The impact of directionality and speech event type on target speech compression/expansion in simultaneous interpreting

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Abstract – Simultaneous interpreting is a complex cognitive activity that can be influenced by several factors, including source speech features (e.g., delivery rate), contextual variables, working languages, and directionality (e.g., interpreting from/into one's native or foreign language), among others. Owing to the time constraints inherent in this interpreting mode, simultaneous interpreters must make swift decisions on how to best deliver the original message into the target language. Although explicitation is considered a universal feature of translation and interpreting, it is also true that part of (redundant) information is eventually omitted. In fact, as opposed to translated texts, interpreting corpora show a general trend of interpreted speeches being shorter than source speeches (in terms of number of words). However, a closer look at the *Directionality in Simultaneous Interpreting Corpus* (DIRSI) partially disconfirms such a general trend. The DIRSI corpus consists of three medical conferences mediated by simultaneous interpreters (English/Italian). Each conference is analyzed in terms of speech length to ascertain to what extent directionality and speech event type may have an impact on the interpreters' output. Results show that directionality cannot always be linked to target speech expansion, whereas the type of speech event is likely to play a role. In particular, this applies to the interpretation of source speeches under 500 words, as interpreters adopt optimization strategies to manage politeness, source speech ungrammaticality, and integrate contextual cues.

Keywords –simultaneous interpreting; speech event; directionality; compression; expansion; DIRSI corpus

1. INTRODUCTION

The advent of machine-readable corpora of translated texts has given way to the study of the distinguishing features of "translated literature […] as a system in its own right" (Baker 1993: 238) and, more generally, it opened up the idea of translation universals and norm-oriented features. In this respect, particular attention has been put on the level of explicitness of translated texts (i.e., target texts, henceforth TT) compared to original texts (i.e., source texts, henceforth ST), along with simplification, disambiguation, conventional grammaticality, and repetition avoidance in translation and, to a lesser

extent, in interpreting (Baker 1993: 243–245). These features are largely born out of the constraints inherent in the translation and interpreting process —for instance, space limitations in subtitling or time in simultaneous interpreting (henceforth SI)— and may also be directly linked to the strategic dimension therein (Riccardi 2005). Eventually, many of those features can be subsumed into text compression or text expansion as linguistic items are omitted or added respectively.

Considering the fundamental differences in the constraints and the strategies that can be found in either translation or interpreting, the patterns unveiled in translated texts may not match with the ones that can be observed in interpreted texts. For instance, while translations would seem to be longer than their ST (Frankenberg-Garcia 2009; Abbasi and Koosha 2016), corpus data show that the opposite is generally the case in SI, with TT being shorter than their original speeches. TT compression was observed in SI of European Parliament debates in the *European Parliament Interpreting Corpus* (EPIC; Russo *et al.* 2012; Russo 2018) and the *EP-Poland Corpus* (Bartłomiejczyk 2022; Bartłomiejczyk *et al.* 2022), where interpreters normally work into their native language and, also, in SI of medical conferences in the *Directionality in Simultaneous Interpreting* corpus (DIRSI; Bendazzoli 2010, 2012), where interpreters work bidirectionally, that is, from their foreign working language into their native language and vice versa (also known as interpreting into B or *retour*). However, this is merely a general trend, which results from cumulative data, but does not single out the various speech events making up the communicative situations they originate from.

The present study is based on the DIRSI corpus and aims to ascertain whether the type of source speech events and the directionality of interpreting —that is, whether interpreters work into their native or foreign working language— may still confirm the general tendency to text compression in SI.

The study is organized as follows. Section 2 gives a brief overview of the constraints involved in SI and the observations made with respect to interpreters' strategic behavior, especially with respect to TT compression and expansion. It also examines the range of speech events constituting the conference as a communicative situation. Section 3 provides a description of the DIRSI corpus, which consists of transcribed ST and TT in English and Italian from three international conferences held in Italy. The results are presented in section 4 and discussed in section 5, with a particular focus on the instances of text expansion which were detected in TT originating from very short source speech

events. This result goes against the general tendency of TT compression in interpreting. Finally, Section 6 concludes the study.

2. SIMULTANEOUS INTERPRETING

2.1. Constraints and strategies

SI is a translational activity in which the ST and the TT are produced at the same time. In fact, the interpreter's output is not 100 percent simultaneous, as a minimal unit of meaning from the ST is necessary to start processing the input and get to a meaningful output. Such a time mismatch between ST and TT is known as 'décalage' or 'Ear-Voice-Span' and it can vary depending on a range of factors, such as the individual interpreter's working memory capacity, ST speed, lexical density, delivery (impromptu speech, semi/prepared, read out from a script, etc.), and culture-bound units of meaning (Riccardi 2005). Although this applies to all types of SI —that is, with or without sound-proof booth, and with or without equipment such as headsets and microphone— the data analyzed in the present study refer to SI with a booth and an equipment.

Interpreters' working languages are classified by the *International Association of Conference Interpreters*[1] as language A for one's native language, language B for one's active foreign language (meaning that an interpreter is able to translate both from and into that language) and language C for one's passive foreign language (meaning that an interpreter is able to translate from that language but not into it). Interpreters working at international institutions generally interpret into their native language (with the exception of those language combinations for which there are fewer interpreters available), whereas interpreters working as freelancers —e.g., in Italy's private market— are generally required to cover both directions of a language combination. Depending on the interpreters' directionality —that is, on whether they are translating into their language A or language B— different strategies may be put in place and the scope of language availability may be limited more or less (Gile 2009; Aston 2018; Cresswell 2018).

As is clear from the considerations above, time stands as one of the major constraints in SI. Drawing on a classic definition of interpreting, especially in SI from a booth, "a first and final rendition in another language is produced on the basis of a one-

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[1] https://www.aiic.org/

time presentation of an utterance in a source language" (Pöchhacker 2004: 11). Interpreters have virtually no chance to ask for repetitions or clarifications, as they are physically separated from the source speaker and, even if they could do so by making gestures from the booth or voicing a request explicitly, it would nonetheless seriously disrupt the communication flow and make interpreters lose face.

In order to keep up with all the constraints affecting SI, interpreters tend to develop relevant strategies which may be language specific as different language systems pose particular challenges. According to Riccardi (2005), interpreting strategies can be grouped into several categories, namely comprehension, production-oriented, general, and emergency strategies. Among these, compression and expansion are categorized as production-oriented strategies, while omission, paraphrasing and reordering (which may imply text compression or expansion) are listed under the emergency strategy category.

Regardless of the specific nature of each strategy, compression and expansion have been the object of investigation since the early studies in SI research. In the seminal work by Chernov (2004) on text redundancy and anticipation in SI, reference is made to syllabic, lexical, syntactical, semantic, and situational compression. In fact, in some cases, TT compression may be obligatory owing to fundamental differences between two language systems. The same applies to expansion, as some categories may be missing in the target language and more explicit phrasing may be necessary to produce a fully acceptable target output.

Obligatory explicitation results from the differences between two or more language systems whereby it may be necessary to provide more information in the target language than is explicitly available in the source language. A common example of this, when interpreting from a pro-drop language like Italian into a non-pro-drop language such as English, is the use of personal subject pronouns: these can be omitted in Italian but must be mentioned in English. On the other hand, as Frankenberg-Garcia (2009: 49) states, voluntary explicitation:

> can be a result of conscious decision to make the target text easier to understand or even of a subconscious operation inherent to the process of translation.

Gumul (2017) provides a broad overview of explicitation in SI by listing an important number of surface manifestations, such as adding connectives, modifiers, qualifiers, intensifying cohesive ties, inserting hedges, disambiguating lexical metaphors, etc. Her

analysis looks at trainee interpreters' performance and identifies the following factors as having a bearing on explicitation: interpreting strategies (process-oriented and product-oriented), interpreting constraints (time, linearity, unshared knowledge, and memory load), directionality (native vs. *retour*), and idiosyncratic preferences (Gumul 2017: 284).

