Interpreters' strategies for dealing with different source speech delivery rates: Form- vs meaning-based approaches

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ABSTRACT

Source speech delivery rate is an important aspect of (simultaneous) interpreters' working conditions. A fast delivery rate is considered an "extreme speech condition" (Meuleman and Van Besien 2009:31) and various studies find that interpreters confronted with this condition produce output of sub-standard quality (Pio, 2003). Other authors suggest that interpreters can cope with fast delivery rates by applying distinct strategies (Meuleman and Van Besien 2009). However, little information is available regarding the strategies that result in a successful interpreting performance despite a fast delivery rate. This paper examines professional interpreters' choice of strategy when interpreting slow-, medium- and fast-paced speeches to determine whether interpreters are more likely to employ form- or meaning-based approaches (Dam 1998) at various rates. A parallel corpus consisting of 60 speeches delivered at the European Parliament and interpreted simultaneously from English into German is compiled and analysed using the electronic corpus tool ParaConc. The analysis focuses on interpreters' renditions of the English ing-clause, which offers possibilities for both form- and meaning-based renditions into German.

KEYWORDS: simultaneous interpreting; source speech delivery rate; form- vs meaning-based interpreting; corpus-based interpreting studies

1. Introduction

One of the most common problem triggers for (simultaneous) interpreters is a fast delivery of the source language (SL) speech to be interpreted (Gile 2009:192). Li (2010:19) goes as far as referring to high input speed as "the arch enemy of simultaneous interpreters". Several studies analyse the potentially detrimental effects of very high delivery rates on the quality of interpreters' output (e.g. Gerver 1975; Galli 1990; Pio 2003), and a few authors study the strategies that interpreters use to cope with such conditions (e.g. Pio 2003; Meuleman & Van Besien 2009). Less information is available regarding if and how interpreters' choice of interpreting strategy is conditioned by the varying demands of different input rates, and very few studies analyse the effect of a very slow input rate on interpreter performance (Shlesinger, 2000 in Pöchhacker 2004:130).

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Some studies indicate that fast source speech input rates lead interpreters to produce target language (TL) output that displays a high degree of lexical similarity with the SL speech, arguably because interpreters working under extreme working conditions no longer possess enough processing capacity to deverbalize the SL message (Barghout and Garcia 2015). Meuleman and Van Besien (2009), for example, find that interpreters adopt a "tailing" approach at higher source speech input rates. This approach involves the reproduction of the individual source text units and structure, and forms part of what Dam (1998) terms "form-based interpreting", i.e. the production of TL output that is formally similar to the source text, as opposed to "meaning-based interpreting" which results in a formally dissimilar product.

However, little data from authentic interpreting settings is available to indicate whether professional interpreters' use of form- vs meaning-based interpreting is conditioned by the source speech's input rate, and whether the form-based approach is indeed the more frequently used strategy at higher input rates. Instead, most studies on delivery speed in interpreting rely on experimental designs that aim to examine the effects of a high input rate on trainee interpreters' performance. Meuleman and Van Besien (2009:22) therefore call for more research in "near-naturalistic settings" to provide information on professional interpreters' choice of interpreting strategy when confronted with various input rates.

The present study examines professional interpreters' output when interpreting slow-, medium- and fast-paced speeches in an authentic interpreting setting, namely the European Parliament's plenary debates, in order to determine whether interpreters' choice of interpreting strategy is conditioned by the input rate, and if so, which approaches interpreters favour at various source speech delivery rates.

2. Literature review

2.1 Effect of input rate on interpreter performance

A number of studies have examined the effect of SL input rate on the quality of interpreters' output in terms of factors such as accuracy and completeness. Most authors compare the output of interpreters working at different input rates in order to determine the extent to which its quality is affected by varying SL rates and, in particular, if and to what extent interpreters' performance deteriorates at very fast input rates. Most of this research relies on experimental

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research designs and fabricated SL speeches (e.g. Shlesinger 2003; Korpal 2012; Barghout and Garcia 2015). Some authors furthermore incorporate additional variables and compare, for example, the performance of trainee and professional interpreters at various SL input rates (e.g. Barik 1973; Korpal 2012).

Some of the earliest studies on delivery speed in interpreting examine interpreters' omissions, additions and substitutions at various input rates and arrive at the conclusion that interpreters' performance deteriorates with increasing input rate as more omissions and substitutions occur (Gerver 1969; 1971; Barik 1973). Galli (1990) conducts a similar experiment and compares the number of omissions, additions, substitutions and "interpretations" (correct renderings) that interpreters produce at various input rates. Like Gerver (1969; 1971) and Barik (1973), she concludes that the number of both omissions and substitutions increases as the source speech input rate increases, whereas the number of additions decreases. Pio (2003) examines interpreters' renditions at different rates for meaning equivalence (omissions, additions, and substitutions) and for fluency of delivery (pronunciation, pauses, repetitions, and false starts). The main difference in performance that she identifies for interpreters working at higher input rates is an increased number of meaning equivalence errors, and in particular omissions.

