Rendering Numbers in Simultaneous Interpreting : An African Perspective

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Abstract:

This study investigates the difficulties that student interpreters at the Advanced School of Translators and Interpreters (ASTI), University of Buea, encounter when rendering numerical information during simultaneous interpreting. The research pursues three objectives : to quantify the extent to which numbers constitute a problem for student interpreters; to determine whether the strategies employed to manage numerical rendering are predominantly general (shared) or idiosyncratic (personal); and to evaluate the effectiveness of those strategies in improving numerical accuracy in simultaneous interpreting. Employing a quantitative design, the study collected data from 34 participants via two instruments : an online questionnaire administered through Google Forms and an experimental task in which respondents interpreted two recorded speeches (one in English, one in French). Responses from both instruments were analysed to identify error rates, strategy types, and patterns associated with language direction. The findings indicate that all respondents (100%) acknowledge numerical rendering as a persistent challenge in simultaneous interpreting. Measured error rates for numerical items were high, averaging 62% for English into French renditions and 65% for Frenc into English renditions. Participants reported using a mixture of general strategies (e.g., rehearsal of numerical conventions, use of

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chunking and note-taking techniques) and personal strategies (e.g., individualized mnemonic devices and idiosyncratic rehearsal routines) to mitigate errors. Analysis further suggests that the language combination — specifically the pairings of English and French with local linguistic repertoires — significantly influences numerical performance among African student interpreters. The study concludes by discussing pedagogical implications for interpreter training, recommending targeted numerical-handling exercises, direction-specific practice, and curriculum adjustments that foreground the cognitive and linguistic demands of numerical information in simultaneous interpreting.

Keywords: Simultaneous Interpreting; Numbers; Attention-Sharing; ASTI; Personal Strategy.

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Résumé :

Cette étude examine les difficultés rencontrées par les étudiants-interprètes de l'École supérieure des traducteurs et interprètes (ASTI) de l'Université de Buea dans le rendu des nombres lors de l'interprétation simultanée. Elle poursuit trois objectifs : quantifier dans quelle mesure les nombres constituent un problème pour ces étudiants-interprètes ; déterminer si les stratégies mobilisées pour mieux traiter les nombres sont de nature générale (partagées) ou personnelle (idiosyncratiques) ; et évaluer dans quelle mesure ces stratégies contribuent à améliorer la gestion des nombres en interprétation simultanée. Adoptant une démarche quantitative, l'étude s'appuie sur deux instruments de collecte de données : un questionnaire en ligne administré via Google Forms et une expérience consistant en l'enregistrement de deux allocutions, l'une en anglais et l'autre en français, que les répondants ont interprétées. Trente-quatre participants ont fourni des réponses aux deux instruments; les données recueillies ont été analysées et interprétées afin d'identifier les taux d'erreur, les types de stratégies et les tendances liées à la direction linguistique. Les résultats montrent que 100 % des étudiants-interprètes reconnaissent que le rendu des nombres constitue une difficulté persistante en interprétation simultanée. Les taux d'erreur moyens observés pour le traitement des nombres s'élèvent à 62 % pour les rendus Anglais→Français et à 65 % pour les rendus Français→Anglais. Les participants déclarent recourir à un mélange de stratégies générales (par exemple, la révision des conventions numériques, le morcellement de l'information, des techniques de prise de notes) et de stratégies personnelles (mnémoniques individualisées, routines d'entraînement propres).

L'analyse suggère en outre que la combinaison linguistique — telle que définie dans la littérature en études d'interprétation — joue un rôle déterminant dans les difficultés rencontrées par les interprètes étudiants africains pour le rendu des nombres. L'article conclut en discutant des implications pédagogiques pour la formation à l'interprétation et recommande des exercices ciblés sur le traitement numérique, une pratique spécifique par direction linguistique et des ajustements curriculaires visant à intégrer les exigences cognitives et linguistiques liées aux informations numériques en interprétation simultanée.

Mots-clés : Interprétation simultanée ; Nombres ; Division de l'attention ; ASTI ; Stratégie personnelle.

1. Introduction

Interpretation is often characterized by high information density and high level of analysis. Interpreters report a certain difficulty dealing with numbers as they are a common source of errors during interpretation. According to Alessandrini (1990), numbers also have high informative content in dense speech sections which increase processing capacity demands for all efforts, because the interpreter must process, retain, and translate more information per unit of time. This causes many interpreters to have a hard time conveying numbers from the source language to the target language without errors or mistakes.

Many interpreters therefore agree that numbers are particularly difficult to interpret. Yet, research on the topic of interpreting numbers is rather limited (Mead 2015: 287). Starting with Braun & Clarici (1996), several experimental studies have been conducted on the success rate of number rendition in interpreting, showing that overall performance is relatively poor, both in professionals and in student interpreters. In Braun & Clarici (1996) for instance, 12 students obtained a mean error score of close to 70% while simultaneously interpreting numbers contained in speeches. Mazza (2001) reports slightly better performances by 15 students, but the mean error rate in her study is still in the 45–50% range. The findings of Pinochi (2009), based on interpretations by 16 students, are consistent with Mazza's result. Pinochi compares interpretations from two different source languages (English and German) into one target language and finds that

error rates are nearly identical (40%), even though interpreters must overcome additional challenges due to differences in the syntax of numbers between German and Italian. Literature shows no trace of any study carried out to assess how successful interpreters are in rendering numbers in the global South, especially in Africa and particularly in a learning environment.

2. Problem statement

The conclusion of a pilot study suggests that many interpreters find it difficult to faithfully interpret numbers (decimals, amounts, fractions, percentages, and dates) during simultaneous interpreting without omitting them and/or drifting from the message's main idea. The aim of rendition is to produce an equivalent form and avoid saying something apart from the truth, Goui, D. (2025). The student interpreter is presumably more liable to errors than the professional interpreter due to lack of experience and limited knowledge on many fields of human activity. Though the problem of simultaneously interpreting numbers is well known to professional interpreters, student interpreters and researchers, the literature shows a limited number of studies conducted on the topic in professional or learning environments, and virtually no trace of any study conducted in the global south.

3. Purpose of the study

The purpose of this study is thus to examine how the student interpreter of ASTI, a training institution from the global south, manages numbers and overcomes challenges during simultaneous interpreting, thereby enriching the literature with more experimental data. From the host of questions arising from the problem statement, the study will strive to answer the following more specifically: (1) To what extent are numbers a problem for student interpreters? (2) Are strategies to better handle numbers general or personal? (3) How can student interpreters improve on their handling of numbers during simultaneous interpreting?

4. Literature review

This section includes the definition of a few concepts, a brief review of pertinent works on rendering numbers in simultaneous interpreting, and the theoretical framework of the study.

4.1. Defining the key concepts of the study

As mentioned above, the key concepts of the study are defined hereunder:

4.1.1. Numbers

We use numbers in our day-to-day life. Without numbers, we cannot do counting of things, date, time, money etc. Sometimes, these numbers are used for measurement or labelling. They are expressed in figures and also in words.

A number is an arithmetic value used for representing the quantity and used in making calculations. A number system is a writing system for denoting numbers using digits or symbols in a logical manner. This system represents a useful set of numbers, reflects the arithmetic and algebraic structure of a number and provides standard representation. The digits 0 to 9 are used to form all the other numbers.

There are 12 types of numbers that exist in mathematics namely :

- ✓ Natural Numbers: Natural numbers are the positive integers from 1 to infinity, excluding zero. They are also known as counting numbers. Examples: {1,2,3,4,5,6,7,8,9,10…∞}. Natural numbers are represented by the symbol “N”.
- ✓ Whole Numbers: Whole numbers are positive numbers, including zero, that do not have any fractional or decimal parts. Examples: {0,1,2,3,4,5,6,7,8,9, 10…∞}.
- ✓ Integers: Integers are whole numbers that can be positive, negative or zero, but not a fraction or decimal. Examples: {1,3, -10...}.
- ✓ Real Numbers: A real number is a number that can be used to measure a continuous one-dimensional quantity such as a distance,

duration or temperature. It can be defined as the union of both rational and irrational numbers. They can be positive or. All the natural numbers, decimals and fractions come under this category. Examples: {0,1,2,3/4,0.125,0.333}.

- ✓ Rational Numbers: A rational number is any number which can be represented in the form of p/q where q≠0. Any fraction fits under the category of rational numbers, where the denominator and numerator are integers, and the denominator is not equal to zero. Examples: 2/4, 5/8, etc.
- ✓ Irrational Numbers: irrational numbers are real numbers that cannot be represented as simple fractions. Examples: √2=1.414213...
- ✓ Complex Numbers: Complex numbers are the numbers that are expressed in the form of a+ib where, a, b are real numbers and "i" is an imaginary number called "iota". Example: 2+3i.
- ✓ Imaginary numbers: Imaginary numbers are the numbers when squared it gives the negative result. In other words, imaginary numbers are defined as the square root of the negative numbers where it does not have a definite value. It is mostly written in the form of real numbers multiplied by the imaginary unit called "i".
- ✓ Even Numbers: Even numbers are those numbers that can be divided into two equal parts or pairs and are exactly divided by 2. An even number always ends with 0,2,4,6 and 8. Example: 46, -788, 9674.
- ✓ Odd Numbers: Odd numbers are those numbers that cannot be divided into two equal parts. They are always 1 more than or 1 less than an even number. An odd number always ends with 1,3,5,7 or 9. Example: 51, -543, 8765.
- ✓ Prime Numbers: A prime number is a natural number greater than 1 that is not a product of two smaller natural numbers. It is a number that can only be divided by itself and 1 without remainders. 1 is not a prime number because it has only one factor, namely 1.
  Examples:
  2,3,5,7,11,13,17,19,23,29,31,37,41,43,47,53,59,61,67,71,73,79,83,89,97.