Various instances of TT compression and expansion have also been observed in previous studies looking at professional interpreters' output, typically using corpus data from European Parliament debates (EP). For example, from a comparable perspective, a higher frequency of the complementizer *that* was observed in English TT with respect to ST delivered in English (Kajzer-Wietrzny 2018). Conversely, from a parallel perspective (Morselli 2018), linking adverbials appeared to be left out more in English TT (from Italian ST), whereas apposition markers were added more in Italian TT (from English ST). Similar results from EP debates concern discourse markers, which were found to be both deleted and added more by interpreters than translators (Defrancq *et al.* 2015).

Bendazzoli (2019), focusing on the use of the discourse marker *so* by simultaneous interpreters in the DIRSI corpus, revealed that 30 percent of the occurrences were actually generated by the interpreters themselves, sometimes upon evident expansion of the TT with the addition of new information, reiteration of previously given information, and restructuring of the interpreter's output.

It is clear that TT compression and expansion are two sides of the same coin. While redundancy and repetitions in ST can give interpreters the opportunity to take advantage of time-saving strategies as certain items are reduced or omitted, TT expansion or additions can be effective time-gaining strategies whenever interpreters need to receive more units of meaning and figure out how to proceed with their output.

2.2. *Conference setting and speech events*

In addition to the factors mentioned above, the type of communicative situation where SI is provided also has a strong bearing on the potential constraints and interpreters' strategic behavior, as the rules of procedures applicable to a certain situation may differ considerably from others. For example, speaking time and floor allocation in EP debates may differ considerably from the speech events typically found at scientific or academic conferences (Bendazzoli 2010).

The constituent parts of a conference, considered as a communicative event, were identified in previous studies (Pöchhacker 1994; Riccardi 1995; Russo 1999; Shalom 2002; Ventola 2002), which outlined the structure of a conference into sessions with various functions (e.g., opening session, paper presentation session, poster session, plenary/keynote lecture, panel/roundtable, etc.). Based on these classifications, and thanks to the field observations made during the data collection stage of the DIRSI corpus, it was possible to define the kinds of sections making up a conference, along with its participants' (communicative) roles and main speech events (Bendazzoli 2012). Speech events are particularly relevant to the present study and range from opening remarks to paper presentations, lecture or plenary presentations, floor allocations, procedure, housekeeping announcements, questions, answers, comments, and closing remarks.

It is important to highlight that the presence of simultaneous interpreters requires conference participants to speak with a microphone and one at a time, so as to allow interpreting service users to understand who is actually speaking, and the interpreters to provide their service. When such a procedure is disrupted, interpreters may feel the need to shift to a different speaking person or to verbalize the situation (see Bendazzoli 2023 for an example in the EP).

Conference speech events are also characterized by their total length (in terms of number of words), time duration, and delivery rate. Overall, drawing on the field observation of the interpreter-mediated conferences making up the DIRSI corpus (see specifications in Section 3) and 11 further conferences that were not included in the corpus (yet they are part of the DIRSI multimedia archive), it was possible to determine that few major speech events are embedded in a much larger sequence of shorter speech events. The distribution and relative length/duration of conference speech events are substantially different from those observable in EP debates (Bendazzoli 2012). Based on DIRSI corpus data, the typical ranges of speech event duration (time) and length (number of words) in a conference are as follows: 1) short (up to 15 minutes and less than 1,650 words), 2) medium (between 15 and 30 minutes, between 1,650 and 3,300 words), and 3) long (more than 30 minutes and more than 3,300 words).

3. CORPUS DATA AND METHODOLOGY

The DIRSI corpus includes transcripts and audio recordings from three international medical conferences held in Italy and mediated by professional simultaneous interpreters in English/Italian. Two conferences were about cystic fibrosis and were organized by the *Cystic Fibrosis Foundation*[2] in Verona (CFF4 and CFF5) and one conference was organized by a partnership of associations from different countries in ELSA,[3] a European project, and was about the role of foreign carers in assisting elderly people. The following are the official titles of each conference:

1) *IV Spring Seminar. Recent Advances and Future Developments in Cystic Fibrosis Research: Diabetes, Nutrition, and Internet Communication*, held in Verona on 25 May 2006 (CFF4).

2) *V Spring Seminar. Recent Advances and Future Developments in Cystic Fibrosis Research: What Changes in CF, Pharmacotherapy of the Basic Defect, Advances in CF Lung Transplantation*, held in Verona on 11 May 2007 (CFF5).

3) *Participation and Partnership in Local Policies to Support Non-self-sufficient Elderly People and their Family Members*, held in Cesena on 19 October 2006.

The three conferences were open to both experts and non-experts: physicians and patients in CFF4 and CFF5, and project partners and community members in ELSA.

The corpus consists of four sub-corpora: two sub-corpora with all the original speeches —namely one sub-corpus of Italian ST and one sub-corpus of English ST— plus two sub-corpora with interpreted speeches, namely one sub-corpus of TT into English and one sub-corpus of TT into Italian. In total, five professional interpreters are represented in the corpus (one interpreter, IT-01, worked at two conferences). Four interpreters were native speakers of Italian (IT-01, IT-02, IT-03, IT-04) and also had English as an active working language, while one of them was a native speaker of English (UK-01) and had Italian as an active working language.

The speech events in the corpus belong to the opening, presentation, and closing sessions of the conferences. Debates and Q&A sessions were not considered, as their interactional pattern was considerably different from the other sessions, including cases

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[2] https://www.cff.org/

[3] In Italian, the ELSA acronym stands for *Politiche di empowerment delle lavoratrici straniere addette alla cura* ('Policies for the empowerment of foreign carers').

of overlapping speech that could not fit in the design of the corpus. In total, the DIRSI corpus contains 10 hours of ST and 10 hours of TT approximately.

Each transcript in the corpus comes with a header including metadata about the conference, the participant, and the speech event. The total number of words in each sub-corpus was calculated by extracting the data from the header of each individual transcript. The number of words in the transcripts was obtained with the relevant function in the word processing program *TextPad*.[4] In addition to the automatic extraction of the data under consideration, it was also possible to use the same data included in the Excel document set up to manage the DIRSI multimedia archive. With the use automatic filters, it was possible to query the textual output of individual subjects based on directionality and speech event type. This is presented in graphic form in Section 4.

Using the word count as a unit of measurement for text compression/expansion does not come without problems. As discussed above, there are language-specific features that can determine the use of certain words compulsorily in one language and not in another one. In fact, alternative systems have been proposed —e.g., counting characters, syllables, or morphemes— but they all seem to be affected by similar limitations in determining the explicitness of a TT (Frankenberg-Garcia 2009). Another issue concerns the way words are counted depending on the word processor in use. *TextPad* counts those instances consisting of a word with an apostrophe and the word that follows them as one unit (they were not separated with a space in our transcripts). For this reason, the number of words does not coincide with the number of tokens in the corpus, when transcripts are tokenized. Such critical limitations can nonetheless be counterbalanced thanks to the bidirectional nature of the DIRSI corpus, as its structure allows for both parallel and comparable analyses of Italian and English as source and target languages.

4. RESULTS

The total number of words in DIRSI is 135,835. In more detail, the size of the four sub-corpora is quite balanced: they range from a minimum of 31,500 words (for Italian ST) to a maximum of 37,200 words (for English ST). Both sub-corpora containing English and Italian TT are smaller in size than the sub-corpora containing the respective ST. Table 1 illustrates the size of each sub-corpus: Italian source speeches (ORG-IT), interpretations

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[4] https://www.textpad.com/home

from Italian into English (INT-IT-EN), English source speeches (ORG-EN), and interpretations from English into Italian (INT-EN-IT). The second column lists the number of speech events (e.g., opening remarks, paper presentations or lectures, etc.). This is followed by the number of words and the percentage of the corpus covered by each sub-corpus.

Sub-corpus	Number of speech events	Number of words	Percentage of DIRSI
ORG-IT	63	33,412	24.6
INT-IT-EN	63	31,510	23.2
ORG-EN	16	37,249	27.4
INT-EN-IT	16	33,664	24.8
Total	**158**	**135,835**	**100**

Table 1: Total size (number of words) of DIRSI

Looking at the distribution of total words in the four sub-corpora, it is interesting to note that the largest sub-corpus (ORG-EN) only contains a quarter as many texts (speech events) as the other ST sub-corpus (ORG-IT). This apparent disparity can be explained by the fact that the three conferences were held in Italy, they were all organized by Italian subjects, and the role of chair and discussant was always given to Italian speakers.