Barghout and Garcia (2015) examine the impact of speed on interpreters' omissions of redundant elements in particular, and find that, as expected, more synonyms are omitted by interpreters as the SL input rate increases, probably as part of a "conscious and deliberate decision and strategy by the expert interpreter" (Barghout and Garcia 2015:326). Regarding redundant conjunctions, interpreters apply omission more frequently at 160 words per minute (wpm) than at 120 wpm; however, contrary to expectation, interpreters omit redundant conjunctions less frequently at 200 than at 160 wpm. The authors hypothesize that this may be due to the fact that at this very high input rate of 200 wpm, interpreters simply lose control over the interpreting process and resort to following the speaker as closely as possible. Korpal (2012) compares the performance of trainee and graduate interpreters. The main finding, in line with the above studies, is that the graduates resort to (probably deliberate) omissions more frequently at faster input rates. For trainee interpreters, however, the increase in omissions when interpreting speeches with fast input rates is not statistically significant, presumably because less experienced interpreters have not yet mastered this strategy.

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While some of the earlier publications (Gerver 1969; 1971) equate interpreter omissions with interpreting errors, more recent studies argue that omission, especially when associated with difficult working conditions, is a deliberate, strategic decision that professional interpreters take in order to enable them to retain the most important elements of the SL speech when coping with a high cognitive load (Korpal 2012; Barghout and Garcia 2015). Whether deliberate or not, the above authors agree that the number of omissions increases with increasing source speech input rate.

Shlesinger's (2003) data, however, leads to a different conclusion. Shlesinger (2003) does not analyse the number of omissions, additions and substitutions, but instead examines the way in which interpreters deal with multiple adjectival modifiers that require post-modification in the TL (Hebrew). She finds that the interpreters in her study transfer the modifiers more accurately and completely at a higher input rate. She attributes this to the fact that, due to the faster rate, there has been less time for the relevant SL items to decay in an interpreter's memory. In line with this, Shlesinger (2000, in Pöchhacker 2004:130) finds that a slow input rate results in the decay of information in the interpreter's memory. It needs to be pointed out, however, that Shlesinger's (2003) fast input rate of 140 wpm differs significantly from the definitions of fast input rates provided by some other authors (e.g. Meuleman & van Besien (2009): 184 wpm; Barghout and Garcia (2015): 200 wpm). It is unclear whether the performance of the interpreters in Shlesinger's (2003) experiment would have deteriorated again at these significantly faster input rates.

While most studies that focus on the extent of interpreter omissions, additions and substitutions conclude that a higher input rate results in a deterioration of interpreter performance, Shlesinger's (2000, in Pöchhacker 2004:130; 2003) research thus indicates that there may be some benefits related to a higher source speech input rate, e.g. more accurate retention (and hence reproduction) of some types of information in interpreters' working memory.

Not all studies that examine interpreter performance at different input rates focus on the omission or retention of information in interpreters' TL renditions. Other factors, and in particular interpreters' ear-voice span, interpreters' own output rate, and the selection of so-called tailing vs reformulation strategies as conditioned by the SL input rate, have also been examined.

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Pio (2003), for example, observes with regard to ear-voice span that while some (trainee and professional) interpreters shorten their ear-voice span as input rate increases, others lengthen their ear-voice span under the same conditions. This behaviour appears to be independent of the number of omissions produced. Gerver (1971) finds that, at higher input rates, interpreters start significantly lengthening their ear-voice span, possibly to allow for more extensive reformulation and summarization of the SL message. With regard to the interpreter's own TL output rate, Gerver (1969; 1975) and Dejean Le Feal 1978 (in Meuleman & Van Besien 2009) also find that, while interpreters initially increase their own pace as the input rate increases, this effect drops off at higher input rates, at which interpreters start decreasing their own pace again, possibly to allow for more summarizations and omissions at this faster pace.