- ✓ Composite Numbers: A composite number is a natural and whole number that can be divided by at least one other number, in addition to 1 and itself, thus having two factors.
  Examples:
  4,6,8,9,10,12,14,15,16,18,20,21,22,24,25,26,27,28,30,32,33,34,35,36,38,39,40,42.

4.1.2. Terms often used during simultaneous interpreting

For the purpose of this study, the following terms used often during simultaneous interpreting and for representations are defined:

- Date : a specific day, month and year in a point in time that can mark a birthday, appointment or other events.
- Percentage : it is a number or ratio that represents a fraction of 100. It is one of the ways to represent a dimensionless relationship between two numbers. Percentages are often denoted by the symbol "%" written after the number.
- Fraction : a fraction is a number that represents a part of a whole, or a number of equal parts. Fractions are made up of two parts, the numerator and the denominator. The numerator is the top number and the denominator is the bottom number. The numerator represents the number of equal parts being considered and the denominator represents the total number of equal parts in the whole. Example: ½, ¾.
- Amount : an amount is a quantity, number, total, sum, size or extent. It can also refer to the sum of two or more quantities, the sum of the principal and interest of a loan or the full effect, value, or significance.
- Range : it is the area of variation between upper and lower limits on a particular scale. It is also the distance or extent between possible extremes, the difference between the least and greatest values of an attribute or the variable of a frequency distribution.

4.2. Empirical literature review

This section reviews previous prominent works on the issue of rendering numbers in simultaneous interpreting.

4.2.1. Factors causing the difficulties in rendering numbers

According to Frittella (2019) and Pinochi (2009), there are several reasons why numbers represent a common and complex problem trigger for interpreters. The cognitive operations involved in processing and understanding numbers increase the difficulty of the already complex task of simultaneous interpreting. Therefore, faced with two complex tasks, it becomes difficult to locate the origin of the difficulty experienced by the interpreter. For the purpose of this research, we will focus on nine main causes:

- Decoding and transcoding

This type of difficulty occurs when the interpreter hears the source-language (SL) number word, processes it (*decoding*), and then transforms it either into a graphic representation (such as into an Arabic number), a process known as *numerical transcoding*, or processes it semantically before it can be rendered into the target language.

Decoding and transcoding a number require mental processing both of its constituent units by means of lexical operations, and of the inner relations between them through syntactic operations. Frittella (2019: 81) puts this as follows:

> Syntactic operations identify the order of magnitude of the number and of its elements (thousand, hundred, etc.) and create a corresponding representation of its syntactic macrostructure. Lexical operations complete the representation of the number's macrostructure with the corresponding digits. If an error occurs in this process, some erroneous lexical items will be found within correct syntactic categories.

> Large numbers have been found to increase processing latency and effort and have been associated with a particularly high error rate in every-day cognitive operations (Brysbaert, 1995) as well as in SI (Mazza, 2001).

- Language Proficiency

Within the conference interpreting profession, interpreter's languages are classified as 'A', 'B' or 'C' languages (AIIC, 2012). An 'A' language is an interpreter's mother tongue or language of culture and education, into which she works from her 'B' and 'C' languages. A 'B' language is a foreign language the interpreter uses both passively (interpreting from it into an 'A' language) and actively (interpreting into it, from an 'A' language, and sometimes also from any other 'C' languages). 'C' languages are purely passive foreign languages from which the interpreter works into her A language, and sometimes B language. For the purpose of this study, we will focus more on the A and B language combination. It has been noticed that many student interpreters have a hard time interpreting numbers into their B language because their proficiency level is low.

For example, the French expression for 97 is 'quatre-vingt dix-sept', literally "eighty seventeen", and if French is her B language, and English her A, an interpreter may hear that number as "80" followed by "17" and then have to do a quick mental conversion to arrive at 97, whereas a native speaker of French, or a non-native speaker of French with adequate proficiency and experience of handling French numbers, would likely have a single mental template for the multi-word phrase "quatre-vingt dix-sept" that is readily matched to the Arabic numeral representation of "97", more or less as easily as "ninety seven" is for a native English speaker.

In a review of the literature on bilingualism and cognitive arithmetic, Rusconi, Galfano & Job (2007: 169) make the point that:

> According to self-reports, bilinguals tend to count and do arithmetic in just one of their languages, which is usually the one in which they were taught arithmetic (this is also true for

> the participants of Rusconi et al. 2006c). When, after having received formal education in one language, people move to a different linguistic community and remain there for a long time, they tend to lose proficiency in L1. But even when L2 has become dominant, they keep working out numbers and calculations in their original language (Dehaene 1997).

- Semantic processing

According to Frittella (2019):

> Numerical transcoding is not necessarily semantically mediated, which implies that it is possible to write down a number and/or read it aloud without thinking about its meaning (Dehaene, 2001). Further cognitive processing is required to actually comprehend the number that was heard (Ekuni, Vaz, & Bueno, 2011).
>
> Further processing is required to identify the links between numbers in the text. If this level of processing does not take place, the interpreter may create within-text contradictions.
>
> Extra-linguistic understanding of the numeral requires relating it to a property of the referent and linking it to prior relevant knowledge to gain information. If this does not happen, the interpreter may incur plausibility errors.

The other six factors that may have an impact on numbers rendering by interpreters include: memory (long term memory, working memory and short-term memory), source language, information density, subjective competence, difference in hearing modality, and the non-application of common interpretation techniques (Frittella, 2019).

4.2.2. Common types of errors in rendering numbers

Frittella (2019) discusses several types of errors that may occur during the processing and rendering of numbers by interpreters during simultaneous interpretation.

- Syntactic errors

Syntactic errors can be identified in the delivery when the order of magnitude of the number and the structure are not correctly recoded into the target language by the interpreter even though the components may be present. The number has been totally changed modifying the overall information. The order of magnitude can be considered in terms of tens, hundreds, thousands, millions, etc.

An example can be when the interpreter renders 250000 by 250 or 40/1000 becomes 40%.

- Lexical errors

Lexical errors may occur when interpreting the number's macrostructure with the corresponding digits. In this case, the order of magnitude of the number is correct, but some of its components are in the wrong order, they have been either misplaced or inverted.

An example can be interpreting 250000 by 205000 or 2024 being translated by 2004.

- Incorrect generalisation/approximations

"Understanding the meaning of a number requires, first of all, a mental representation of its magnitude. If this level of processing does not take place, the number will not be linked to the corresponding quantity" (Frittella, 2019: 81); some interpreters generalise numbers or render numbers approximately as coping strategies to gain more time but most often do not do it correctly.

An example can be the interpreter rendering 40% of students as the majority of students or rendering 4,739,597 women as "about 4,000,000 women".

- Phonological errors

This can be due to the wrong perception of numbers with similar sounds in the target language especially when a high memory activity is

required. This can also be due to low language proficiency of the interpreter's working languages.

E.g. the number *nineteen* which can be perceived as *ninety* in English by the interpreter. A common example is also the mistake in interpreting "ninety-nine (99)" into French language "quatre-vingt dix neuf (99)" i.e. 4 x 20 + 19.

- Omission errors

In this case, the interpreter totally omits the number in the text, either because he is lagging behind and could not catch up with the speaker or he did not just hear the number at all. Most often, the interpreter stays quiet or replaces the number with general expressions like "many or few" without being sure of its exactitude. E.g. 10 people being interpreted as many people or nothing being said to render the number.

4.3. Theoretical Framework

This research is grounded in one model and one theory :

4.3.1. The Processing Ladder Model

This model uses the concept of objective and subjective redundancy to explain the difference between the intrinsic difficulty of processing numerical information and the perceived difficulty as determined by the interpreter's analysis of the input on different levels. The general architecture of the processing ladder model for the interpretation of numbers presents the following levels :

1- The phonologic redundancy is the level where the interpreter hears the number unit, when spoken by the speaker in a speech.
2- The syntactic redundancy is when he hears the numerical information unit, that is the descriptive form or measurement unit of the number.
3- The semantic redundancy reveals the text around the number heard in the speech.

4- The cognitive redundancy level depicts the interpreter understanding of the context of the number, the numerical information unit and the text heard before interpreting into the target language.
5- The last level known as the pragmatic redundancy is the communicative context level where the interpreter finally interprets and communicates.

At each level, processing can be expected to be successful if the necessary skills are available and automatic. The absence of relevant skills or low automaticity can be expected to hinder processing as a result of increased latency and higher processing requirements. Therefore, the delivery of numbers can be expected to reflect the level of cognitive processing accomplished by the interpreter.

4.3.2. The Cognitive Load Theory

This theory was first propounded by John Sweller as an information processing theory that focuses on the limitations of the working memory. The theory suggests that our cognitive systems can become overwhelmed when faced with too much information or complex tasks, leading to cognitive overload and reduced learning outcomes. To avoid this cognitive overload, the scholar proposes chunking in learning and processing of information.

Thus, an interpreter's working memory inherent capacity system can be low and unable to interpret numbers without errors or omissions.