As discussed in Section 2.2, the course of proceedings at a conference often involves the production of a large number of short speech events (e.g., opening remarks, floor allocation, procedure, and formalities) and a considerably smaller number of longer speech events, such as main lectures. The length of the speaking time is closely related to the number of words produced. Nevertheless, the total speaking time is mostly covered by the few longer speech events. A similar trend is reflected in the length of texts in terms of the number of words produced.

The spoken output in each of the three conferences included in DIRSI is summarized in the set of tables below: Table 2 for Italian ST, Table 3 for English TT, Table 4 for English ST, and Table 5 for Italian TT:

Sub-corpus		Number of speech events	Number of words	Percentage of DIRSI
	CFF4	19	8,707	6.4
ORG-IT	ELSA	18	9,822	7.2
	CFF5	26	14,883	11.0
Sub-total		**63**	**33,412**	**24.6**

Table 2: Size of the ORG-IT sub-corpora in DIRSI (number of words)

Sub-corpus		Number of speech events	Number of words	Percentage of DIRSI
	CFF4	19	9,474	7
INT-IT-EN	ELSA	18	9,228	6.8
	CFF5	26	12,808	9.4
Sub-total		**63**	**31,510**	**23.2**

Table 3: Size of INT-IT-EN sub-corpora in DIRSI (number of words)

Sub-corpus		Number of speech events	Number of words	Percentage of DIRSI
	CFF4	5	15,189	11.2
ORG-EN	ELSA	6	7,836	5.8
	CFF5	5	14,224	10.5
Sub-total		**16**	**37,249**	**27.4**

Table 4: Size of ORG-EN sub-corpora in DIRSI (number of words)

Sub-corpus		Number of speech events	Number of words	Percentage of DIRSI
	CFF4	5	13,500	9.9
INT-EN-IT	ELSA	6	7,628	5.6
	CFF5	5	12,536	9.2
Sub-total		**16**	**33,664**	**24.8**

Table 5: Size of INT-EN-IT sub-corpora in DIRSI (number of words)

Comparing the size of the various sub-corpora of each conference, it is clear that the CFF5 conference makes the largest contribution of Italian ST and English TT, while the amount of words for English ST (and related Italian TT) is similar in CFF4 and CFF5. In contrast, the ELSA conference contributes a good number of words for Italian ST, but has a considerably smaller size for English ST.

In the set of tables below, data on the size of the various sub-corpora are grouped according to the conference to which they refer: Table 6 for CFF4, Table 7 for ELSA, and Table 8 for CFF5.

Sub-corpus	Number of speech events	Number of words	Percentage of DIRSI
ORG-IT	19	8,707	6.4
INT-IT-EN	19	9,474	7.0
ORG-EN	5	15,189	11.2
INT-EN-IT	5	13,500	9.9
Total	**48**	**46,870**	**34.5**

Table 6: Size of CFF4 sub-corpora (number of words)

Sub-corpus	Number of speech events	Number of words	Percentage of DIRSI
ORG-IT	18	9,822	7.2
INT-IT-EN	18	9,228	6.8
ORG-EN	6	7,836	5.8
INT-EN-IT	6	7,628	5.6
Total	**48**	**34.514**	**25.4**

Table 7: Size of ELSA sub-corpora (number of words)

Sub-corpus	Number of speech events	Number of words	Percentage of DIRSI
ORG-IT	26	14,883	11
INT-IT-EN	26	12,808	9.4
ORG-EN	5	14,224	10.5
INT-EN-IT	5	12,536	9.2
Total	**62**	**54,451**	**40.1**

Table 8: Size of CFF5 sub-corpora (number of words)

In this additional comparative analysis of the data on the size of the various sub-corpora of DIRSI, it is interesting to note that there is always a lower number of words in the TT than in the related ST, thus confirming the general tendency discussed above, with the exception of the Italian ST and the English TT in the CFF4 conference. Between these two sub-corpora (CFF4_ORG-IT and CFF4_INT-IT-EN) there is an increase of more than 700 words (roughly +9%) in the English TT. This increase may not be coincidental considering that, in CFF4, one of the two interpreters is a native English speaker (UK-01), so his working directionality in the sub-corpus in question is from language B to language A (English). This finding was checked against the word distribution between the two interpreters, and the higher output of interpreter UK-01 is confirmed when compared to the Italian native interpreter (IT-01) in English TT. Figure 1 shows the number of words in each ST in Italian (grey column) and their TT in English (black column) broken down by interpreter: IT-01 is the interpreter with English as language B and UK-01 is the interpreter with English as language A.

A look at Figure 1 shows that, although the total output of both interpreters does not deviate much from the number of words in the ST, UK-01 has a larger output in all cases regardless of the length of the ST (with only two exceptions out of a total of 14 speech events).[5] The same trend is not attested in the opposite directionality with TT in Italian, for which both interpreters typically produce shorter output than their respective

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[5] The difference between the total words in the Italian ST and the English TT by interpreter is -61 words for IT-01 and +875 words for UK-01.

ST. This is in line with the general trend of TT compression attested in all the other sub-corpora and the studies mentioned earlier about SI of EP debates.
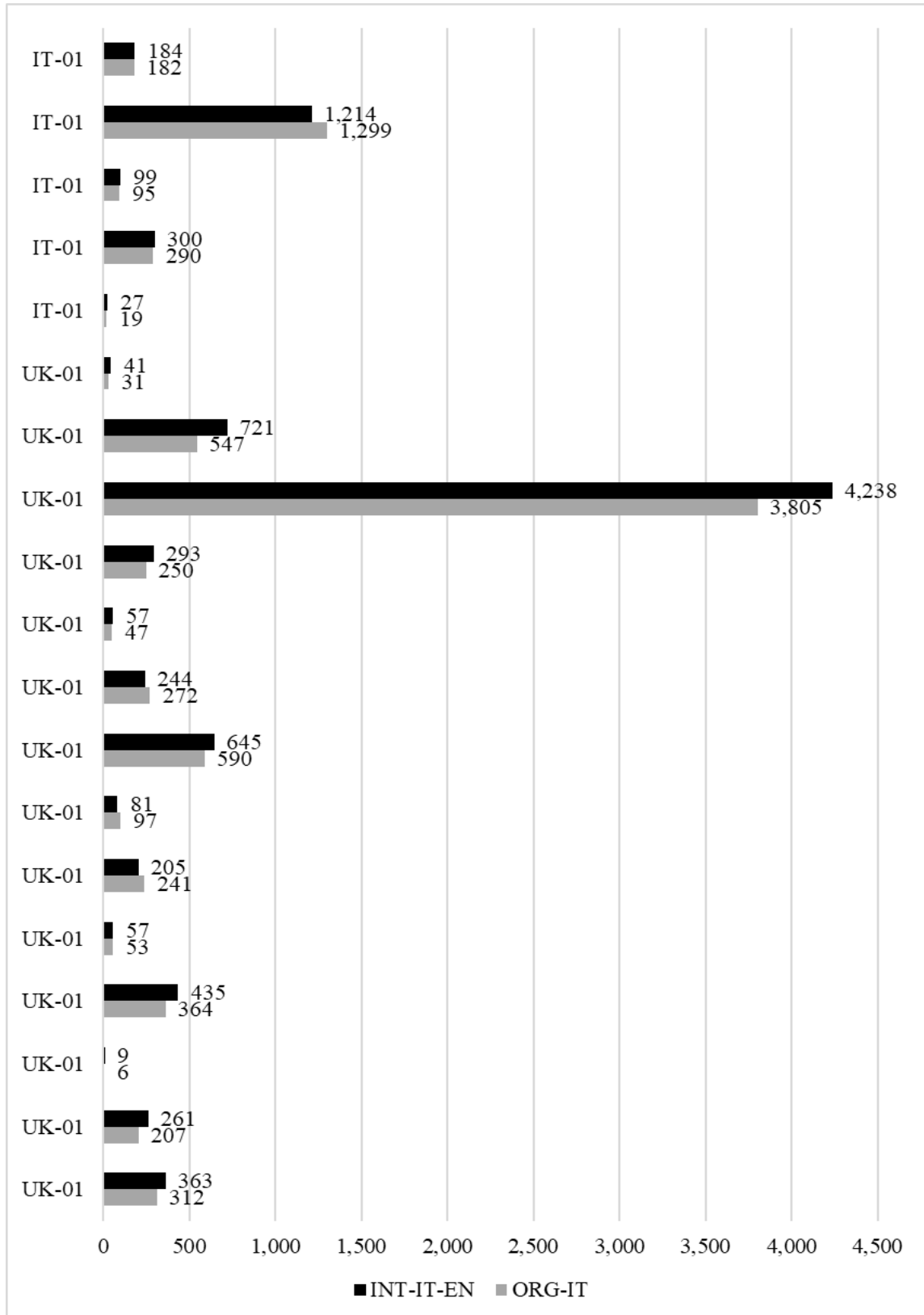