Meuleman and van Besien (2009) investigate interpreters' use of tailing (i.e. following the source speech structure closely) and segmentation (i.e. splitting complex SL structures into shorter, more manageable units) when dealing with high input rates, and also determine which of these two strategies results in more 'acceptable' output. They find that the strategy that most interpreters prefer at the high input rate is tailing, and that this strategy leads to acceptable TL output in most cases. Interpreters who opt for segmentation, or who fail to adopt a consistent strategy, most often do not succeed in producing acceptable output. This concurs with the findings by Barghout and Garcia (2015), who also conclude that interpreters confronted with very high input rates prefer to adhere to the SL speaker very closely as proper analysis and reformulation of the SL speech become increasingly difficult due to capacity overload. Similarly to Meuleman and van Besien (2009), Mackintosh (1983, in Gile 2005) concludes that interpreters exposed to a high input rate will resort to "a very well-known strategy for difficult and dense passages by sticking very close to the original (tailing), not attempting to process the idea but preferring to transpose the words".

In conclusion, most studies on speed in interpreting find that, firstly, interpreters' omissions (whether deliberate or not) increase as SL input rate increases (Gerver 1969, 1971; Barik 1973; Galli 1990; Pio 2003; Korpal 2012; Barghout and Garcia 2015). Only Shlesinger (2000, in Pöchhacker 2004:130; 2003) observes fewer omissions of SL items at a faster input rate and attributes her findings to a reduced decay of certain SL items in the interpreter's memory at higher presentation rates. Secondly, while some authors observe that interpreters lengthen their ear-voice span at increasing input rates, possibly in order to allow for more extensive reformulation (Gerver 1971; Pio 2003) others concur that as the SL input rate increases,

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interpreters start resorting to a tailing strategy (Mackintosh 1983; Meuleman and van Besien 2009; Barghout and Garcia 2015).

Although all of the above studies analyse interpreter performance at various speeds, it needs to be pointed out that the values used to define slow, medium and fast input rates often differ across different studies, as outlined in Table 1. For example, a fast input rate is variously defined as 140 wpm (Shlesinger 2003) and as 200 wpm (Barghout et al 2015). A slow input rate is defined as 95 wpm (Barik 1973) or as 130 wpm (Korpal 2012). It is possible that some variability in the findings of the above studies may be the result of the lack of standard consensus as to what constitutes a slow and a fast input rate in simultaneous interpreting.

Table 1: Slow, medium and fast input rates as defined by different authors

Author/s	Slow		Medium		Fast
Gerver (1969; 1971)	95 wpm	112 wpm	120 wpm	142 wpm	164 wpm
Barik (1973)	95 wpm	112 wpm	120 wpm	142 wpm	164 wpm
Pio (2003)	108 wpm			145 wpm	
Meuleman & van Besien (2009)					184 wpm
Galli (1990)	from 107 wpm			156 wpm	
Shlesinger (2003)	120 wpm			140 wpm	
Barghout and Garcia (2015)	120 wpm		160 wpm		200 wpm
Korpal (2012)	130 wpm			177/180 wpm	

The use of word counts (vs syllable counts) for different languages, as well as the confounding effects of prosody and intonation (Pöchhacker 2004:130), further complicate comparisons across the different studies cited above. It is also worth noting that many of the above authors analyse the output of interpreters working with different language combinations, as indicated in Table 2. Interpreters working with cognate languages may be more likely to resort to tailing as a strategy whereas interpreters working with more dissimilar languages may need to use reformulation more regularly regardless of the source speech delivery rate.

Table 2: Interpreters' language combinations in different studies

Author	Language combinations
Gerver (1969; 1971)	English/French
Barik (1973)	English/French

Galli (1990)	English/Italian
Pio (2003)	German/Italian
Shlesinger (2003)	English/Hebrew
Meuleman & van Besien (2009)	French/Dutch
Korpal (2012)	English/Polish
Barghout and Garcia (2015)	English/French

All studies discussed above rely on experimental research designs and fabricated SL texts. Meuleman and van Besien (2009) and others call for studies in more natural settings, and in particular a "corpus-based study using existing corpora of interpreted texts" Shlesinger (2003:45). The present study addresses this gap in the research on the effect of SL input rate on interpreter performance by analysing data from an authentic interpreting setting (i.e. the European Parliament) in order to determine (i) whether professional interpreters' choice of strategy is conditioned by the SL speech's input rate, and if so, (ii) whether form-based approaches or meaning-based approaches are preferred at slow, medium and fast input rates.