5. The particular situation of African countries

Most African countries adopted foreign languages as official languages after independence. Yet, their citizens spoke one of the local languages as their mother tongue (A language). Colonial languages adopted as official languages were therefore actually their B language (foreign language). For most of those in the translation/interpretation professions, the languages they present as their A and B languages respectively are actually B and C languages, though many of them stand international competition using those languages which are a colonial heritage. For African interpreters

working with European languages, this situation compounds the difficulties this article has so far discussed in handling numbers as interpreters during simultaneous interpretation.

An illustration of this difficulty was observed when the Pan-African University Programmes of Translation, Interpretation and Transborder Languages was launched at ASTI in 2012. Some students were from countries where the most spoken language was Arabic or Kiswahili. Yet they were compelled to use English and French in the programme. Most of those students had never had French as a working language. They had hard times coping in the programmes, especially the interpretation programme, with their mates who were from countries which practiced French as first or second language. They were therefore generally viewed as weak students until the "error" was discovered and corrected with changes in their language combinations and an extra effort from the African Union to invite trainers with the corresponding language combinations. The situation totally changed for those students, and they were henceforth viewed differently, including by their trainers. This somehow anecdotal story shows how timely the present article is and how significant and useful its projection of a global south's perspective is in the debate on simultaneously interpreting numbers.

Thus, many of the European languages spoken by African interpreters as A, B, C, etc. languages are actually not A, B, C, etc. languages as defined by the profession. They were simply imposed on Africans at independence. Referring to the case of Cameroon, Nama (1990: 14) writes as follows :

> *Since the English speaking and French-speaking parts of the country became a unified territory in 1972, and English and French automatically became the official languages, the volume of translation and interpretation activities of administrative and socio-political texts has increased dramatically … In 1985, a School of Translation and Interpretation opened its doors at Buea University Centre which trains translators and interpreters who work in English and French.*

Most African interpreters therefore use A languages which are actually not their mother tongue. Yet, “excluding African mother tongues from the African translator training syllabus is detrimental to the development of the cognitive skills of African students in general and that of the student translator in particular.” (Wanchia and Dongho, 2016: 138). This reality may be an aggravating factor in the handling of numbers by African interpreters, in line with Rusconi, Galfano & Job (2007: 169)’s quotation cited above concerning cognitive arithmetic. In an attempt to define what a mother tongue is, Wanchia and Dongho (2016: 139) write as follows :

> According to Cambridge Advanced Learner’s Dictionary (2003), mother tongue refers to the “first language learned when you are a baby rather than a language learned at school or when you are an adult”. This language must be naturally acquired without interruption before the one learned at school in a bid to help define the world for the learner. This leads to enquiring which between the European and African languages are the mother tongues (L1s) of African translation students and professionals ?
>
> Training needs to seek relevance always **(**Drahamane & Goui, 2026).

6. Methodology

The methodology of this article used an experiment, then a questionnaire to garner the opinions of student interpreters on the extent to which they find it difficult to render numbers during simultaneous interpreting.

Individuals making up the research population are all student interpreters in ASTI (Advanced School of Translators and Interpreters), Division II (Interpretation), Year II. ASTI is located in Buea, Cameroon. Created in 1985, it is one of the first and most prestigious professional translation and conference interpreting schools in Africa.

Referral sampling was used: initial participants were identified who meet the eligibility criteria and asked to refer others they know who also fit

the requirements. The sample size grew as referrals were added, creating a chain-like structure.

Thirty (30) questionnaires were prepared and distributed online via google forms and 10 student interpreters were selected for the experiment. Out of the 30 questionnaires administered and the 10 students for the experiment, 27 respondents filled the questionnaire, and the experiment was conducted on 07 respondents respectively. Thus, the presentation and analysis of data will be based on the 27 questionnaires filled (including by the 07 students who underwent the experiment) and the experiment carried out on 07 subjects. It is worth noting that the intake in interpretation at ASTI moved from 10 to 20 since the 2015/2016 academic year (Azambou, 2019), and not all 20 students find themselves in Year 2 the following year, as the mean pass percentage stands at about 75%. The failure rate at graduation being about 87% under the BMP system (Azambou, 2019), level 2 has about 13 students repeating. Thus, participants (both for the experiment and the administration of the questionnaire) were selected from a total population of about 30 students.

A similar study conducted by Frittella (2019) used for its experiment 07 participants with the group with English and 08 participants with the group with German as their second languages respectively. Another similar study conducted ten years earlier by Pinochi (2009) had used 16 subjects for its experiment.

6.1. Experiment

The experiment was carried out on 07 student interpreters of Year II, Division II (Interpretation) programme, at the Advanced School of Translators and Interpreters (ASTI) out of 10 students targeted. All students had French and English in their combination, either as A or as B language. Four students had French as their A language and three had English as their A language. Two speeches were recorded and sent to the students, the first in English and the second in French. The speeches lasted between 3 to 4 minutes and were read by native speakers for a better articulation and

fluency. The aims of the experiment were clearly spelled out in accordance to the study's research questions.

The two speeches were sent to the subjects' inbox through WhatsApp. They listened to the speeches, recorded themselves with the use of second devices to register their interpretation and sent their recordings back to the researcher for analysis.

6.2. Questionnaire

The questionnaire had a uniform format to ensure that all respondents receive the same questions in the same order, with identical response options. This approach helps to ensure consistency and higher reliability of the results. It was built based on the research questions outlined in the problem statement section. Open and closed-ended questions were asked.

The administration of the questionnaire was done via google forms, a modern online platform through which respondents can easily have access to it and answer in the comfort of their homes and according to their availability using their smartphones.

7. Results

7.1 Measures of central tendency

Usually when two or more different data sets are to be compared, it is necessary to condense the data, but for comparison, the condensation of data set into a frequency distribution and visual presentation are not enough. It is then necessary to summarise the data set in a single value. Such a value is usually somewhere in the center and represents the entire data set and hence it is called measure of central tendency or averages.

Measures of central tendency removes all the unnecessary details of the data and gives a concise picture of the huge data; it is also used for the purpose of comparison. There are three measures of central tendency, mainly the mean, the median, and the mode.

- The Mean: This is the sum of all values divided by the total numbers of values. It is calculated by adding all values and dividing by the total number of values. It is also calculated using the following formulae:

$$\bar{x} = \frac{\sum fx}{n}; \text{Here } n = \sum f$$

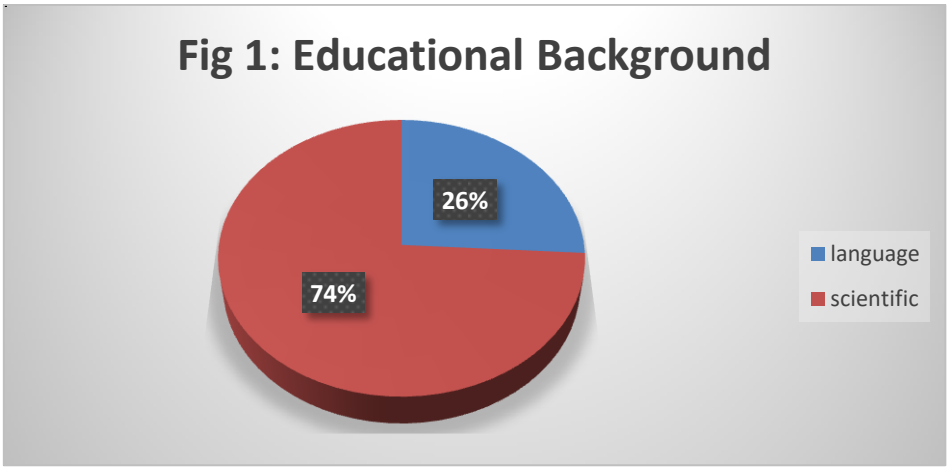
- The Median: This is middle value when all values are arranged in increasing order. It is calculated by ranking the data values from the smallest to largest and determining the middle value.
- The Mode: This is the most occurring value in a distribution. It is calculated by counting number of occurrences of each data value and determining which value occurs most often.