Figure 1: Comparison of the number of words in Italian STs and English TTs in CFF4 by interpreter

Given the variety of speech events making up each conference, the next step is to provide a detailed study of the trend of text compression/expansion for each source speech event and its interpretation within all the DIRSI sub-corpora, so as to check whether the general trend remains constant in all cases. In order to facilitate this kind of analysis and to effectively manage the amount of data at hand, the data from DIRSI-ORG-EN and DIRSI-INT-EN-IT (i.e., from the ST in English with the related TT in Italian), present in all the three conferences, are grouped into a single graph. By contrast, the ST in Italian and the related TT in English are presented separately for each conference and according to two total levels of output. A first group includes texts with less than 500 words, while a second group includes texts containing more than 500 words.

As Figure 2 clearly shows, contrary to the trend identified from a global observation of the data, in texts of shorter length (up to about 2,000 words) the number of words is slightly higher in TT than in ST. In contrast, in texts classified as medium (1,650–3,300 words) and long (> 3,300 words) in length, the general trend in which TT have fewer words than the corresponding ST is confirmed, as shown in Table 9.
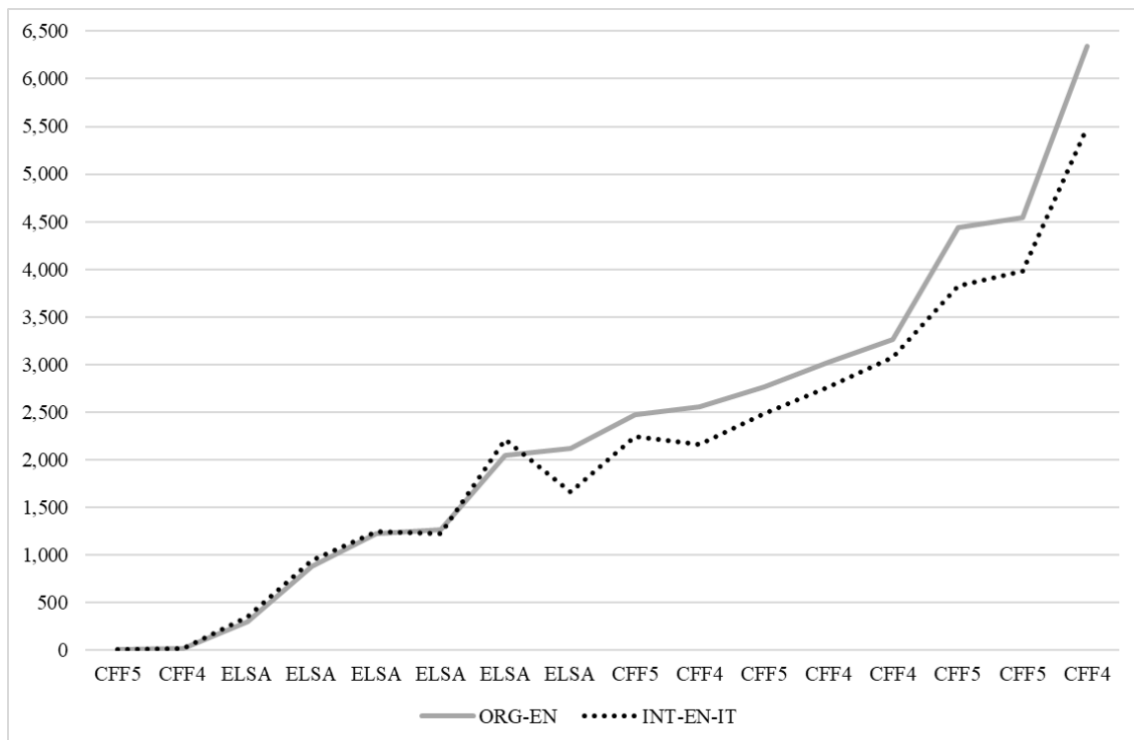

Figure 2: Number of words in English ST and Italian TT in DIRSI

Sub-corpus	Number of words in ORG-EN	Number of words in INT-EN-IT
CFF5	6	4
CFF4	18	14
ELSA	297	347
ELSA	879	938
ELSA	1,228	1,243
ELSA	1,269	1,225
ELSA	2,045	2,216
ELSA	2,118	1,659
CFF5	2,472	2,241
CFF4	2,550	2,160
CFF5	2,763	2,478
CFF4	3,019	2,763
CFF4	3,264	3,077
CFF5	4,439	3,827
CFF5	4,544	3,986
CFF4	6,338	5,486

Table 9: Number of words in English ST and Italian TT in DIRSI

As explained earlier, the analysis of the Italian ST and their corresponding TT in English was carried out with two subsets of data, that is, separating all the source speech events with less than 500 words from those with a higher number of words in each conference. Figures 3 and 4 display the trend for each group respectively in the CFF4 conference. The vertical axis lists the number of words while the horizontal axis lists the speech events from the shortest to the longest in their category.
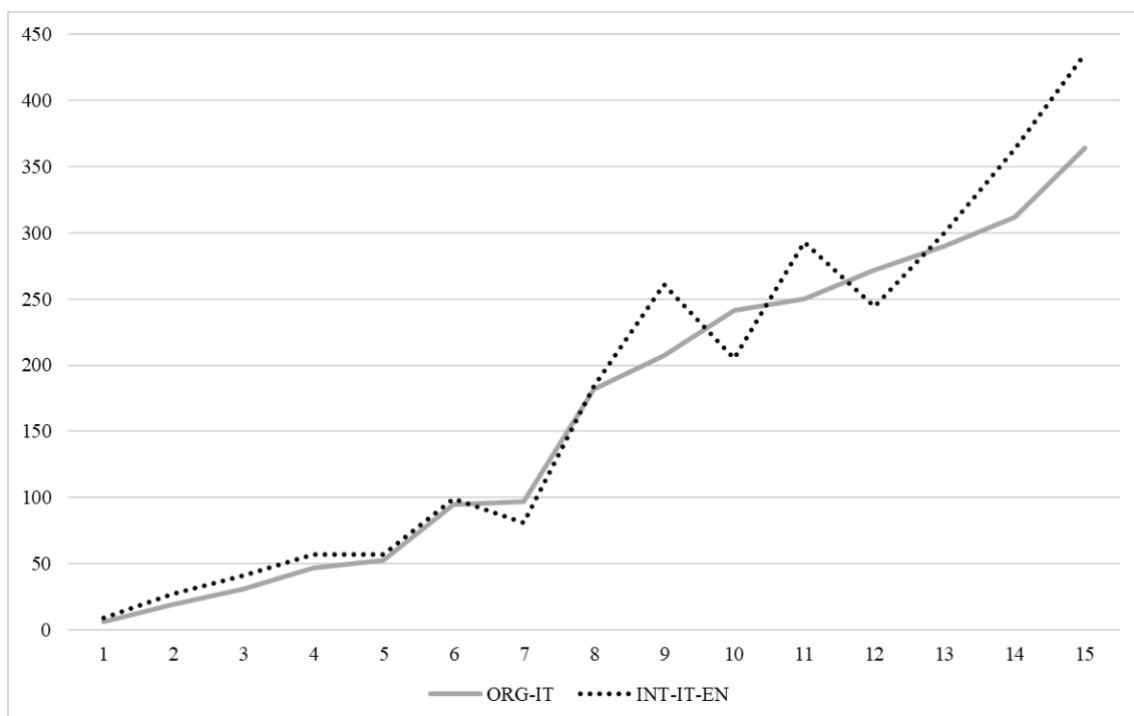

Figure 3: Number of words in Italian ST and English TT in CFF4 (ST < 500 words)

In this group of speech events taken from the CFF4 conference and with a length of less than 500 words (Figure 3), it is possible to note that there is almost always expansion with a higher word output in TT than in ST. We have already pointed out that the directionality factor probably plays a key role in this data set, as one of the interpreters on duty is a native speaker of English (UK-01). Table 10 lists the exact number of words in the interpreter's output for each speech event.

