CAI) has followed up and consequently raised a few questions about whether interpreters will all be replaced by machines.

At the current stage, modern CAI systems mainly combine speech recognition and machine translation to create an efficient workflow. For instance, iFLYTEK's platform provides real-time transcriptions, allowing interpreters to verify the materials to be interpreted (Sun et al., 2021).

As for the industry applications and training, CAI is increasingly adopted in remote interpreting and conference settings. In pedagogy, CAI training programs emphasize dual skill development, strengthening traditional competencies (e.g., listening, note-taking) while cultivating technological adaptability.

Thus, human interpreters must be aware of and learn the technology of CAI to achieve human-machine coupling, which might eventually improve their quality and efficiency. Therefore, CAI is drawing attention from interpreters and relevant academics.

1.2. Research Objective and Theoretical Framework

This research has identified two primary limited fields of current studies:

First, most of the existing studies have primarily focused on the effect of CAI applied in SI settings. CAI application in CI, which is a foundational skill and more widely learned during undergraduate education, has been largely overlooked.

Second, the majority of experiments are conducted among advanced or professional interpreters, with a noted vacancy in studies involving student interpreters. There is a significant research gap concerning how less experienced, undergraduate-level student interpreters engage with and benefit from CAI tools in the context of CI. The research gap will be further elaborated in 2. Literature Review.

Therefore, the primary objective of this research is to investigate the impact of CAI on student interpreters' performance and cognitive processing during CI tasks. The theory of cognitive load and the interpreting rating scale were introduced for theoretical support.

1.3. Significance and Contribution

Theoretically, by focusing on the application of CAI in the CI context and by student interpreters, which is a domain and subject group currently lacking extensive research, this study explored the underdeveloped subject of interpreting study and provided a data foundation for applying CAI in the teaching of interpretation during undergraduate education. By adopting CLT, the study will offer certain insights into how technology cognitively influences student interpreters when using CAI.

Practically, as CAI is gaining more advancement, low-level student interpreters are at risk of being replaced by machine translation, especially in simple and standardized translation tasks, while high-level interpreters remain irreplaceable in complex and formal settings, as machine translation is still unable to manage sophisticated language environments and unexpected situations (Yang et al., 2019). But the advancing trend of CAI technology cannot be doubted, which indicates that it is of great importance for interpreters to empower themselves with CAI techniques. This research may provide certain assistance in using CAI for CI tasks.

This research is likely to have a positive influence on the teaching and training of CI during the period of undergraduate study. As CAI is more widely used in teaching and training, this research's conclusions can provide guidance and promote its use during undergraduate CI studies.

2. Literature Review

This chapter provides a focused review of the differing effects of Computer-Assisted Interpretation (CAI) on various interpreting modes, specifically highlighting the disparity in research attention between its influence on Simultaneous Interpreting (SI) and Consecutive Interpreting (CI). Extensive research has explored CAI's role in SI, investigating its potential to enhance performance, mitigate cognitive load, and improve accuracy. However, empirical studies focusing on CAI's application in CI remain comparatively scant. Therefore, this review aims to systematically identify the existing research gap concerning the effects of CAI on CI, while also elucidating the established dimensions and influencing factors of interpreting quality.

2.1. The Impact of Computer-Assisted Interpretation (CAI) on Interpretation
The Positive Impact of CAI on Interpretation

The impact of computer-aided software is comprehensive and profound, relating to factors including types of interpretation tasks (e.g., simultaneous interpretation and consecutive interpretation), target and source languages (e.g., E-C or C-E), and the level of participants, etc. Therefore, in research related to CAI, the variations in the research model could greatly influence the conclusion. Using TED talks with subtitles as tasks for SI, a study concluded that there is "a significant enhancement in the trainees' performance within the video condition compared to areas of fidelity and delivery.

However, no statistically significant distinction emerged in the language criterion between the two conditions." (Shang, Xie, 2024:12).

Chen and Kruger mainly studied the integration of AI technologies such as ASR, automatic speech recognition, and MT, machine translation. They have discovered that CAI can improve the efficiency and accuracy of interpreters (2024).