7.2. Findings related to research question one: To what extent are numbers a problem for student interpreters?

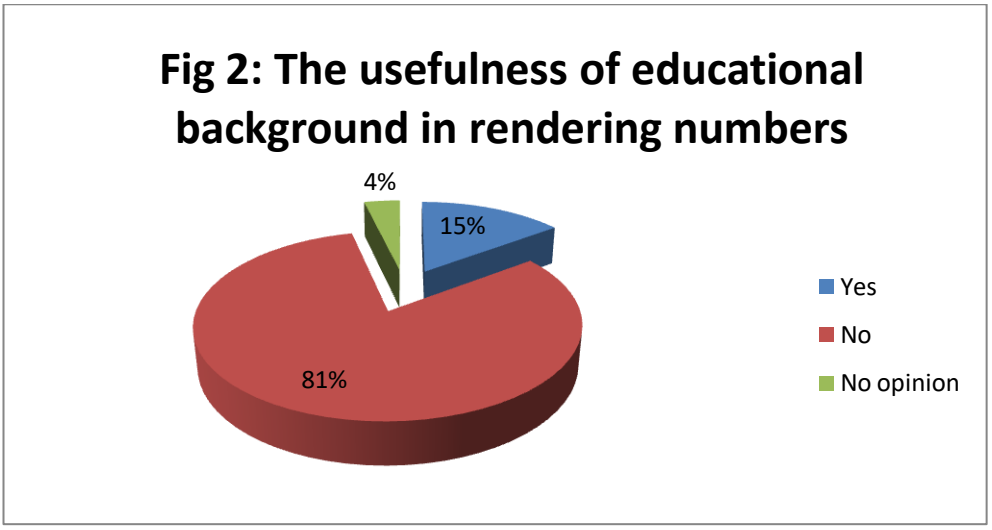
Table 1: Rendering of numbers is a challenge for student interpreters

Options	Frequency	Percentage
Yes	27	100%
No	0	0
No opinion	0	0
Total	27	100%

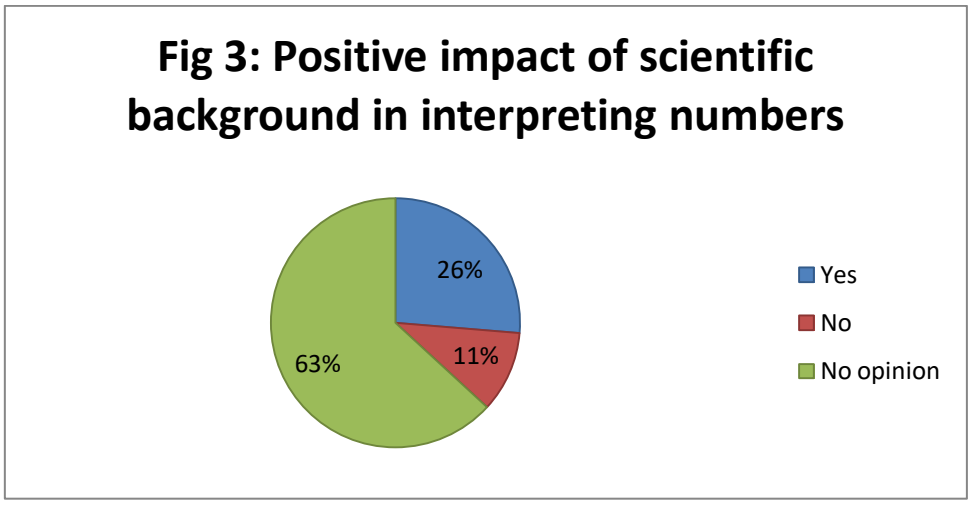
From table 1, respondents unanimously agreed that rendering numbers in simultaneous interpreting is an existing challenge for student interpreters, as 27 out of 27 students (100%) answered yes.



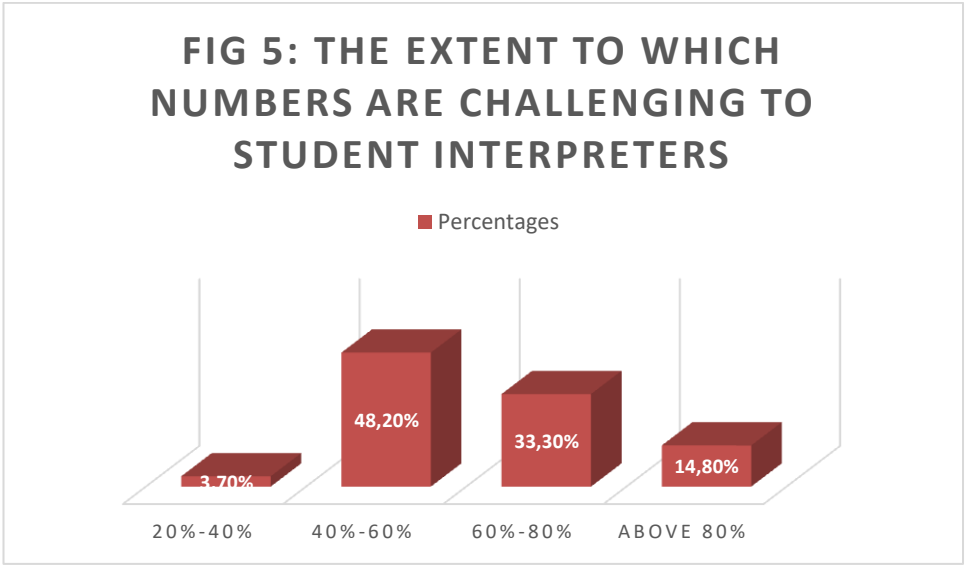
From chart 1, 20 student interpreters have a language studies background (74%) while only 7 have a scientific studies background (26%).



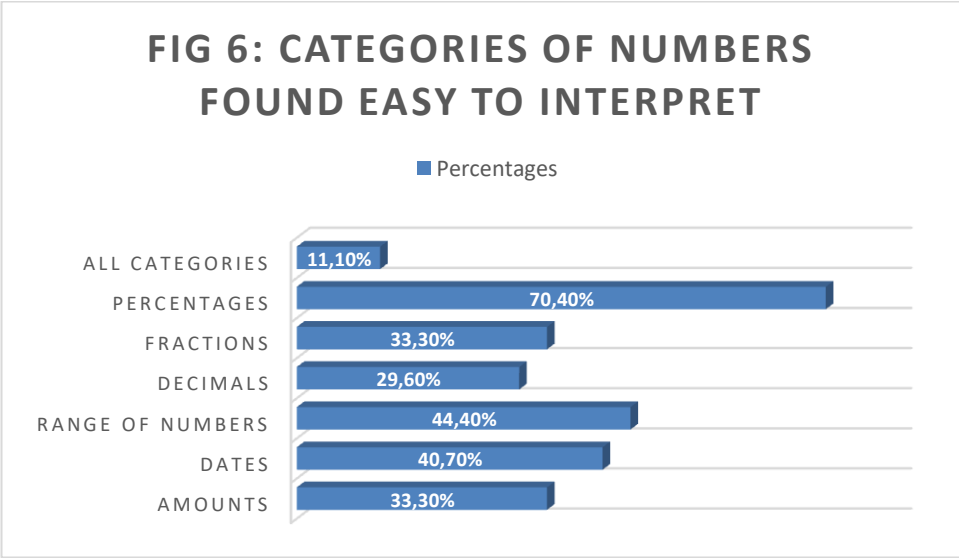
As shown in chart 2, 22 respondents (81%) affirmed that their background studies does not help them in rendering numbers while 4 respondents (15%) affirmed the contrary and 1 respondent (4%) gave no opinion on the question asked.



Data from chart 3 reveals that 5 respondents (26%) feel a positive impact of their scientific background in interpreting numbers, 12 respondents (63%) gave no opinion, and 2 respondents (11%) said it is not helping them at all. These findings suggest that the impact of background (language or scientific) in interpreting numbers is relative. Contrary to what one could have assumed, a scientific background does not clearly stand out as a predominant favourable factor.



From chart 5, the highest frequency (13) with 48.2% shows the number of respondents who think that numbers are challenging to student interpreters by 40%-60%. 1 respondent said it is below 20%, 9 think it is between 60%-80% and 4 said above 80% giving 3.7%, 33.3% and 14.8% respectively.



From chart 6, most student interpreters find it easy to interpret percentages rather than interpreting decimals. Looking at the data from the chart, 19 respondents (70.4%) easily interpret percentages,12 (44.4%) easily interpret range of numbers, 11 (40.7%) said dates, 9 (33.3%) amounts, 9 (33.3%) said they easily interpret fractions, 8 (29.6%) chose decimals and just 3 (11.1%) respondents find it easy to interpret all categories of numbers.

Table 2: Easiness in interpreting into "A" language

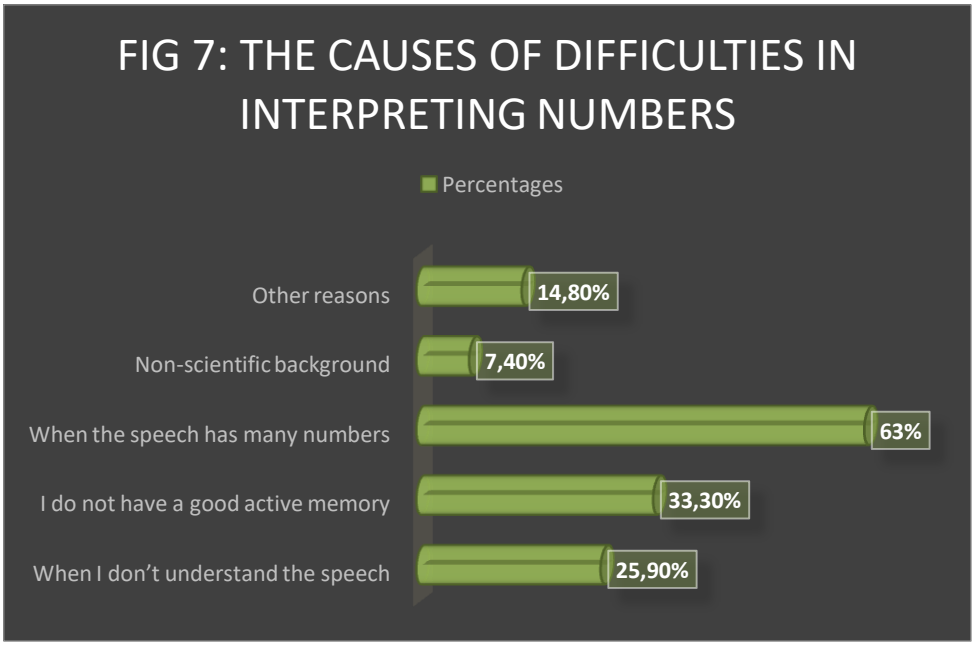
Options	Frequency	Percentage
Yes	14	51.9%
No	7	25.9%
Both	6	22.2%
Total	27	100%

When asked whether their command of their working "A" language was good enough, 14 respondents answered in the affirmative while 7 said no and 6 said both languages giving 51.9%, 25.9% and 22.2% respectively. Thus, most student interpreters are confident of their mastery of the language they use, though, as demonstrated under section 5 of this article, for most of them, those languages, abusively referred to as A and B, are actually their B and C languages respectively, their African language (which is not part of their professional working languages) being their mother tongue.