2.2 Form-based vs meaning-based interpreting

Dam (1998) distinguishes two main interpreting strategies to classify the interpreter's output based on its formal correspondence with the SL speech, namely form-based interpreting (leading to formal similarity between the SL and the TL speeches) and meaning-based interpreting (resulting in formal dissimilarity between the two). Meaning-based interpreting, according to Dam (1998:50) involves a "reformulation of the source text meaning", whereas form-based interpreting is characterized by "target language reproduction of the individual source text units and structure" (Dam 1998:50) and by "sticking very close to the original, not attempting to process the idea but preferring to transpose the words" (Mackintosh 1983 unpublished thesis). While form-based interpreting does not, in fact, preclude an accurate transfer of the SL message and grammatical correctness, the meaning-based approach has nonetheless traditionally been considered superior (Seleskovitch 1976, cited in Dam 1998:50; Fabbro et al 1991, cited in Dam 1998:50). It has even been claimed by scholars such as Seleskovitch (cited in Dam 1998:50) that meaning-based interpreting is the approach that is favoured by practising interpreters most of the time. However, little empirical evidence has been provided in this regard and some scholars, such as Isham (1994:205) conclude that different interpreters simply process SL input differently: While some interpreters retain a

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"memory trace for the form of the source-language sentence", others do not, resulting in their preference for either form- or meaning-based interpreting strategies depending on an unknown "predictor variable that determines why some subjects [behave] the one way, and other subjects in another way". Others, such as Alonso Bacigalupe (2006, in Gile 2009:209) suggest that form-based approaches are in fact applied more frequently in practice than has traditionally been claimed.

Based on the above description of the form- and meaning-based interpreting approaches, Meuleman and van Besien's (2009) "tailing" strategy qualifies as form-based interpreting and their "segmentation" strategy as meaning-based interpreting, leading to the conclusion that according to most of the empirical studies discussed above, form-based approaches are often favoured by interpreters at higher SL input rates (possibly due to the fact that under extreme working conditions, interpreters are unable to avail sufficient processing capacity to the process of deverbalization and reformulation of the message (Barghout and Garcia 2015), and/or because there has been less time for the source speech units, form and structure, to decay in the interpreter's working memory (Shlesinger 2003)).

The present study examines (i) whether interpreters' choice of form-based vs meaning-based interpreting is conditioned by the source speech's input rate, and if so, (ii) which of the two approaches is favoured at which input rate, by analysing the strategies used by professional interpreters at the European Parliament for interpreting the English ing-clause into German at various input rates that are classified into slow, medium, and fast. Based on the findings of previous studies, it is expected that interpreters will closely reproduce the structure found in the SL speech, in this case the English ing-clause, in their German TL output more frequently when the SL speech is delivered at a fast input rate, whereas for slower input rates, more extensive reformulation of the message will occur.

3. Methodology

3.1 Data collection

In order to determine whether interpreters' choice between form- and meaning-based interpreting is dependent on the source speech input rate, a parallel corpus was compiled of speeches delivered in English (at various input rates), and simultaneously interpreted into

German by professional German interpreters at the European Parliament. The corpus used in this study consists of speeches delivered in English at plenary sittings of the European Parliament between July 2008 and February 2018, as well as their respective simultaneous interpretations into German.

Video and audio files of these sittings are freely available for download from the EP's website[1] and are therefore in the public domain. The video files show the SL speaker; the audio files contain the corresponding voice tracks in the selected TL. Apart from the SL version, it is possible to listen to audio files containing the simultaneous interpretations of these speeches into any of the official languages of the European Union.

Source speeches were selected mainly according to the criteria that (a) they had to contain at least one ing-clause, and (b) they had to fit into the input rate categories of slow ($\leq$ 130 wpm), medium (131 wpm-160 wpm), and fast (> 160 wpm). These word counts are based on the values determined by Sandrelli and Bendazzoli (2005:4) and are specific to the context of (generally fast-paced) European Parliament debates, which makes them ideal for use in the present study.

Due to the time constraints that delegates at the European Parliament experience in terms of speaking time allocated to speakers (European Parliament 2019), many speeches delivered in this setting are characterized by fast delivery speeds and identifying speeches delivered at under 130 wpm consequently proved difficult. There is thus greater repetition of speakers in the corpus of slow speeches as very few speakers speak at this pace. As it proved difficult to identify speeches that both contain an ing-clause and are delivered at slow and medium input rates, two non-native speakers (from Estonia and Finland) are included in the slow-paced corpus and two non-native speakers (from Finland and Cyprus) are included in the medium-paced corpus. All other source speeches are presented by speakers with British or Irish nationality.

The data that comprises this corpus consists of the transcriptions of 60 English speeches and their simultaneous interpretations into German. The English source speech corpus contains 14

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[1] http://www.europarl.europa.eu/plenary/en/debates-video.html

187 words and is 1:37:05 hours long. Table 3 summarizes the details of the English source speech corpus.