The potential of machine-assisted translation to reshape the interpreting process has been a central theme, with studies exploring its effects on cognitive load, accuracy, and overall interpreting quality (Fantinuoli, 2023). Defrancq et al. (2021) assessed the impact of ASR on number rendition in simultaneous interpreting, highlighting the technology's role in reducing errors and improving interpreter performance. Another study that aimed to develop a CAI tool called InterpretSIMPLE concluded that CAI systems can significantly enhance the interpreters' workflow, especially in handling technical terminology and numerical data, marking a significant advancement in the field of computer-aided interpreting (Lyu et al., 2024). Also, CAI increased the fidelity of interpreters in SI and reduced note-taking anxiety as well as listening anxiety (Lyu Yifan, 2023). Another research studied the influence of computer-assisted software in the preparation period of interpretation and came to the conclusion that it can be a valuable addition to traditional preparation methods for interpreters. It allows for the creation of specialized corpora, terminology extraction, and dynamic exploration of texts, which can improve the quality of preparation and, consequently, the interpreting performance (Fantinuoli, 2017).

Limitations and Mixed Findings of CAI Impact

On the contrary, CAI also has certain limitations. Research on the impact of CAI on SI has a rather negative conclusion, suggesting that Simulated machine-assisted functions did not significantly enhance the output quality of simultaneous interpreters, which may be related to the cognitive load of interpreters. The practical application effects of machine-assisted functions in interpretation are not obvious (Xiao Luanyi & Wang Yanyan, 2020). AI assistance may distract interpreters and affect their understanding of the source language's logical structure, especially in the demanding context of simultaneous interpretation (Sun et al., 2021).

The current research in CAI has mainly focused on its effect on SI, while research in CACI (Computer-Aided-Consecutive-Interpreting) is comparatively rare. One research in CACI has experimented to compare the effect in CACI of different workflows, which concluded that the reduction in cognitive load was only observed in the L1–L2 direction. "While CACI demonstrated high respeaking quality, notably in L1, and a positive correlation between respeaking quality and interpreting quality, challenges associated with L2 respeaking and their detrimental impact on cognitive load and quality require further exploration in future training and research. (Chen, Kruger, 2024: 394)"

2.2. Interpreting Quality

Interpreting Quality Bands

Interpreting quality is multifaceted, containing multiple dimensions. According to Chao Han, the assessment of interpreting quality can be rated in three dimensions: information completeness, delivery quality, and target language quality. He examines the utility of analytic rating scales in assessing English-to-Chinese bidirectional interpreting. The study finds that the rating scales generally functioned appropriately over time (2017). Such a rating scale of interpreting quality is well accepted and applied. Cai Xiaohong and Fang Fanquan have summarized the dimensions of interpreting quality, listing credibility, acceptability, simplicity, variety (refers to the ability to adapt to different accents and subjects, etc.), agility, and techniques (2003).

Factors Influencing Interpreting Quality

In research conducted by Lyu et al., the language choice of notetaking and shortcomings of notetaking, including the lack of main messages, inconsistency of abbreviations, logic ambivalence, numbers and their implications, and inadequate records of high-density information, can directly influence the quality of interpreting (2023). Memory training is also a key factor, according to Zhang Wei and Yu Dewei, which plays a positive role in improving interpreting performance (2018). Conducted 19 tests, Dong Yanping et al. concluded that psychological competence can mediate student interpreters' performance. Such psychological factors contain interpreting anxiety, which is the only element that correlates with both E-C and C-E interpretation, English and Chinese span (2013). The importance of interpreting anxiety is also stressed by Li Qing and Li Yue, who conducted the research under the guidance of the effort model, and concluded that the high density of information, fast speed of materials, digit contents, poor interpreting environment and equipment, and strong accent all might strengthen the anxiety of student interpreters, therefore influencing their performance (2024).