Table 3: Easiness in interpreting into "B" language

Options	Frequency	Percentage
Yes	6	22.2%
No	16	59.3%
Both	5	18.5%
Total	27	100%

As concerns their "B" language, 16 respondents said they don't easily interpret into their "B" language, thus have a limited proficiency in the said language, while 6 do not have any issue and 5 others are at ease with both languages, giving 59.3%. 22.2% and 18.5% respectively. Not easily interpreting into one's "B" language comes in support of that "B" language being actually a "C" language for the respondents, as demonstrated under section 5.

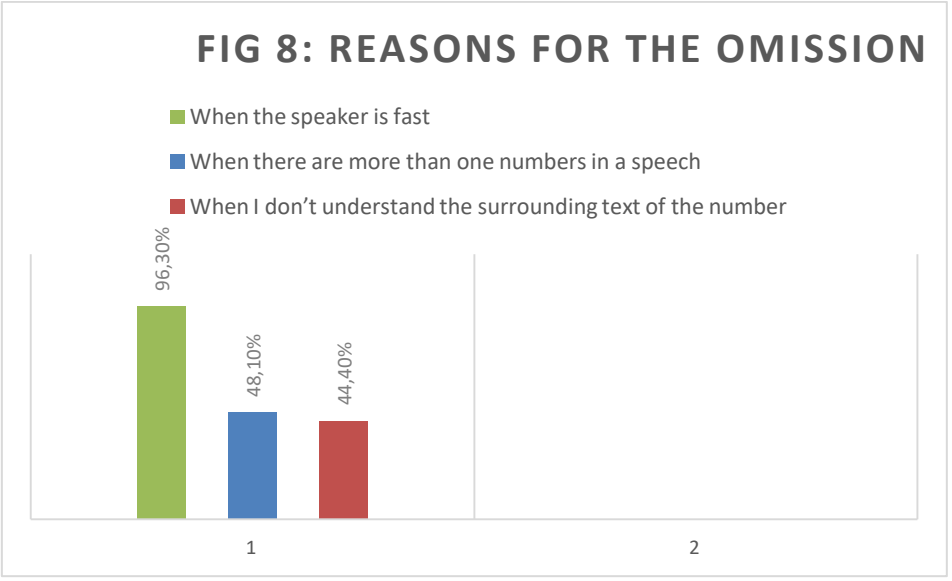


As shown in chart 7, majority of the student interpreters (17) indicated that they find it difficult to render numbers in simultaneous interpreting when there are many numbers in the speech (63%). 9 respondents (33.3%) do not have good active memory to easily sail through the exercise while 7 respondents (25.9%) said it is when they do not understand the speech. On the other hand, 2 respondents (7.4%) said it is because of their non-scientific backgrounds and 4 said for other reasons (14.8%).

Table 4: The omission of numbers while interpreting

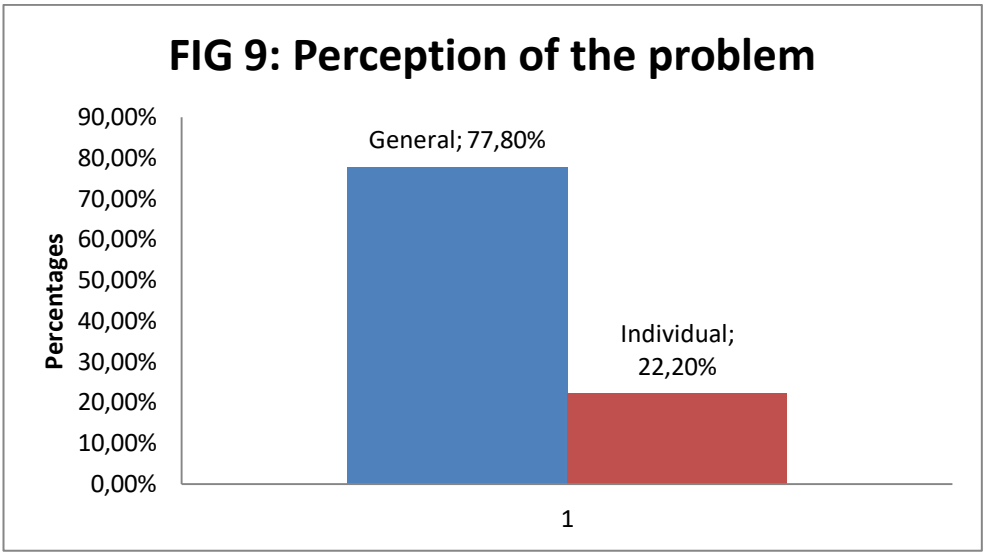
Options	Frequency	Percentage
Yes	27	100%
No	00	0
Never	0	0
Total	27	100%

From table 4, respondents unanimously agreed that they omit numbers while interpreting for 27 out of 27 students (100%) answered affirmatively.



As shown in Chart 8, a large proportion (26) of student interpreters (96.3%) said that they omit numbers while interpreting when the speaker is fast whereas 13 of them (48.1%) said when there are many numbers in a speech and 12 respondents (44.4%) when they don't understand the surrounding text of the number.

7.3. Findings related to research question two: Are strategies to better handle numbers general or personal?



When asked whether the problem with interpreting numbers is a general or individual one, 21 respondents said it is a general one (77.8%) while 6 respondents said it is an individual one (22.2%).

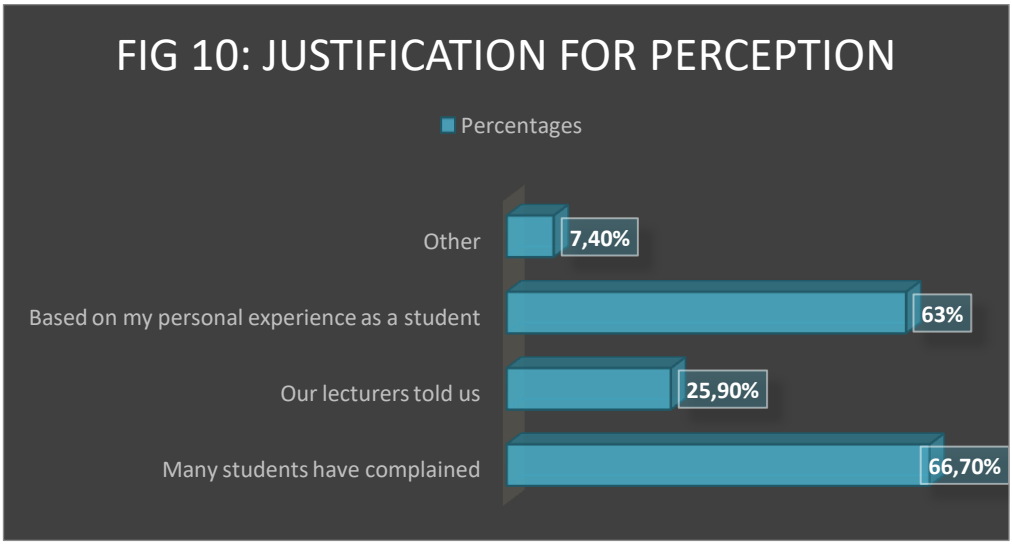
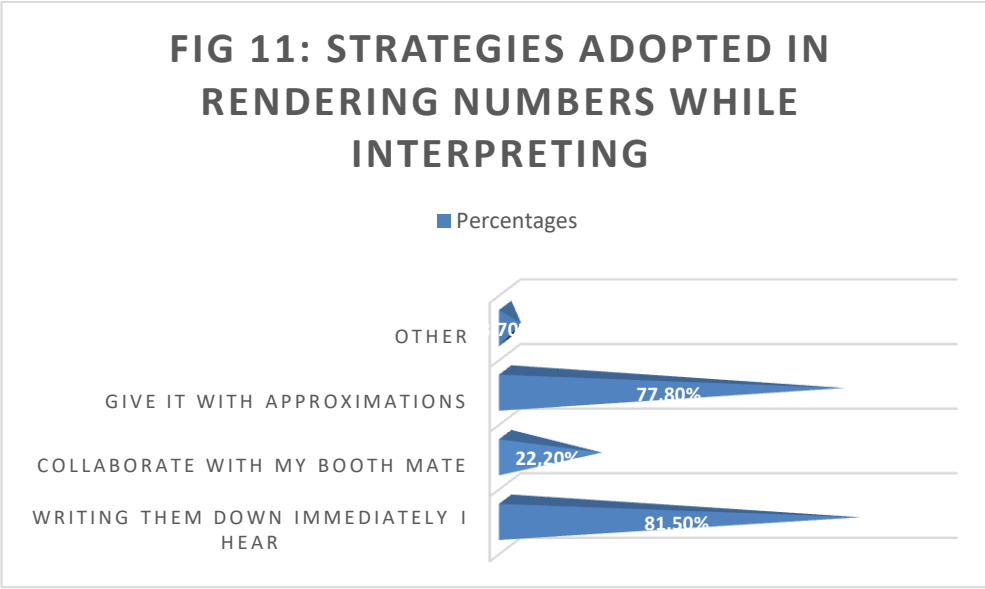


Chart 10 reveals that student interpreters think the challenge of rendering numbers in simultaneous interpreting is either a general or individual problem because many students have complained (18

respondents) thus 66.7%; based on their personal experience (17 respondents) giving 63%; their lecturers told them (7 respondents), 25.9% and 2 respondents (7.4%) said for other reasons best known to them.