Table 3: SL speeches included in corpus

ENGLISH SPEECHES	Slow speeches ≤ 130 wpm	Medium speeches 131 - 160 wpm	Fast speeches > 160 wpm	TOTAL
No. of speeches	*20*	*20*	*20*	*60*
No. of different speakers	*7*	*15*	*15*	*37*
No. of words	*4,036*	*5,126*	*5,025*	*14,187*
No. of minutes	*35:17*	*34:11*	*27:37*	*1:37:05*
Average wpm	*111 wpm*	*149 wpm*	*186 wpm*	*148 wpm*
Range wpm	*70 - 130*	*134 - 160*	*165 - 219*	*70 - 219*

The corpus of German interpreted speeches consists of 12,397 words and has a duration of 1:34:46 hours. The use of data from the European Parliament ensures that there is standardization of the discourse environment "as well as homogeneity of the source speeches". (Sandrelli and Bendazzoli 2005:1); similarly, interpreter selection is standardized to some extent as all interpreters will have undergone the European Parliament's strict selection test (Sandrelli and Bendazzoli 2005:1). Table 4 shows the information relating to the German target language corpus.

Table 4: TL speeches included in corpus

INTERPRETED GERMAN SPEECHES	Slow SL speeches	Medium SL speeches	Fast SL speeches	Total
No. of words	3,523	4,931	3,943	12,397
No. of minutes	31:18	35:26	28:02	1:34:46
Female vs male interpreters	13 vs 7	13 vs 7	16 vs 4	42 vs 18

3.2 The ing-clause

This study focuses on interpreters' strategies for interpreting the English ing-clause into German at various source speech input rates. An ing-clause can be defined as a non-finite, dependent construction without tense or modality whose main verb occurs in the -ing form (Biber et al. 2002:259). An ing-clause is often used to convey the progressive aspect (especially

when used with verbs such as "begin", "start", or "stop"), but can also report "speech acts, cognitive states, perceptions, emotions, and other actions" (Biber et al. 2002:344). Ing-clauses can take the form of present participle clauses and of gerund phrases, and may hence take on various syntactic functions, including:

i.   Subject[2]: ***Having a fever*** *is pleasant, vacant.*

ii. Extraposed subject*: It's very difficult **getting supplies into Sarajevo**.*

iii. Subject predicative*: The real problem is **getting something done about cheap imports**.*

iv. Direct object*: I started **thinking about Christmas**.*

v.   Adverbial*: I didn't come out of it **looking particularly well**, I know.*

vi. Complement of a preposition (incl. prepositional object): *No-one could rely on **his going to bed early last night**.*

vii. Noun postmodifier*: The man **making the bogus collections** was described as middle aged.*

viii. Part of an adjective phrase*: The town is busy **taking advantage of its first City Challenge victory**.*

(Biber 2002:259-260)

Because of the English ing-clause's wide variety of possible syntactic functions, it can be translated into German using a number of different syntactic structures that accommodate the relevant English construction's function. Possible German structures include a German present participle clause (a structure which does not, however, occur in natural, non-translated German speech (Durrell 2003: 282-284), and which is therefore generally avoided by translators (Herold and Levin 2018)), a German gerund phrase, a German noun phrase, a German infinitive clause, and a German subordinate clause. Often, several options are available to the translator, as illustrated by the examples below:

(a) **Present participle clause: Crossing the street**, the man was hit by a car.

▪ Translation as present participle clause: **Die Straße überquerend** wurde der Mann von einem Auto erfasst. [Crossing the street, the man was hit by a car.]

▪ Translation as noun phrase: **Beim Überqueren der Straße** wurde der Mann von einem Auto erfasst. [During the crossing of the street, the man was hit by a car.]

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[2] All syntactic function examples are taken from Biber et al. (2002: 259-260).

- ▪ <u>Translation as subordinate clause</u>: **Als er die Straße überquerte**, wurde der Mann von einem Auto erfasst. [When he crossed the street, the man was hit by a car.]

 (b) **Gerund phrase: Walking on the beach** is relaxing.
- ▪ <u>Translation as gerund phrase</u>: **Das Spaziergehen** am Strand ist entspannend. [Walking on the beach is relaxing.]
- ▪ <u>Translation as noun phrase</u>: **Ein Spaziergang** am Strand ist entspannend. [A walk on the beach is relaxing.]
- ▪ <u>Translation as infinitive clause</u>: **Am Strand spazieren zu gehen** ist entspannend. [To walk on the beach is relaxing.]

Furthermore, other reformulations of the information contained in the source text that do not rely on any of the above structures are also possible. Alternatively, an interpreter could entirely omit the information contained in the ing-clause, either as part of a deliberate interpreting strategy or unintentionally.