In the realm of interpreter education and practice, conference interpreting anxiety has emerged as a pivotal psychological phenomenon that spans from the receipt of an interpreting task to its completion. This phenomenon is characterized by a spectrum of emotional responses, which can be categorized into pre-interpreting, mid-interpreting, and post-interpreting anxiety. Pre-interpreting anxiety often stems from a lack of familiarity with the subject matter or self-doubt regarding one's interpreting abilities, while mid-interpreting anxiety is influenced by the difficulty of the material, personal well-being, and environmental factors. Post-interpreting anxiety, on the other hand, is a consequence of dissatisfaction with one's performance.

The manifestation of conference interpreting anxiety is multifaceted and can significantly impede the learning process and professional development of interpreters. According to a study by Lin Zhongjing (Lin, 2021), the primary research directions in China have been the design of anxiety scales, the causes and impact of interpreting anxiety, and the proposal of theoretical measures to address it. However, the study also highlighted the lack of innovation in empirical research and the

need for more interdisciplinary studies to address the complex nature of conference interpreting anxiety.

Lyu Yifan's empirical study (2023) delved into the impact of CAI tools on student interpreters' anxiety levels and interpreting performance. The results indicated that while CAI tools can alleviate certain aspects of anxiety, such as listening and memorizing, they also introduce new challenges, including delays in transcription and the risk of literal translation. This study underscores the importance of human-computer interaction in interpreter training and the need for further research on the reliability and improvement of CAI tools.

Another research analyzed (Zhao Jiana, 2021) from the cognitive psychology perspective further explores the definition, symptoms, and causes of CIA. It suggests that factors such as biological, personality, environmental, and mental elements contribute to the development of anxiety in interpreters. The study emphasizes the need for a multifaceted approach to address CIA, including the adoption of various teaching methods, the integration of current affairs in teaching materials, and the creation of an emotionally supportive learning environment.

In summary, the literature on conference interpreting anxiety reveals a complex interplay between psychological factors and the cognitive demands of interpreting tasks. Future research should focus on refining CAI tools, exploring the bidirectional relationship between interpreting quality and anxiety, and developing tailored interventions to enhance the professional readiness of interpreters.

2.3. Cognitive Load in Interpreting

Cognitive Load Theory (CLT), initially proposed by Australian psychologist John Sweller in 1998, is a highly influential framework. The theory is fundamentally based on the distinction between the limited capacity and duration of the human working memory and the virtually unlimited capacity of the long-term memory. According to CLT, information stored in long-term memory is structured as cognitive schemas, which are richly meaningful units. When these schemas are processed in working memory, they are treated as manageable chunks of information, and when they become automated through practice, they can drive behavior without requiring significant working memory resources, thereby freeing up cognitive capacity.

According to Pass et al., cognitive load is conceptualized as a multi-dimensional structure, including mental load, mental effort, and performance (2003).

CLT is particularly relevant in the study of new modes of practice, such as technology-assisted simultaneous interpreting (SI), which utilizes real-time speech recognition for source text subtitles and machine translation for target text subtitles (Su and Li 2024). Studies focusing on this new model have demonstrated that technical assistance can significantly reduce the cognitive load for student interpreters, which in turn leads to improved translation quality. For instance, one study found that technology-assisted SI reduced students' cognitive load more effectively in the English-to-Chinese

(L1-target) direction (Su 2025). However, the benefit of technology in reducing cognitive load is less pronounced for professional interpreters compared to student interpreters, a phenomenon sometimes attributed to the "ceiling effect" (Su and Li 2024).

2.4. Justification for the Study

Despite the profound and wide-ranging impact of CAI on interpreting, a significant research gap persists in the understanding of its specific effects on Consecutive Interpreting (CI). Existing literature has overwhelmingly concentrated on CAI's role in SI, yielding mixed results. While some studies suggest CAI enhances SI performance by increasing fidelity and reducing anxiety (Shang & Xie, 2024; Lyu Yifan, 2023) , others indicate that the practical effects of machine-assisted functions in SI are negligible and may even distract interpreters (Xiao Luanyi & Wang Yanyan, 2020; Sun et al., 2021).