As shown in chart 11, majority of the student interpreters (22) write numbers down immediately they hear it from the speaker, 21 respondents render the numbers with approximations while 6 respondents collaborate with their boothmate and 1 said he had other reasons giving the following results: 81.5%, 77.8%, 22.2%, and 3.7% respectively.

7.4. Findings related to research question three: How can student interpreters improve on their handling of numbers during simultaneous interpreting?

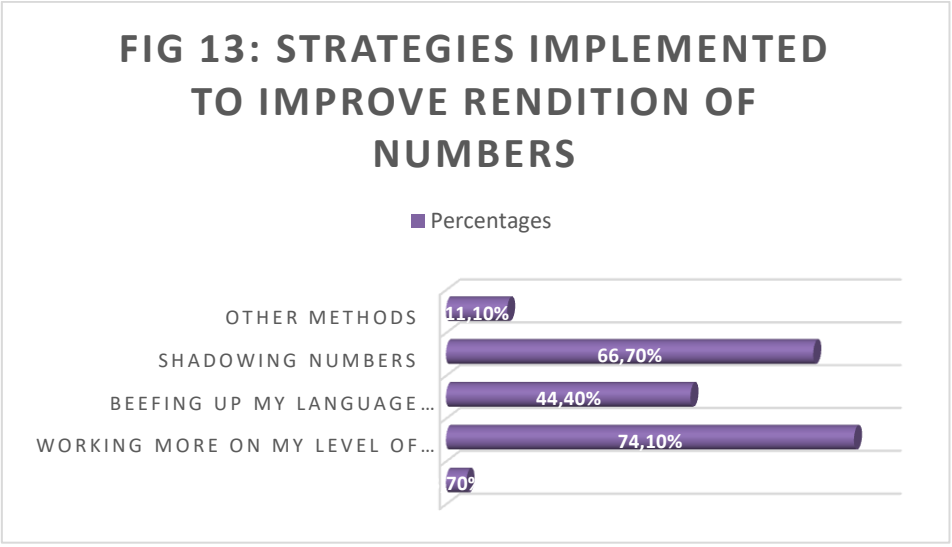
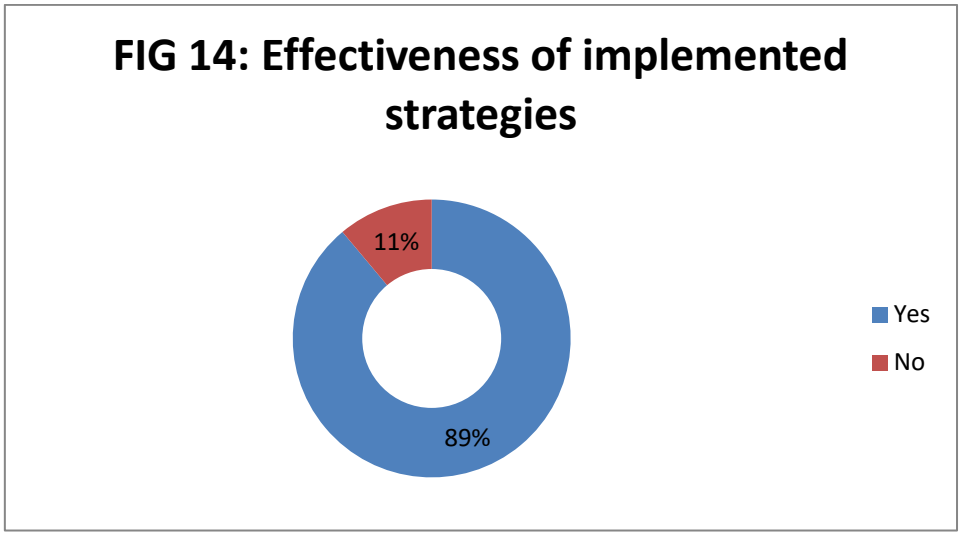
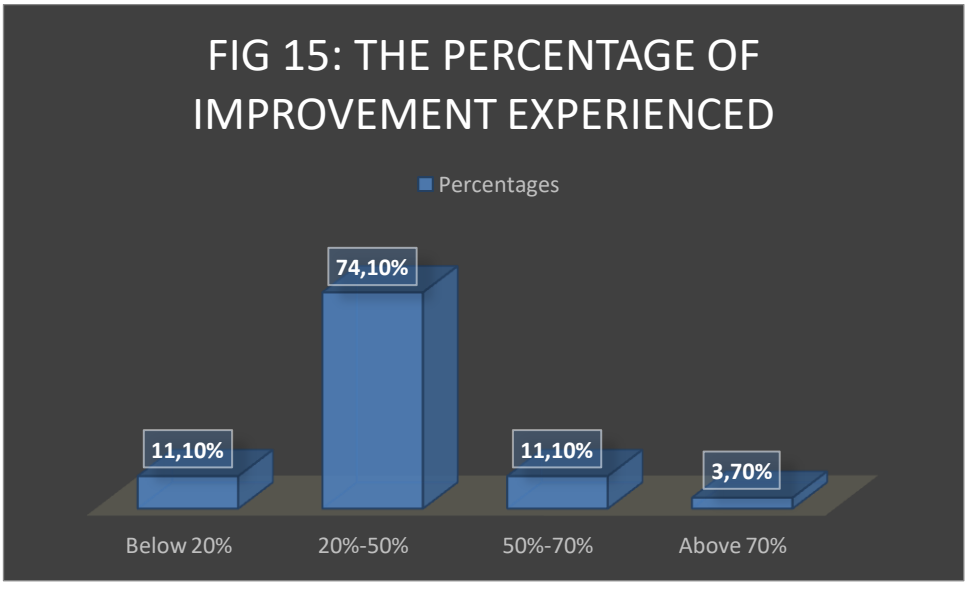


Chart 13 shows the responses on strategies implemented to improve rendition of numbers. The two most common strategies used by respondents are working more on their level of concentration and shadowing numbers for 20 respondents (74.1%) and 18 respondents (66.7%) respectively. Also, 12 respondents work to beef up their language proficiency in both languages (44.4%), 3 use other methods (11.1%) and 1 use software and apps on numbers to work (3.7%).



The questions on whether the strategies implemented by student interpreters were effective was answered in the affirmative by 24 respondents (88.9%) while 03 of them (11.1%) disagreed.



As for the percentage of improvement experienced, about 20 respondents (74.1%) experienced 20%-50% improvement, 3 (11.1%)

experienced below 20%, 3 (11.1%) between 50%-70% and 1 (3,7%) above 70% improvement.

7.6. Data from experiment

The experiment was conducted on 07 students of interpretation out of 10 targeted, who had attended interpretation courses for at least 2 semesters. All subjects had both French and English as their languages. Of the 07 students tested, 03 were English A students and 04 French A students. All texts were read by native speakers in both languages for better articulation and fluency; the speeches were then recorded on a recorder with an external microphone.

For a visual presentation of data collected from the experiment, tables and charts will be used. The following variables are considered:

S1 = Speech 1 (English→French)

S2 = Speech 2 (French→English)

To present the data, frequency distribution tables will be used with the following variables :

A = well interpreted numbers,

B = wrongly interpreted numbers

C = omitted numbers and

N = the seven subjects used to conduct the experiment.

7.6.1. Data from speech one (S1)

The first speech was read in English, to be interpreted into French; it lasted for about 4 minutes. The speech was a report from the African Development Fund which is an African Development Bank arm, on the state of the African economy in 2023. The speech had series of 22 numbers with varieties such as: amounts (billions, millions and thousands), percentages, range of numbers, dates, decimals and fractions.

Table 5 shows the frequency at which the subjects (N) interpreted numbers well (A), wrongly (B) and omitted them (C). After keenly listening to the interpretation of each subject we obtained different values. For example, the first student interpreted 8 numbers correctly, 8 wrongly and omitted 6, giving a total of 22 numbers in the speech. Data from experiment are analysed as a whole for all the subjects (7); thus, values were summed up from each variable. A=58, B=38 and C=58, Total=154. Calculating the total value, 22*7=154.

Table 5: Frequency distribution table for S1

N	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Total**
A	8	8	2	5	10	12	13	**58**
B	8	2	6	9	3	5	5	**38**
C	6	12	14	8	9	5	4	**58**
TOTAL								**154**

- Calculation of the mean

154/7 = 22

For the purpose of this study, the mean was calculated by separating the variables of the numbers wrongly interpreted (B) and omitted (C) from those well interpreted in order to obtain the average mean of mistakes per student.

The mean: (38+58)/7 = 13.7

Therefore, each student had an average of 13.7 mistakes out of 22 numbers stated in the speech, giving 62.27% of errors.