Number of words in ORG-IT (CFF4)	Number of words in INT-IT-EN (CFF4)
6	9
19	27
31	41
47	57
53	57
95	99
97	81
182	184
207	261
241	205
250	293
272	244
290	300
312	363
364	435

Table 10: Number of words in Italian ST and English TT in CFF4 (ST < 500 words)

Table 11 and Figure 4 instead report text compression and expansion in CFF4 speech events with ST larger than 500 words. The trend noted in Figure 3 is also noted in texts longer than 500 words. Again, we should consider what has already been commented about the directionality factor for this particular group of texts, where the working languages of one of the two interpreters are English as language A and Italian as language B.

Number of words in ORG-IT (CFF4)	Number of words in INT-IT-EN (CFF4)
547	721
590	645
1,299	1,214
3,805	4,238

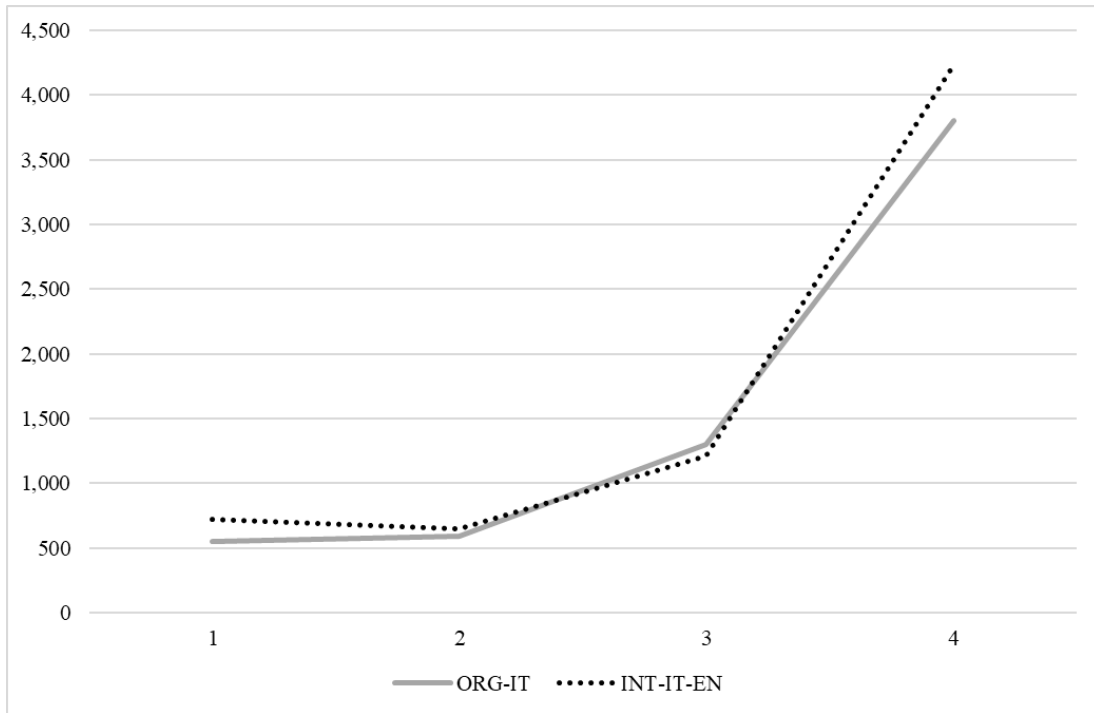Table 11: Number of words in Italian ST and English TT in CFF4 (ST > 500 words)

Figure 4: Number of words in Italian ST and English TT in CFF4 (ST > 500 words).

The same analytical procedure was applied to the ELSA conference. Figures 5 and 6 (along with Tables 12 and 13) report the text compression/expansion (between ST with less and more than 500 words respectively) and the corresponding TT.
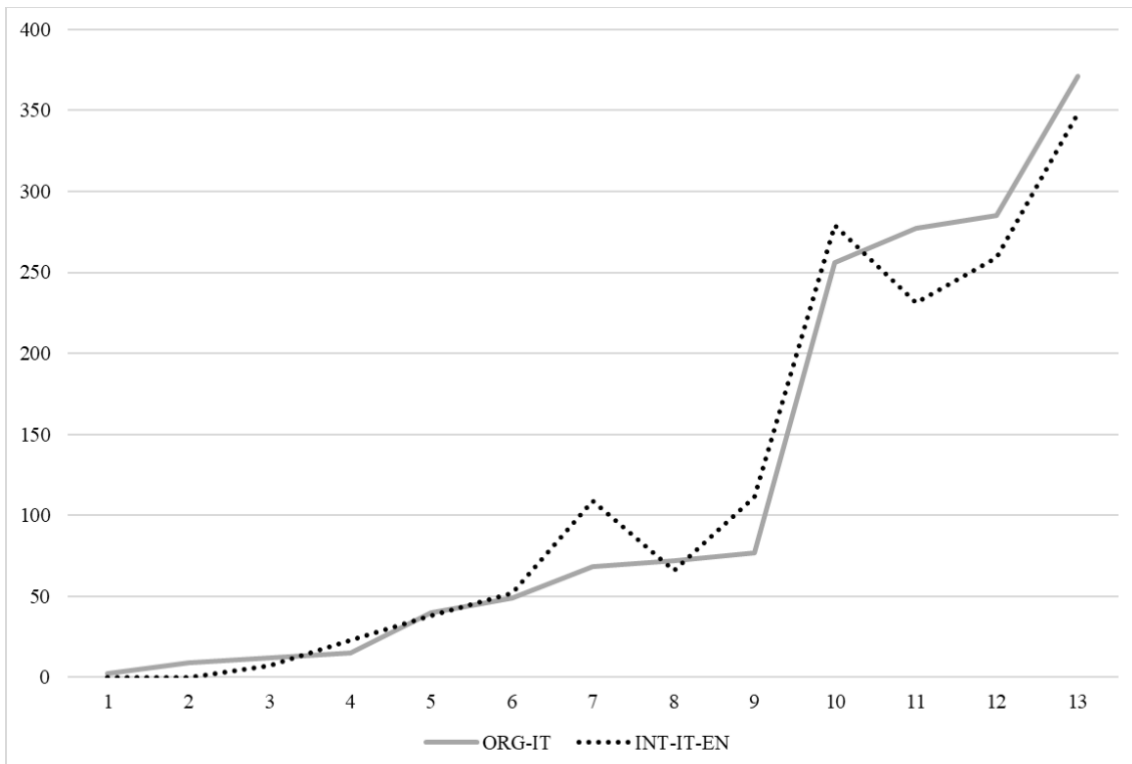

Figure 5: Number of words in Italian ST and English TT in ELSA (ST < 500 words).

In the speech events under 500 words in length selected from the ELSA conference, it is possible to observe that the number of words in the TT generally remains similar or slightly above the number of words in the relevant ST, with the exception of the last three texts (over 270 words) and the first two (extremely short and not translated by the interpreter). This finding challenges the general trend noted from a global observation of the data (it should be specified, however, that the spike in speech event number 7 is due to the failure to record the first few seconds in this speech).