For the purposes of this study, the use of a German present participle clause, gerund phrase or of an alternative syntactic structure such as a noun phrase, an infinitive clause or a subordinate clause will be considered form-based interpreting, whereas the reformulation of the relevant information into other, unrelated structures will be considered meaning-based interpreting.

3.3 Method

In order to detect all English ing-clauses and their corresponding German segments in the corpus, the transcribed data was analysed by means of a corpus analysis tool, namely the parallel concordance software program ParaConc269 (Barlow 2003). This software enables its user to search elements in one text while at the same time displaying the automatically aligned TL items in up to three other texts.

The English SL speeches were searched for all instances of ing-clauses using the search pattern *ing, and any items ending in -ing that do not constitute an ing-clause (e.g. "Good morning") were then eliminated manually. The relevant items' interpretations into German were then detected using the parallel concordancer. A total of 149 ing-clauses was detected in the corpus

of English source language speeches, with 48 ing-clauses occurring in the corpus of slow speeches, 53 in the corpus of medium-paced speeches and 48 in the corpus of fast speeches.

All German renditions of the slow, medium, and fast segments containing English ing-clauses were then identified and categorized according to the type of structure that the German interpreter produced into (i) form-based interpreting (including a German present participle clause, gerund phrase, noun phrase, infinitive clause or subordinate clause), (ii) meaning-based interpreting (i.e. a complete reformulation of the relevant segment), or (iii) complete omission of the information contained in the ing-clause. The number of times that interpreters used form-based and meaning-based interpreting as well as omission for slow, medium and fast input rate speeches was then determined.

A Chi Square test was used in order to statistically ascertain whether input rate is the reason for interpreters' choice in interpreting approach, followed by three Chi Square Goodness-of-Fit (GoF) tests at each of the three input rate categories in order to determine whether interpreters have a preferred interpreting approach for slow, medium- and fast-paced speeches. The Chi Square test is a non-parametric test that is used to determine whether an observed value is significantly different from the expected value. This test is appropriate for the present study because the data is divided into more than two categories which are nominally ordered. The null hypothesis (H_0) is that input rate does not determine interpreters' choice of interpreting strategy, and that there is no significant difference between the frequency with which interpreters use form- and meaning-based approaches and omission at each of the three input rate categories. If H_0 is rejected, i.e. if the p value is < 0.05, this means that input rate conditions interpreters' preference for an interpreting approach and that interpreters have clear preferences in approach depending on the input rate; if the H_0 is not rejected, i.e. if the p value is $>$ or $=$ 0.05, then there is not enough evidence to support the claim that input rate is responsible for interpreters' selection of one or the other interpreting approach.

There are a number of variables that the present study does not control and which may therefore have a confounding effect on the results. These include the number of speakers reading from prepared scripts vs those delivering their speeches spontaneously across the slow, medium and fast corpora. Furthermore, elements such as intonation pattern and prosody, which affect "interpreters' perception of the delivery rate" (Pöchhacker 2004:130), were not determined. As the data used originates from an authentic setting to which the researcher only had remote

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access via the internet, it was not possible to determine or eliminate any possible interpreter fatigue effects across the fast, medium and slow corpora. Some of the interpreters included in the study may have been "on the job" for longer than others, which could have led to differences in performance on the part of these interpreters. Furthermore, although all interpreters included in the study will have undergone the European Parliament's rigorous selection procedures, it was not possible to determine or balance the years of experience of the interpreters included in the corpora, and interpreters' proficiency levels may therefore have varied to some extent.

The "success" or "acceptability" of the interpretation produced by the interpreters in the present corpus was not assessed as part of this study.

4. Data Analysis and Discussion

4.1 Presentation of results

Examples of the various structures with which the interpreters in the present corpus have interpreted the English ing-clause into German are presented below:

Example 1: Translation as noun phrase
- Source speech: This is essentially a directive for **regulating** heavy industry, but buried in the text and in the annex are a number of paragraphs which directly affect farmers. (Slow/Noun Phrase: Hall_Integrated pollution prevention and control)
- Target speech: *Es handelt sich hier um eine Richtlinie **zur Regulierung** der Schwerindustrie, aber im Text und in den Anhängen verborgen finden sich verschiedene Absätze, die direkte Folgen für die Landwirte haben.* [This is a directive for **the regulation** of heavy industry, but buried in the text and in the annex there are various paragraphs that have direct consequences for the farmers.)