- Calculation of the median

  Arranging the numbers in ascending order:

  2,2,3,4,5,5,5,5,6,6,8,8,8,8,9,9,10,12,12,13,14

  The median is 8
- Calculation of the mode

There are two numbers with four appearances each (5 and 8). Thus, there are two modes: 5 and 8.

To graphically represent the above data, it is important to draw another table which shows the various numbers and the frequency at which they occur:

Table 6: Frequency of occurrence of numbers

Numbers	2	3	4	5	6	8	9	10	12	13	14
Frequency	2	1	1	4	2	4	2	1	2	1	1

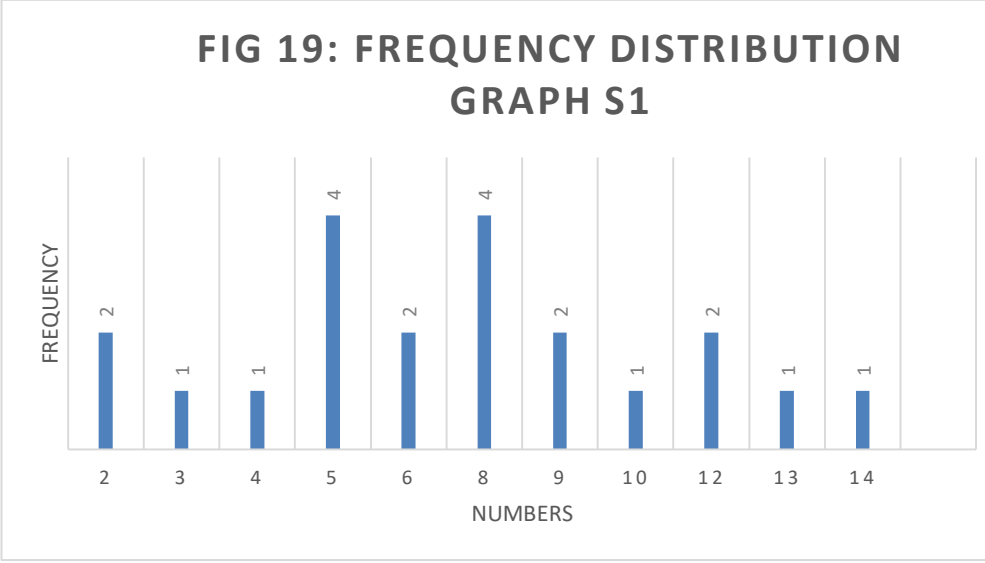


Table 6 and Chart 19 present the frequency distribution table and graph of the first speech interpreted by students. It shows the frequency at which numbers were well interpreted, wrongly interpreted and omitted by student interpreters. From the data, the mean is 22, the median is 8 and the modes are 5 and 8. For the purpose of the research, the mean of number of errors made by each student interpreter was calculated, which is 13.7; when divided by 22 which represents the number found in the speech, that is 62.27%. Therefore, error rate for each student interpreter stands at about

62% when interpreting numbers during simultaneous interpreting from English into French.

7.6.2. Data from speech two (S2)

The second speech was read in French, to be interpreted into English; it lasted for about 4 minutes. The speech was a report from the World Health Organization on the efforts of the organization to stamp out Malaria in the African region in 2023. The speech had series of 24 numbers with categories such as: amounts (billions, millions and thousands), percentages, range of numbers, dates, decimals and fractions.

Table 7 shows the frequency at which the subjects (N) interpreted numbers well (A), wrongly (B) and omitted them (C). After keenly listening to the interpretation of each subject; different values were obtained. For example, the seventh student interpreted 13 numbers correctly, 7 wrongly and omitted 4, giving a total of 24 numbers in the speech. Data from experiment are analysed as a whole for all the subjects (7); the values from each variable were summed up. A=58, B=46 and C=64, Total=168. Calculating the total value, 24*7=168.

Table 7: Frequency distribution for S2

N	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Total**
A	10	4	4	16	7	4	13	**58**
B	9	5	7	5	5	8	7	**46**
C	5	15	13	3	12	12	4	**64**
TOTAL								**168**

- Calculation of the mean

168/7 = 24

The same procedures as in section 7.6.1. was followed to calculate the mean, the median, and the mode. Thus, the mean: (46+64)/7 = 15.7

Therefore, each student had an average of 15.7 mistakes out of 24 numbers stated in the speech, thus an error rate of 65.41%.

- Calculation of the median
  Arranging the numbers in ascending number:
  3,4,4,4,4,5,5,5,5,7,7,7,8,9,10,12,12,13,13,15,16
  The median is 7
- Calculation of the mode
  There are two numbers with four appearances each (4 and 5). Thus, there are two modes: 4 and 5.

Table 8: Frequency of occurrence of numbers

Numbers	3	4	5	7	8	9	10	12	13	15	16
Frequency	1	4	4	3	1	1	1	2	2	1	1

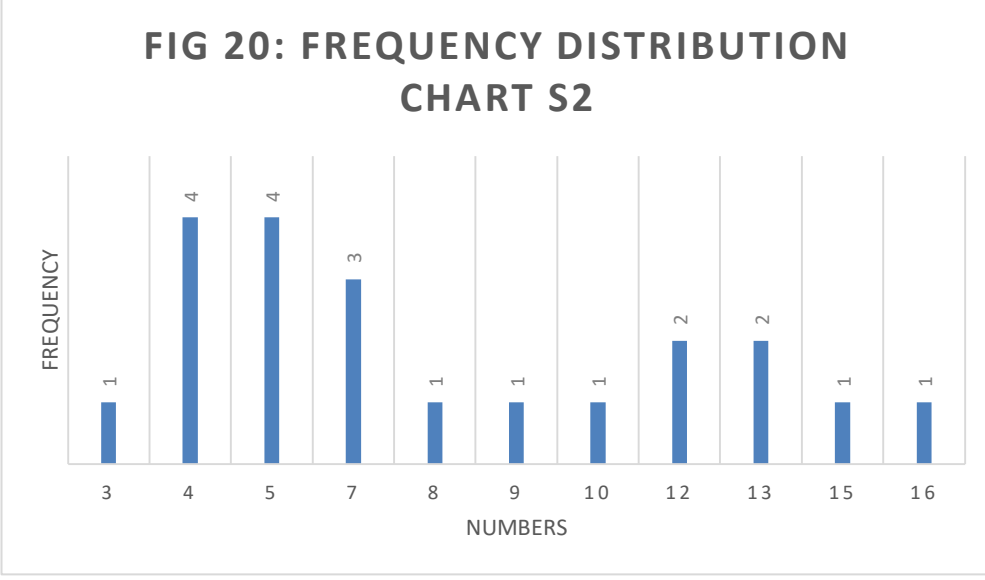


Table 8 and Chart 20 present the frequency distribution table and graph of the second speech interpreted by students. It shows the frequency at which numbers were well interpreted, wrongly interpreted and omitted by student interpreters. From the data, the mean is 24, the median is 7 and the modes are 4 and 5. The mean of average numbers of errors made by each

student interpreter was calculated, which is 15.7; when divided by 24 which represents the number found in the speech, that is 65.41%. Therefore, the error rate of each student interpreter stands at about 65% when interpreting numbers during simultaneous interpreting from French into English.

7.6.3. Cumulative data from both speeches (S1 and S2)

For the purpose of analysis, it is important to present a cumulative data of both speeches:

Table 9: Cumulative data from experiment

Variables	S1 (ENGLISH → FRENCH)		S2 (FRENCH → ENGLISH)	
	Frequency	**Percentage**	**Frequency**	**Percentage**
A	58	37.66%	58	34.52%
B	38	24.68%	46	27.39%
C	58	37.66%	64	38.09%
TOTAL	**154**	**100**	**168**	**100**

Table 9 presents the cumulative data collected from the experiment, as per the various variables considered during analysis. As stated earlier, A=numbers well interpreted, B=numbers wrongly interpreted and C= numbers omitted. For A, 58 out of 154 numbers (37.66%) in speech one were well interpreted by the seven student interpreters and 58 out of 168 numbers (34.52%) in speech two were well interpreted by the seven student interpreters. For B, 38 out of 154 numbers (24.68%) in speech one were wrongly interpreted by the seven student interpreters and 46 out of 168 numbers (27.29%) in speech two were wrongly interpreted by the seven student interpreters. For C, 58 out of 154 numbers (37.66%) in speech one were omitted by the seven student interpreters and 64 out of 168 numbers (38.09%) in speech two were omitted by the seven student interpreters.