Number of words in ORG-IT (ELSA)	Number of words in INT-IT-EN (ELSA)
2	0
9	0
12	7
15	23
40	38
49	52
68	109
72	66
77	111
256	279
277	231
285	259
371	348

Table 12: Number of words in Italian ST and English TT in ELSA (ST < 500 words)

Let us now consider Italian ST longer than 500 words and their TT into English in the ELSA conference (Table 13 and Figure 6). The two lines in Figure 6 show partial correspondence with the general trend of text compression in TT. However, there are a couple of exceptions where the TT has a slightly higher number of words than the ST. In any case, the other TT follows the general trend and show a lower number of words than the corresponding ST.

Number of words in ORG-IT (ELSA)	Number of words in INT-IT-EN (ELSA)
554	444
821	942
1,187	1,254
2,271	2,117
3,456	2,948

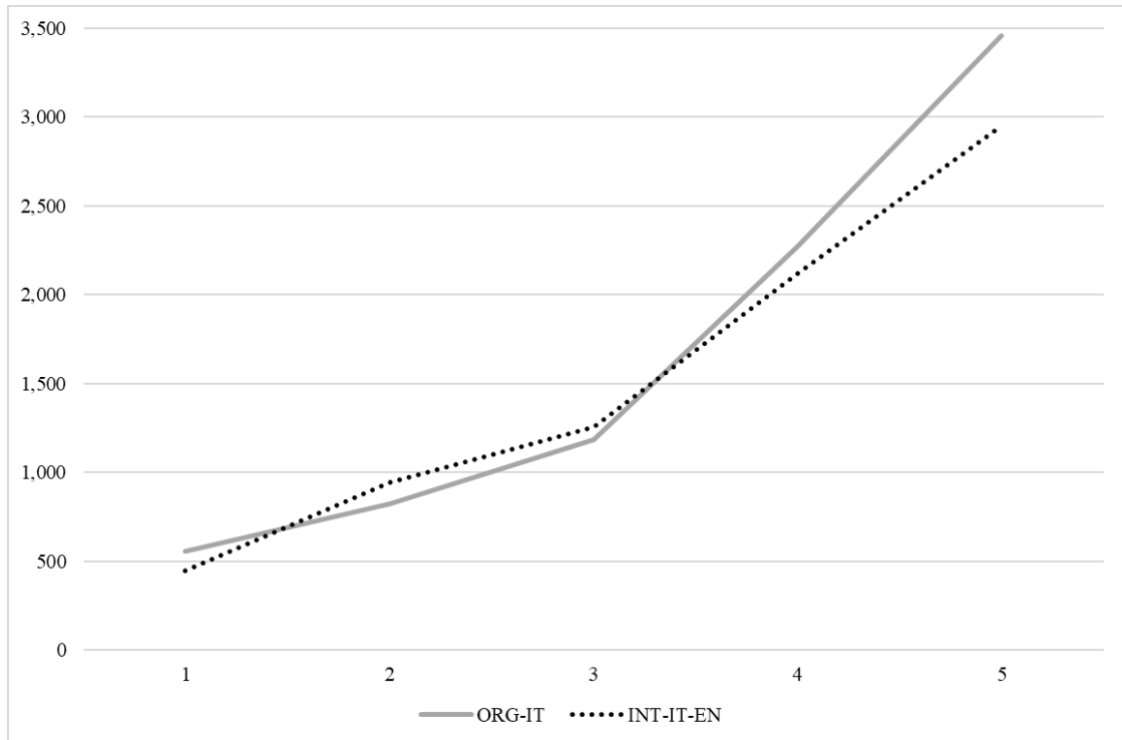Table 13: Number of words in Italian ST and English TT in ELSA (ST > 500 words)

Figure 6: Number of words in Italian ST and English TT in ELSA (ST > 500 words)

Finally, the last conference to be analyzed is CFF5. As above, ST up to 500 words are considered first (Figure 7 and Table 14), and ST with more than 500 words and their TT are considered second (Figure 8 and Table 15).
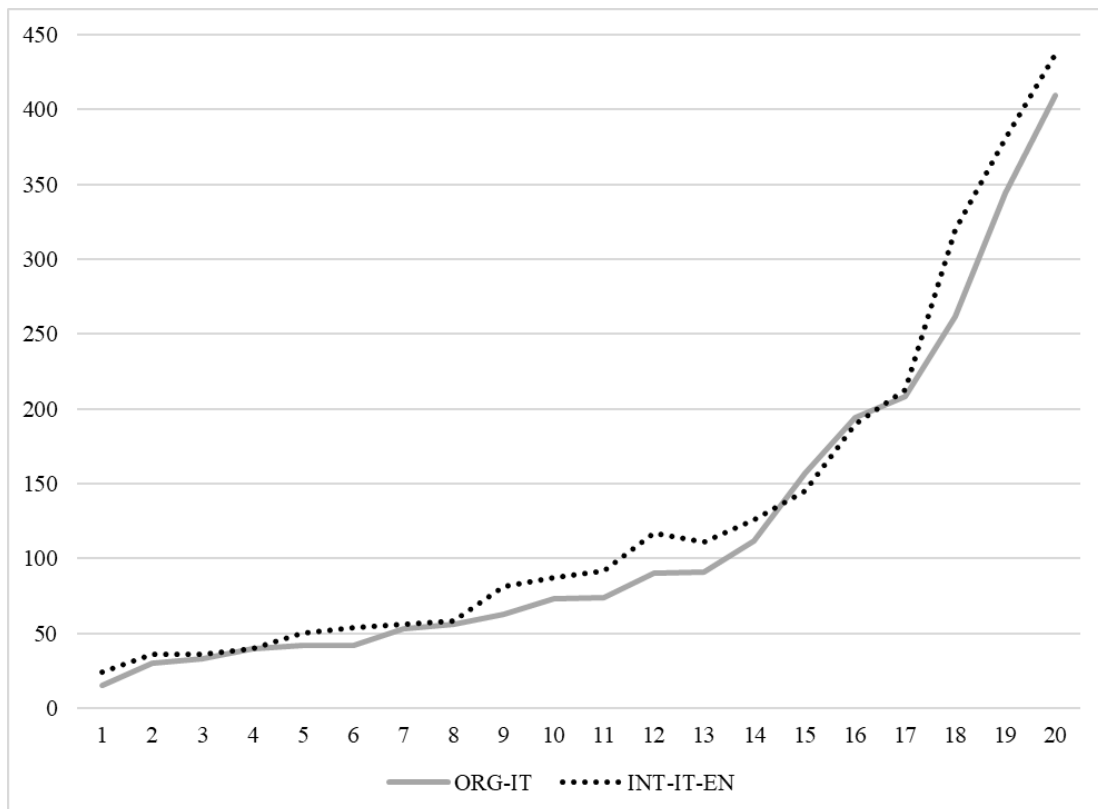

Figure 7: Number of words in Italian ST and English TT in CFF5 (ST < 500 words)

Number of words in ORG-IT (CFF5)	Number of words in INT-IT-EN (CFF5)
15	24
30	36
33	36
40	40
42	50
42	54
53	56
56	58
63	81
73	87
74	92
90	117
91	111
112	126
157	145
194	190
208	213
262	320
344	381
410	437

Table 14: Number of words in Italian ST and English TT in CFF5 (ST < 500 words)

In source speeches with less than 500 words from CFF5, the number of words is most times always higher in TT and lower in the related ST, in total contrast to the general trend whereby TT are always shorter in length than ST.

By contrast, the general trend is confirmed once again in the results shown in Table 15 and Figure 8, with ST larger than 500 words from the CFF5 conference. The number of words in TT is always lower than the number of words in the corresponding ST, with just one exception where the number of words is the same (i.e., 648, the shortest ST from this category), as shown in Table 15.