In contrast, research into Computer-Aided Consecutive Interpretation (CACI) is notably scarce. The limited existing CACI studies, such as the experiment by Chen and Kruger (2024), which compared different CACI workflows, have only suggested a potential for cognitive load reduction and have highlighted the need for repetitive and extensive research before definitive conclusions can be drawn.

Moreover, the inherent challenges of CI—including conflicts in energy allocation among listening, note-taking, and interpreting, as well as difficulties in note-taking comprehension and decoding—have been identified (Yang Haofei, 2015; Xiao Li, 2018). Crucially, the potential role of CAI in mitigating these specific CI difficulties has not been adequately investigated. Although emerging technologies, such as voice transcript applications like Otter, show promise in addressing note-taking and listening challenges in CI, their integration and overall impact within a formal CAI framework remain fundamentally unexplored.

Therefore, a critical research gap exists in fully understanding the effects of CAI on consecutive interpretation, particularly its capacity to alleviate CI-related difficulties and enhance interpreter performance. Further empirical research is urgently required to bridge this gap, exploring the specific impacts of CAI on CI by comparing different workflows, language directions, and interpreter proficiency levels, and assessing the integration of voice transcript technologies to comprehensively establish the potential and limitations of CAI in consecutive interpretation. Such research is essential to inform the development of more effective training models and optimize the utilization of technology in the professional interpreting field.

2.5. Research Questions

The study aims to resolve the following research questions (RQs):

1. What is the impact of Computer-assisted interpreting on the quality of English-Chinese consecutive interpretating performed by student interpreters?

2. What are the underlying factors that mediate the impact of CAI on interpreting performance?

3.   Methodology

This chapter presents the methodology employed in this dissertation, involving the research design, data collection strategies, data analysis procedures, and ethical considerations that guided the research process. This mixed-methods design, combining quantitative analysis with interviews and questionnaires, provides both statistical rigor and nuanced insights.

3.1. Research Design

The criteria for evaluation were adapted from Han (2017), including information completeness, delivery fluency, and target language quality. To investigate the impact of CAI on the quality of student interpreters' E-C CI delivery, this study adopted a mixed-methods approach, integrating both qualitative and quantitative methodologies. This approach allowed for a comprehensive understanding of the multifaceted influences inherent in the study topic. The research was systematically subdivided into three components, each designed to gather significant data.

Experimental Design

To perform empirical research, this study designed a controlled experiment. The experiment involved 11 undergraduate participants in their junior or senior years, each having completed a minimum of one term in interpretation studies. The CAI tool utilized in this experiment was IFLYTEK, which facilitated the delivery of transcripts for tasks completed both with and without CAI assistance.

The experimental materials comprised two of consecutive interpreting (CI, E-C) tasks, selected from actual speeches to ensure authenticity. Both pieces were of comparable length and thematic content.

Participants engaged in the experiment in turn. Each participant performed one CI task without the CAI tool and another task with its assistance. The recordings of these sessions were collected and transcribed by Lark, after which both I and ERNIE Bot evaluated the transcripts. Scores for participant delivery were marked based on Professor Han Chao's "Interpreting Scoring Scale," focusing on fluency, an aspect scored by me, while ERNIE Bot assessed the completeness of information and quality of the target language.

Questionnaire Design

The questionnaire was adapted from the interpreting anxiety scale devised by Dong Yanping, Chen Huanpeng, and Yu Zhibin, tailored specifically for this research context. Each participant received the questionnaire and completed it after the experimental tasks, aiming to ascertain whether CAI induced anxiety among student interpreters. The questionnaire comprised three sections: (1) evaluation of stress levels experienced during tasks performed with the CAI tool, and (3) assessment

of stress levels experienced during tasks without the CAI tool. The questionnaire aimed to illuminate the relationship between CAI's effect on quality and interpreter anxiety, employing a quantitative analysis framework.