Table 10: Cumulative data as per the objectives of the study

Variables	S1 (ENGLISH → FRENCH)		S2 (FRENCH → ENGLISH)	
	Frequency	Percentage	Frequency	Percentage
A	58	37.66%	58	34.52%
B + C	96	62.34%	110	65.48%
TOTAL	**154**	**100**	**168**	**100**

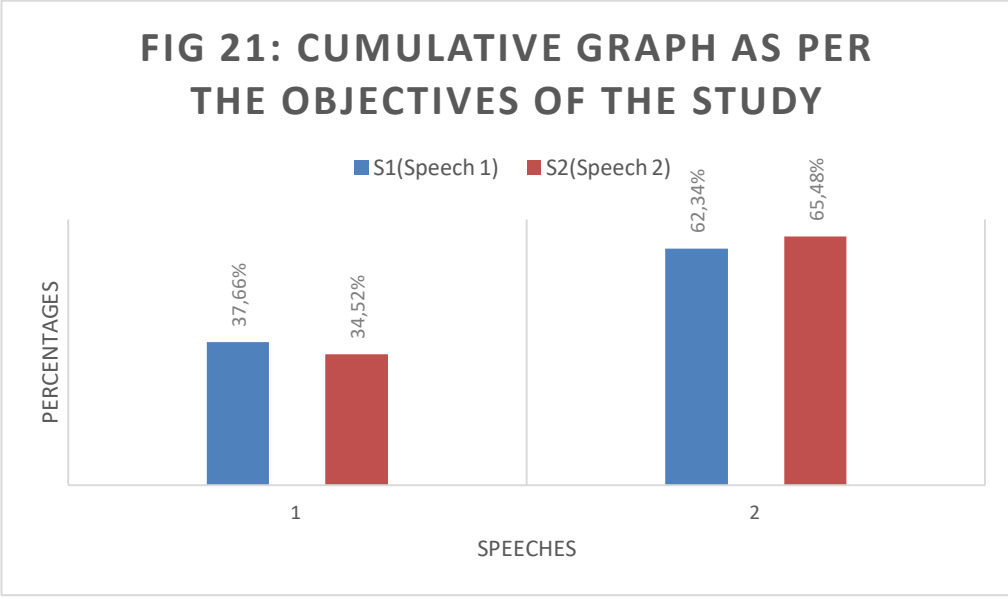


Table 10 and Chart 21 present the cumulative data collected from the experiment, as per the objectives of the research. Consequently, the data collected from wrongly interpreted numbers (B) and omitted numbers (C) were joined for a better analysis. For A, 58 out of 154 numbers (37.66%) in speech one was well interpreted by the seven student interpreters and 58 out of 168 numbers (34.52%) in speech two were well interpreted by the seven student interpreters. For B and C, student interpreters made errors by wrongly interpreting and omitting 96 out of 154 numbers (62.34%) in speech one and 110 out of 168 numbers (65.48%) in speech two. Thus, the

average error rate of interpreting numbers during simultaneous interpreting by student interpreters from English into French is about 62% and from French into English is about 65%.

8. Discussion

The findings from the analysis of questionnaire answers contributed in establishing the existence of the problem related to simultaneously interpreting numbers, and how student interpreters generally perceived the problem. Still from the findings, it appears that many student interpreters apply strategies to better handle numbers during simultaneous interpreting, like writing numbers immediately they hear them, giving them with approximations, collaborating with booth mates, explicitating the idea, reformulating, reconstructing sentences. The adoption of a particular strategy depends on the particular problem the student is facing, and how acute is the problem. This high error rate is generally attributed to a failure in the understanding of the speech, a low level of active memory, many numbers in the speech, a non-scientific background, a failure in understanding the surrounding text of the number or the high speed of the speech. In overall, 77.8% of student interpreters adopt strategies they qualify as general, while 22.2% adopt strategies they qualify as personal to better handle numbers during simultaneous interpreting. Upon applying such strategies, about 74.1% of student interpreters experienced 50% improvement. 66.7% of student interpreters shadow numbers as strategy to improve on their handling of numbers during simultaneous interpreting. 44.4% of student interpreters beef up their language proficiency. 74.1% of student interpreters work more on their level of concentration and memory as strategy to improve on their handling of numbers during simultaneous interpreting.

These results show that the difficulty of rendering numbers is an existing problem and student interpreters use some strategies to reduce their error rates during simultaneous interpreting. As seen above, the palliative measures adopted by most students to improve on their rendering of numbers helped them just a little as some experienced less than 20% improvement.

The findings from the analysis of data from the experiment also confirm that student interpreters have a hard time interpreting numbers during simultaneous interpreting and have a higher error rate in interpreting them than in interpreting ordinary text. Indeed, in this study, as per the results of the experiment, the average error rate of interpreting numbers during simultaneous interpreting by student interpreters from English into French is about 62% and from French into English is about 65%. This article has also confirmed a fact admitted in the literature, that interpreters are more likely to make errors with numbers when they are interpreting into their B language than when they are interpreting into their A language. Bonga (2022: 1) writes the following about a language combination:

> Une combinaison linguistique est donc l'ensemble des langues de travail d'un interprète et se décline souvent en langue A, B, C, etc. où la langue A représente la langue maternelle de l'interprète, la langue B la deuxième langue vers laquelle l'interprète peut facilement interpréter, tandis que la C est celle-là que l'interprète comprend parfaitement mais ne la maitrise pas assez pour interpréter vers cette langue, mais peut interpréter un discours livré en cette langue-là.[*A language combination is therefore the set of working languages of an interpreter and is often divided into languages A, B, C, etc., where language A represents the interpreter's native language, language B the second language into which the interpreter can easily interpret, while language C is the one that the interpreter understands perfectly but does not master well enough to interpret into, but can interpret a speech delivered in that language.*] (Our translation)

However, the problem of interpreting numbers which has been shown by researchers to be general and commonly faced by interpreters during simultaneous interpreting, for reasons extensively discussed in this article, takes a particular dimension when it comes to Africa.

Despite the fact that, as discussed in this article, none of the languages used by African interpreters is actually their mother tongue, their error rates of 62% into French and 65% into English do not seem bafflingly

higher than those of participants in similar studies conducted in other environments under different experimental conditions. Indeed, according to Frittella (2019: 79), "Braun and Clarici (1996), for instance, registered an error rate of over 60% in the interpretation of a speech dense in numbers." She goes further to write:

> The previous studies analysed only a few variables impacting the simultaneous interpretation of numbers and identified various causes for the high error rate. These included the need to switch from 'intelligent translation' of the semantic content of the speech to 'literal translation' of the number (Braun & Clarici, 1996), issues related to working memory and note-taking (Mazza, 2001), the students' background knowledge and adaptability (Pellatt, 2006) and the interpreter's source language (Pinochi, 2009). However, the studies did not systematically correlate these potential causes of difficulty with any specific error pattern, nor did they quantify the contribution of each cause to the overall error rate, so that the extent of the impact of each cause on the delivery of numbers remains unclear.

In a like manner, the contribution of the fact that neither English nor French is the mother tongue of participating subjects remains unclear in this study. Whatever the causes of high error rates identified in the previous studies by different authors, the present study advocates for a significant contribution in the similarly high error rate of African subjects, of the fact that neither language A nor language B of those subjects is their mother tongue (native language).

In favour of this argument is the fact that 12 respondents in this study admit to work to beef up their language proficiency in both languages (44.4%). This may be an indication of their awareness of the fact that their working languages may be a problem. Yet, all interpreter training programmes around the world acknowledge the fact that translator/interpreter training schools are not language training schools. However, for reasons discussed in this article, this situation calls for rethinking when it comes to training institutions in Africa. Though

according to the literature, language A is the language into which an interpreter much easily interprets, and language B the language into which he or she also easily interprets, a striking percentage of 25.9% of respondents say "No" to the question whether they easily interpret into their A language. The situation is worse when it comes to whether they easily interpret into their B language, as the percentage of "No" is 59.3% in this case.

Having noticed the problem with the interpreter training programme of the Advanced School of Translators and Interpreters (ASTI), Azambou (2019: 376) writes as follows:

> […] the curriculum can be reviewed to provide for an additional one-year introductory phase allowing intensive language (and general knowledge) study for ab-initio students. Lecturers perceived to an average extent that language courses are necessary in interpreter training programmes in Cameroon. Sakwe (2013) arrived at similar conclusions concerning the ASTI translation programme, but the problem is more acute with the interpreting course.

Still in an attempt to contribute in solving the language problem in the interpreter training programme of ASTI in Cameroon, Azambou (2019: 377) further writes as follows:

> Another solution could be remedial language classes for those students who obviously need it. The reason for this is that in the theoretical debate on the teaching of languages in an interpreter training programme, the peculiarity of the Cameroon context where none of our working languages is actually our mother tongue as literature defines it, is not given enough importance. Besides, as an insider, the researcher happens to have noticed that those of the students with obvious language difficulties who follow the advice of going in for remedial language classes end up clearly benefitting from such classes.

Frittella (2019)'s study adopted an approach which analysed errors qualitatively rather than quantitatively. However, she concludes as follows: "While numbers are only one of many stumbling blocks that student

interpreters encounter in their training, the potential for serious communicative errors inherent in misinterpreting numbers should make them a priority in interpreter training programmes."

Finally, 22 respondents (81%) affirmed that their background studies do not help them in rendering numbers while 4 respondents (15%) affirmed the contrary and 1 respondent (4%) gave no opinion on the question asked. This finding confirms that being a good interpreter, including when it comes to numbers, does not depend on a particular background (language or science), and that good training, genuine language combination, and exercise may play a more important role than background if students are to improve on their interpreting of numbers in the African context.

Conclusion

This article set out to experimentally assess to what extent numbers are a problem to interpreters in general, and to student interpreters in particular. Conducted in an African context within the Advanced School of Translators and Interpreters (ASTI) of the University of Buea in Cameroon, it arrived at similar conclusions as other authors in different environments, with quantitatively similar error rates recorded with English and French as languages of the experiment. If several factors have been highlighted to explain the findings in other contexts, this article argues that the language factor plays a prominent role when it comes to an African context, as none of the languages used in the experiment is mother tongue to African interpreters as the literature defines a native language for interpreters. Interpreters shall never kill the truth contained in the source text (Goui, 2024).

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