Number of words in ORG-IT (CFF5)	Number of words in INT-IT-EN (CFF5)
648	648
789	760
1,357	1,254
2,042	1,609
2,168	1,752
5,454	4,131

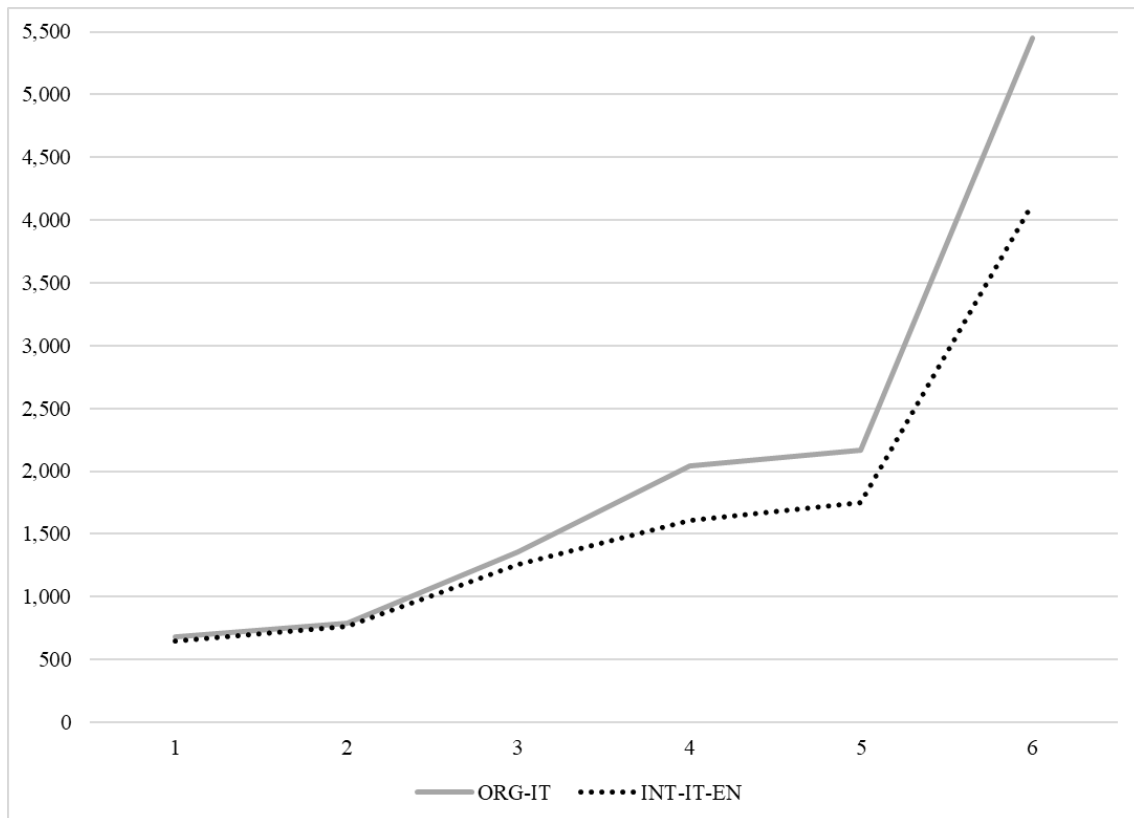Table 15: Number of words in Italian ST and English TT in CFF5 (ST > 500 words)

Figure 8: Number of words in Italian ST and English TT in CFF5 (ST > 500 words)

5. DISCUSSION

Some interesting trends could be noticed in the comparative analysis of the number of words present in the output of source speakers and simultaneous interpreters. Overall, TT have a shorter length (in terms of word count) than ST. However, some exceptions could be identified.

A first exception concerns TT in English as language A or language B. In the specific case represented in the DIRSI corpus with the CFF4 conference, the general trend is not followed by the interpreter working with English as language A. His output in (native) English is larger than the word count of the corresponding Italian ST. This might be explained by the greater language availability of interpreters when working towards their A language. However, this did not occur in the opposite directionality, as the output of both interpreters in the same conference is in line with the general trend, that is, they produce fewer words in the Italian TT than the number of words in the English ST. This is also confirmed by all the other interpreters with Italian A serving in the other conferences included in the DIRSI corpus.

In the next step of the analysis, going from the general observation to a more in-depth level of detail, a different state of affairs was attested, depending on the length of the ST: when translating extremely short source speech events (with less than 500 words) interpreters tended to produce more words than there are in the original. This is seemingly related to the type of speech events involved. In fact, such a short duration is detectable in the following types of speech event: opening-closing remarks, floor allocation, procedure, or housekeeping announcements (as well as question, answer, and comment), that is, in all types of text with the exception of those classified as papers or lectures.

With these data in hand, it can be hypothesized that the expansion (or lack of compression) attested in the TT was due to the handling of the particular information contained in the reported speech events, as well as to the need to comply with certain rhetorical and politeness formulas not compulsorily present in Italian ST, but essential in the rendering of TT in English. Therefore, despite the fact that the interpreters worked towards their B language, it seems that the need to convey information explicitly and with appropriate linguistic-communicative choices induced them to expand their output, thus making the non-Italian-speaking participants fully and effectively share the situational context. Differences in the kind of time constraint posed by sequences of these speech events may also play a role. Conversely, when translating longer ST, interpreters tended to perform text reduction, and this may be due not only to possible cases of omission, but also to the streamlining of a sometimes redundant, repetitive if not wordy and poorly structured ST.

Below are some specific examples of speech expansion in TT retrieved from the DIRSI corpus. The transcripts are provided in tabular form, with the ST on the left and the TT on the right. Speech expansion is highlighted in bold. A literal, backtranslation into English of all Italian ST and TT is provided in square brackets.

The first example is from a closing remark by one of the organizers of the ELSA conference. Several elements that explain the larger number of words in the TT produced by the interpreter (IT-04), both obligatory and non-obligatory, can be identified. The largest expansion is due to the part where the interpreter informs listeners that it is not possible to translate what an audience member is saying, as they take the floor without using the microphone, as shown in (1a).

(1a) ELSA-023-ORG-IT   ELSA-023-INT-IT-EN

io concludo solo con ringraziamenti a Federica Leonardo Sabrina Francesca di ARCO a Milena // in particolare poi a Barbara che è la vera organizzatrice di tutto questo evento e che ha seguito tutta questa cosa // vedevo una mano alzata laggiù in fondo // **[audience speaks without microphone]** // va bene grazie mille ok // io credo che con con queste parole di augurio e di ringraziamento // di nuovo grazie a tutti per essere stati qua e ci sentiamo perché da lavorare ce n'è tanto

finally I'd like to conclude by thanking Federica Leonardo Sabrina Francesca from ARCO and Milena // in particular I'd like to thank Barbara who's the real organizer of thes- this whole event and for following this event through // I saw someone raises his hands at the towards the end of the conference room **and of course also this speech is delivered without using the microphone sorry for that** // thank you // I think that with these final remarks we can call it a day // I'd like to thank you all for being here with us and I think we shall speak to each other again because there is still a lot to do

Other non-obligatory expansions can be identified where contextual cues are provided more explicitly, as in (1b):

(1b) ELSA-023-ORG-IT   ELSA-023-INT-IT-EN

vedevo una mano alzata **laggiù in fondo** [I saw a hand up **back there**]

I saw someone raises his hands **at the towards the end of the conference room**

In addition, managing politeness in English appears to involve the addition of a number of lexical (and grammatical) elements which are not present in the Italian ST, as illustrated in (1c):

(1c) ELSA-023- ORG-IT   ELSA-023- INT-IT-EN

io concludo solo con ringraziamenti a [**I conclude** just with thanks to]

finally I'd like to conclude by thanking

in particolare **poi a** Barbara [in particular **then to** Barbara]

in particular **I'd like to thank** Barbara

e **ci sentiamo** perché da lavorare ce n'è tanto [and **let's talk** because to work there is much]

and **I think we shall speak to each other again** because there is still a lot to do

An instance of sentence completion in the TT can also be observed. This is done with respect to a unit of meaning in the ST that is not fully completed, as can be seen in (1d). In this example, there is also a case of text compression where a lexical repetition, that is, *parole di augurio e ringraziamento* ('words of wishes and thanks'), is reduced to two words in the English TT ('final remarks'):

(1d) ELSA-023- ORG-IT

io credo che con con queste parole di augurio e di ringraziamento // di nuovo grazie a tutti per essere stati qua

[I believe that with with these words of wish and thanking // again thanks to all for being here]

ELSA-023- INT-IT-EN

I think that with these final remarks **we can call it a day** // I'd like to thank you all for being here **with us**

Examples (2a) and (2b) below are taken from an opening remark from the CFF5 conference (DIRSI-2007-05-11-VR-CFF5-001-ORG-IT). The conference started with some delay due to miscommunication about the opening time of the proceedings (a preliminary program had been circulated with a different time). In (2a), the interpreter (IT-01) provides a more extended explanation than the original speaker does, thus making contextual cues more explicit. In (2b), there are also TT expansions that occur in conjunction with several phenomena: different structuring of information that is segmented into several mutually independent utterances, management of politeness, and more explicit contextual cues.