Semi-structured Interviews

The interviews were also conducted after the experiment. Participants who were willing to engage in the interview were asked a few questions about their opinions toward the difficulty and pressure of the tasks and suggestions for the usage of the CAI tool. A qualitative method was used to analyze the results of interviews.

3.2. Data Analysis

Variance analysis and regression modeling were conducted using SPSS 26.0 to scrutinize the impact of CAI tools on translation quality, ensuring reliability and validity, and examining attention resource allocation.

Data collected from the experiments and questionnaire results were analyzed via SPSS, mainly using paired t-tests to identify the impact of CAI on the quality of JLI delivering E-C CI tasks, as well as the levels of participants' interpreting anxiety with the application of CAI, to use the latter analysis results to explain and elaborate the former.

The results of the semi-structured interview were examined by cluster analysis, identifying similar content.

3.3. Ethical Considerations

Ethical considerations were paramount in this research, guiding the methodological framework and implementation. This section delineated the ethical principles and practices that were adhered to throughout the research process.

Rigorous data protection measures were instituted, ensuring that all collected data—comprising recordings, questionnaires, and interview transcripts—were securely stored and access was restricted solely to research-related purposes. Anonymization of participants' personal information was implemented to safeguard their identity and privacy.

Maintaining honesty and transparency was integral to the integrity of the research. The researcher provided an accurate account of all findings, acknowledging any limitations or potential biases encountered during the study while adhering to the highest academic standards. Research outcomes were disseminated responsibly, respecting the contributions of all participants and honoring their time and effort in the research process.

4. Results

4.1. Results of the Experiment

Participant	Information Completeness with CAI	Information Completeness without CAI	Fluency of Delivery with CAI	Fluency of Delivery without CAI	Target Language Quality with CAI	Target Language Quality without CAI	Total Score with CAI	Total Score without CAI
A	7	7	5	6	6	5	18	18
B	6	6	4	4	5	3	15	13
C	7	7	8	8	8	8	23	23
D	5	4	4	4	4	4	13	12
E	6	7	5	7	6	6	17	20
F	6	7	6	7	6	7	18	21
G	7	6	7	5	7	6	21	17
H	7	6	6	6	6	6	19	18
I	7	7	7	6	8	7	22	20
J	7	7	7	6	7	6	21	19
K	7	7	4	5	5	6	16	18

Band 4(Score range: 7-8); Band 3(Score range: 5-6); Band 2(Score range: 3-4); Band 1(Score range:1-2)

配对t 检验分析结果-详细格式

配对编号	项目	平均值	标准差	平均值差值	t值	p值
配对1	Information Completeness with CAI	6.55	0.69	0.09	0.430	0.676
	Information Completeness without CAI	6.45	0.93			
配对2	Fluency of Delivery with CAI	5.73	1.42	-0.09	-0.265	0.796
	Fluency of Delivery without CAI	5.82	1.25			
配对3	Target Language Quality with CAI	6.18	1.25	0.36	1.305	0.221
	Target Language Quality without CAI	5.82	1.40			
配对4	Total Score with CAI	18.45	3.11	0.36	0.536	0.603
	Total Score without CAI	18.09	3.24			

* $p<0.05$ ** $p<0.01$

Analysis of the Experiment Result

(1) Information Completeness:

Average score with CAI: 6.55

Average score without CAI: 6.45

According to the paired-sample T-test, there's no prominent improvement or setback caused by the usage of the CAI tool, suggesting a lack of influence of the CAI tool in improving information completeness in this experiment.

(2) Fluency of Delivery

Average score with CAI: 5.73

Average score without CAI: 5.82

According to the paired-sample T-test, the CAI tool has no apparent influence on the fluency of delivery in the experiment, even causing a decrease in 4 participants in this aspect.

(3) Target Language Quality:

Average score with CAI: 6.18

Average score without CAI: 5.82

(4) Total Score

Average score with CAI: 18.45

Average score without CAI: 18.09

According to the paired-sample t-test, the total score is not highly influenced by CAI.