Example 2: Translation as infinitive clause
- Source speech: Has the Commission already carried out a preliminary analysis of the reports which would allow **giving** some statements on the shortcomings and the difficulties, but also on the major achievements in the enforcement of legislation? (Medium/Infinitive clause: Parish_Animal transport)

- Target speech: *Hat die Kommission bereits eine vorläufige Analyse der Berichte vorgenommen, die es ermöglichen würde, einige Erklärungen zu den Mängeln und Schwierigkeiten, jedoch auch zu den wichtigsten Errungenschaften bei der Umsetzung der Rechtsvorschriften **abzugeben**?* [Has the Commission already carried out a preliminary analysis of the reports which would allow **to give** some explanations of the shortcomings and difficulties, but also of the major achievements in the enforcement of the legislation?]

Examples 3: Translation as subordinate clause

- Source speech: The Commission has rightly said that only a biometric check can confirm with certainty that the person **wishing** to enter is the one to whom the visa has been issued. (Slow/Subordinate clause: Ludford_Use of the Visa Information System (VIS) under the Schengen Borders Code)

- Target speech: *Andererseits hat die Kommission ja schon zurecht gesagt, dass nur durch biometrische Merkmale man wirklich mit Sicherheit sagen kann, dass die Person, **die** einreisen **möchte**, auch wirklich die Person ist das Visum erhalten hat.* [On the other hand, the Commission has rightly said that only through biometric details be it be determined with certainty that the person **who wishes** to enter really is the person who was issued with the visa.]

Example 4: Translation by reformulation

- Source speech: I would put very high on my agenda too **making** maximum use of all natural resources, including animal by-products. (Slow/Reformulation: Doyle_Animal by-products)

- Translation by reformulation: *Wir **sollten** alle natürlichen Ressourcen **nutzen**. Dazu gehören auch die tierischen Nebenprodukte.* [We **should use** all natural resources. This also includes the animal by-products.]

Example 5: Translation by omission

- Source speech: Does the Commissioner agree there will be continuing difficulty in **establishing** animals' exact ages? (Slow/Omission: Taylor_Introduction of compatible systems for the registration of pet animals across Member States)

- Target speech: *Da hoffe ich, dass die Kommission mit mir einer Meinung ist.* [I hope that the Commission concurs with me.]

The above types of structures produced by the German interpreters were quantified, and the information obtained is summarized in Table 5, which indicates how many times interpreters made use of which type of target language structure at each of the three categories of input rates.

Table 5: Strategies used by interpreters to transfer the English ing-clause into German

	Slow	**Slow %**	**Medium**	**Medium %**	**Fast**	**Fast %**	**TOTAL**	**TOTAL %**
ing-clause in ST	48		53		48		149	
Form-based interpreting	21	43.75%	22	41.41%	14	29.17%	57	**38.25%**
Meaning-based interpreting	19	39.58%	20	37.74%	22	45.83%	61	**40.94%**
Omission	8	16.67%	11	20.75%	12	25.00%	31	**20.81%**

In total, across the entire corpus of 60 speeches, the interpreters in this study used both form- and meaning-based approaches to interpreting, and both approaches appear with seemingly similar frequency (38.25% and 40.94% respectively). Omission occurs on 20.81% of cases.

However, when the use of the individual interpreting approaches is analysed according to input rate, it becomes clear that the approach used most frequently when interpreting slow and medium input rate speeches is the use of form-based interpreting and the most frequently used approach for fast input rate speeches is meaning-based interpreting. Omission occurs as the least common approach in all three input rate categories. No interpreter produces a German present participle clause in their TL output at any of the various input rates. Interpreters may avoid this structure due to the fact that it is extremely uncommon in non-translated German speech (Durrell 2003: 282-284).

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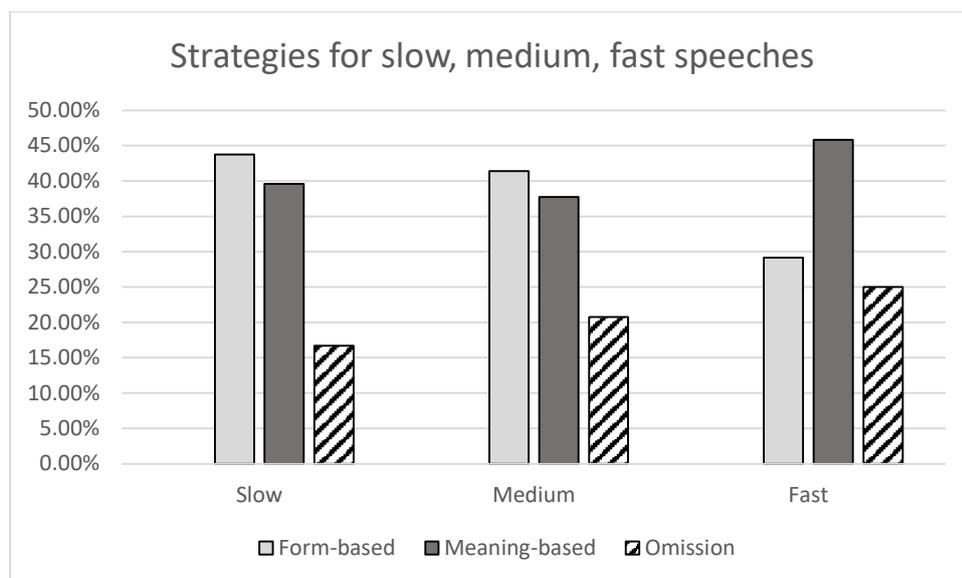Figure 1: Strategies used to interpret slow, medium, fast speeches in %