(2a) CFF5-001-ORG-IT

ci scusiamo ancora per l'equivoco // l'orario // cercheremo di riparare

[we apologize again for the misunderstanding // the time // will try to repair]

CFF5-001-INT-IT-EN

I do apologise for this problem **we had with the beginning of the conference** // **as some people knew it was at ten thirty for the preliminary programme**

(2b) CFF5-001-ORG-IT

questo **quinto seminario** riproduce una tradizione di incontro dei più interessati su alcuni aspetti più emergenti della fibrosi cistica **coinvolgendo** alcuni esperti che vengono da varie parti e che ci sembrano quelli che in questo momento possono dare su quei temi un segnale di aggiornamento efficace // s- **sono** i temi che conoscete in programma //

[this **fifth seminar** reproduces a tradition of meeting of the most interesting on some aspects most emerging of cystic fibrosis **involving** some experts who come from various parts and who seem to us those who in this moment can give on those themes an effective signal of update // **they are** the themes that you know in the programme]

CFF5-001-INT-IT-EN

this **is the fifth edition of our spring seminar** // it is a tradition of meeting on some interesting aspects emerging aspects concerning cystic fibrosis // **we are pleased to involve** great experts coming from all around the world // we consider these experts to be those people who can give a a significant contribution as an an update // **and they will be discussing** the subjects that you have in the programme //

Example (3) has also been retrieved from a speech event classified as an opening remark (as in the case of the previous example) at the CFF4 conference (DIRSI-2006-05-20-VR-CFF4-002-org-it). Unlike examples (1) and (2), the interpreter here works towards his native language, as he is a native English speaker (UK-01). In (3), the expansion made by the interpreter might result from an attempt to make the message (expressed in the ST) less cryptic and more explicit by increasing its anaphoric references to the units of meaning expressed in the previous part:

(3) CFF4-002-ORG-IT

è per questo che a me piace questa giornata e piacciono questi incontri **perché mettono insieme proprio i due poli che si parlano** //

[is for this that I like this seminar and like these meetings because **bring together exactly the two poles that speak to each other**]

CFF4-002-INT-IT-EN

this is why I am very happy to open these proceedings and I'm very happy about these meetings because **they're an opportunity** to bring together two sides **which can exchange and exchange views with regard to solutions and analysis of problems** //

Finally, examples (4a), (4b), and (4c) have been taken from a speech event categorized as a paper presentation in the ELSA conference (DIRSI-2006-10-19-FC-ELSA-012-org-en). In fact, it contains 2,045 words, so it does not belong to the group of very short speech events and, according to the general trend attested in other long speeches, it should be affected by text compression. However, in this case, the TT was expanded by nearly 8.5 percent (2,216 words). The interpreter (IT-04) translated from English into Italian (her A language), and this is sometimes reflected in more elaborate lexical choices and additional options, as shown in (4a). On the other hand, the source speaker is not speaking in her native language and makes use of English as foreign language or as a lingua franca (Bendazzoli 2017). Other instances of expansion in this example are possibly due to the interpreter's attempt to make up for a faulty wording of the ST, which is sometimes confused or expressed with lexical juxtapositions (4b and 4c), and to provide additional information for the sake of clarity, particularly about the English term *carer* which is also kept in Italian (4c). The speaker's difficulty in expressing herself in a foreign language can be perceived quite clearly from the recording of her presentation, though her language weaknesses cannot be perceived when listening to the interpreter.

(4a) ELSA-012-ORG-EN

since two thousand and four we changed our **organisation** in an independent carers' support centre because we **discovered** that sometimes the family carers as we call them

ELSA-012-INT-EN-IT

dal duemilaquattro abbiamo modificato la nostra **struttura organizzativa e siamo diventati** un centro di supporto indipendente ai carer perché **ci siamo resi conto** che a volte i family carer come noi li chiamiamo

[since two thousand and four we have changed our organizati**onal structure and we have become** an independent support center for carers because **we have become aware that** at times family carers as we call them]

(4b) ELSA-012-ORG-EN

the the family members who take care of their parents brothers and sisters partners children disabled children have sometimes trouble with home care organisations //

ELSA-012-INT-EN-IT

cioè i carer che sono membri della famiglia che si prendono cura dei propri cari **che possono essere** figli disabili genitori anziani o comunque familiari malati a volte si trovano in difficoltà nei confronti delle organizzazioni delle cure domiciliari

[**that is the carers who are** members of the family who take care of their dear ones **who can be** disabled children elderly parents or anyway ill relatives at times they find themselves in difficulty with respect to organizations of home care]

(4c) ELSA-012-ORG-EN

and as being a part of such home care organisation **would bring us in a difficult situation** to to help the **family carers**

ELSA-012-INT-EN-IT

e **il fatto che noi facessimo parte** di questa organizzazione di assistenza **di cura** domestica **ci ha fatto trovare nella situazione in cui ci era difficile** poter aiutare i family carer **cioè i familiari che si prendevano cura dei loro cari**

[and **the fact that we were part** of this organization of assistance of home care **has made us find in the situation in which we had difficulty** to help the family carer **that is the relatives who took care of their dear ones**]

6. CONCLUSION

A quantitative analysis of textual output in source speeches and their simultaneous interpretations in the DIRSI corpus (considering the number of words) showed that there is a general trend by which interpreted speeches always contain a lower number of words than their originals, regardless of directionality. The only exception to this trend were the target speeches in English produced by interpreter UK-01, who had English as language A. However, this result differs from what was verified in the Italian target speeches produced by Italian native interpreters, and also from the EPIC corpus, where working conditions might lead to reduced textual output in TT, even when produced by interpreters working from language B (or C) to language A.

In addition to the global observation of the data in the DIRSI corpus, a more in-depth analysis was conducted. This consisted of isolating the data on textual output in ST and TT in each conference making up the corpus. This deeper level of analysis showed that the general trend attested in the overall data does not hold constant for all kinds of speech events: TT produced from extremely short ST (under 500 words, typically opening/closing remarks, floor allocation, announcements) usually contain more words than there are in the corresponding ST. On the other hand, above the 500-words threshold the general trend is confirmed: that is, fewer words in TT than in ST. Among possible motivations for the expansion of TT related to shorter speech events, we noted the addition of more explicit information by the interpreter, the use of formulas for managing politeness in English, and the optimization of the TT when the ST displays incomplete or grammatically deficient sentences.

Overall, there were no instances of very marked expansions of TT compared to ST. However, the maintenance of a similar level of textual output (number of words) between the two types of texts is in sharp contrast with the general picture where the number of words produced in TT is always lower than the number of words produced in ST. Besides the particular features of the very short source speeches where this trend was registered, it is worth emphasizing that every ST was considered individually. Yet, those speech events were actually part of a seamless sequence making up the conference as a communicative event. The deployment of such a sequence may come with pauses that would provide interpreters with more leeway in managing the critical constraint of time in SI. Another important limitation of this study lies in that text compression/expansion

was measured in terms of the number of words, which is a rough indicator of a much more complex linguistic and cultural mediation activity.

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