4.2. Results of the Questionnaire

深入分析-效应量指标

名称	平均值差值	差值 95% CI	df	差值标准差	Cohen's d 值
口译中，我很怕没有把说话人的意思翻译出来 配对 口译中，我很怕没有把说话人的意思翻译出来	-14.18	-31.687 ~ 3.323	10	26.057	0.544
口译中，我如果意识到自己出错了，我后面的翻译质量会受到影响 配对 口译中，我如果意识到自己出错了，我后面的翻译质量会受到影响	-1.64	-12.975 ~ 9.702	10	16.878	0.097
即使我事先做了充分准备，口译时仍会紧张 配对 即使我事先做了充分准备，口译时仍会紧张	12.00	4.091 ~ 19.909	10	11.773	1.019
口译时如果忘记本来知道的东西，我会紧张 配对 口译时如果忘记本来知道的东西，我会紧张	10.09	1.457 ~ 21.639	10	17.190	0.587
我做口译没什么把握 配对 我做口译没什么把握	2.45	-14.600	10	25.386	0.097

深入分析-效应量指标

名称	平均值差值 值差值 95% CI	df	差值标准差	Cohen's d 值
我总认为别人比我译得好 配对 我总认为别人比我译得好	-4.45	~ 19.509 -17.862 ~ 8.953	10	19.957	0.223
做口译需要掌握如此多的技巧，我无法应付 配对 做口译需要掌握如此多的技巧，我无法应付	-12.00	-28.087 ~ 4.087	10	23.946	0.501

(1) Information Completeness

Anxiety of "being unable to interpret what the speaker said" decreased (mean −14.18).

Anxiety of "forgetting known information" increased (mean +10.09).

(2) Delivery Fluency

Anxiety of "even being fully prepared, nervous feeling won't decrease" increased (Cohen's d = 1.019).

(3) Target Language Quality

Fear of "being unable to interpret what the speaker said" decreased (mean −14.18).

Fear of "unsureness of accuracy" showed little change (mean +2.45).

4.3. Results of Semi-structured Interviews (Exertion)

Information Completeness (Interview Results)

Participant A: CAI helped connect logic, but lag caused untimeliness.

Participant H: CAI transcript lacked simplicity; distracting vs. personal notes.

Participant I: The incomplete/inaccurate transcript and a lack of punctuation reduced the usefulness.

Fluency of Delivery (Interview Results)

Participant A: Aiming to match transcript reduced fluency.

Participant B: The transcript distracted from notes.

Participant D: Unfamiliar terms in the transcript caused interruptions.

Participant G: Long transcript caused cognitive overload.

Target Language Quality (Interview Results)

Participant A: The transcript helped interpreting terms and clarified a context.

Participant C: "At least now (using CAI) I know what the speaker is talking about."

Participant I: CAI acted as a fallback when lacking background knowledge.

Participant D: CAI provided too much info, forcing double-selection compared with filtered personal notes.

5. Discussion

5.1. Main Results

This chapter examines the influence of CAI on the quality of E-C CI delivered by student interpreters. Through experimental analysis, CAI shows limited influence on CI performance. Minor improvements in target language quality relate to reduced anxiety in terminology processing; however, CAI introduces cognitive overload, distraction, workflow disruption, and technological anxiety. However, individual differences in performance suggest that CAI may affect interpreters variably. This study found that the influence of CAI on CI is not linear but should be analyzed with the cognitive load threshold of the learners of CI.

The application of CAI is bringing new anxiety factors to the field of interpretation, adding technology-dependence anxiety to traditional performance anxiety. The correlations between CAI and interpreting anxiety should be further studied. An interpreting anxiety scale should be designed specifically to evaluate the anxiety level in the context of using CAI.

Meanwhile, from the practical perspective, this study's finding suggests that CAI, which requires a technological improvement, should be applied appropriately during the learning period of interpretation. The UI of the CAI tool should also be improved to reduce distractions.

5.2. Dialogue with Existing Literature

The marginal improvement in target language quality aligns partially with Lyu Yifan (2023), who suggests that CAI reduces anxiety related to terminology and numbers.

The usefulness of machine transcription echoes Defrancq & Fantinuoli (2021).

However, the lack of significant improvement in fluency and information completeness contradicts the conclusion of Chen & Kruger (2024) that CAI reduces cognitive load in L1→L2 directions. Consistent with Sun et al., CAI may distract interpreters and hinder logical structuring. The finding also supports Xiao Li (2018), showing that CAI cannot replace notetaking.

Combining Yang Haofei's "Energy Allocation Conflict Theory", CI requires more multitasking than SI, so CAI's transcription sometimes increases cognitive load due to information overload; lack of punctuation; lag; attention dispersion. This may explain why CAI helped accuracy but reduced fluency.

5.3. Explanatory Factors Behind CAI's Limited Effects

(1) Anxiety

Participants expressed mixed feelings about CAI, with some experiencing relief in specific anxieties but others noting new pressures introduced by the tool.

(2) Cognitive Overload

The questionnaire and interviews both show that CAI reduces some fears but increases cognitive burden, especially in selecting information, managing long transcripts, and matching transcripts with notes.

(3) Distraction & Increased Difficulty

Many interpreters mention that the on-screen transcript hinders their focus on notes and delivery, leading to difficulties in interpretation.

5.4. Participants' Reflections and Suggestions

For the application of CAI, most participants point out that CAI would be more useful if used as an assistant to their notes, only resorting to the transcript for unclear information or logical structure. Participants also suggest that CAI is more helpful for short discourse. For the improvement of CAI Tools, Participants expect more real-time, accurate transcripts, contextual or background information for culture-loaded words (Song, 2022).

Implications for CAI Design and Interpreter Training are as follows: CAI should evolve from a transcription tool to a contextualized knowledge base; personalizable transcript filtering (e.g., jargon only) may enhance usefulness; CAI integration in CI requires training to minimize distraction and cognitive overload.

5.5. Limitations and Suggestions for Further Studies

The present study is subject to several limitations that should be acknowledged. Firstly, a notable limitation is the lack of training provided to the participants before the experiment. This could potentially impact the results, as untrained participants may not fully understand the tasks or utilize CAI effectively, thereby introducing bias into the data. Secondly, all participants in this study are student interpreters, which may limit the generalizability of the findings. Their relatively limited abilities could act as a confounding variable, influencing their performance and making it difficult to isolate the specific effects of CAI on CI. Therefore, future research should consider incorporating training sessions for participants and include a more diverse range of learners with various proficiency levels to address these limitations. A longitudinal study of CAI's long-term effect in future studies will provide more data on interpreters' anxiety and performance after adapting to CAI tools.

6. Conclusion

This study contributes both theoretically, by extending CLT to CI and CAI contexts, and practically, by providing guidelines for integrating CAI into interpreter training programs. This study investigated the impact of Computer-Assisted Interpretation (CAI) on the performance of student interpreters in English-to-Chinese (E-C) consecutive interpretation (CI). The experimental findings indicate that CAI has a limited effect on overall interpreting quality. Specifically, minor improvements were observed in target language accuracy, while information completeness and fluency showed no significant enhancement.

Three key factors mediated the impact of CAI on interpreting performance: (1) challenges in information processing, including incomplete or inaccurate transcripts and cognitive overload; (2) distraction caused by the interface and excess information; and (3) psychological effects, such as reduced fear of missing information but heightened performance pressure.

Theoretically, this study contributes to understanding the nuanced role of CAI in CI, particularly among student interpreters, highlighting that its benefits are not linear and are influenced by cognitive load thresholds. Practically, the findings suggest that CAI can serve as a supplementary tool during interpreter training, provided that its implementation is optimized to minimize distraction and overload.

This study is subject to several limitations. First, participants received no prior CAI training, which may have affected their ability to use the tool effectively. Second, the sample comprised only student interpreters, limiting the generalizability of the results. Future research should explore CAI effects with trained interpreters, larger and more diverse samples, and longitudinal designs to assess long-term adaptation and performance outcomes.

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