Figure 1 suggests that the use of form-based interpreting decreases with increasing input rate; the use of meaning-based interpreting, on the other hand, increases with increasing source speech rate. The use of omission also increases with increasing source speech rate.

The fact that the prevalence of a form-based approach to interpreting appears to decrease with increasing SL delivery speed from 43.75% in slow-paced speeches to 29.17% in fast-paced speeches suggests that, contrary to what has been found by most other research on speed in interpreting (Shlesinger 2003; Barghout and Garcia 2015), professional German interpreters working in authentic interpreting settings do not resort to form-based interpreting or "tailing" strategies more frequently as the SL delivery rate increases, but instead use this approach less often as the input rate increases. The fact that the use of a meaning-based approach increases with increasing SL delivery speed from 39.58% in slow speeches to 45.83% in fast speeches suggests that when confronted with higher input rates, it is common for interpreters to resort to meaning-based approaches as a strategy more frequently despite the arguably limited processing capacity available to them in this type of situation.

This finding is contrary to findings by Meuleman and van Besien (2009), who conclude that faster input rates lead to an increased use of form-based interpreting, and could be explained by the fact that professional, experienced interpreters working at fast input rates devote less processing capacity to retaining the SL speech's form in their memory in order to free valuable capacity for the analysis of the incoming SL input and production of the TL rendition. (Expert

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interpreters working in authentic interpreting settings may have internalised deverbalisation and reformulation strategies to such an extent that these could, in fact, require less processing capacity of them than the retention of the source message's form.) The observed preference for meaning-based interpreting at increased input rates may also reflect the need for interpreters to resort more regularly to more summarizing behaviour when confronted with high-speed input.

As expected, interpreters' use of omission appears to increase with increasing source speech delivery rate (from 16.67% of ing-clauses in slow speeches to 25.00% of ing-clauses in fast speeches). This concurs with findings by numerous other authors, including Galli (1990), Pio (2003), Korpal (2012), and Barghout and García (2015). Interpreters may use omission as a coping strategy and transfer only the most pertinent content of the source speech while omitting less relevant elements, or may be omitting information unintentionally due to capacity overload at very high input rates.

4.2 Effect of input rate on interpreters' choice of strategy

In order to determine whether the above differences in frequency of use of form-based and meaning based interpreting and omission at the different input rates are statistically significant, and whether source speech input rate thus is the reason for interpreters' preference for a certain strategy, the figures were subjected to a Chi Square test. The results appear in Table 6.

Table 6: Chi Square test: Effect of input rate on interpreting approach

		Form-based	**Meaning-based**	**Omission**	**Total**
Slow	*Observed*	21	19	8	**48**
	Expected	18.36242	19.65101	9.986577	
Medium	*Observed*	22	20	11	**53**
	Expected	20.27517	21.69799	11.02685	
Fast	*Observed*	14	22	12	**48**
	Expected	18.36242	19.65101	9.986577	
Total		**57**	**61**	**31**	**149**
alpha	0.05				
chi2	2.798398				
df	4				
p	**0.592109**				

The Chi Square test does not support the claim that the input rate is the reason for interpreters' preference for a certain strategy. The test yields a p value of 0.59, which is greater than 0.05,

and H_0 is therefore not rejected. Consequently, the frequencies with which form- and meaning-based approaches and omission have been employed by interpreters in the corpus of slow, medium and fast source speeches are not the result of the different input rate categories. Based on the present data, source speech input rate therefore does not appear to have a decisive effect on interpreters' choice of interpreting approach, and the frequencies with which interpreters use form-based and meaning based approaches as well as omission to interpret the ing-clause are not a result of source speech input rate.

4.3 Preference for a certain approach at a certain input rate

Three Chi Square Goodness-of-Fit tests were conducted for the slow, medium and fast speeches in order to confirm the above results and to determine whether interpreters have a preferred interpreting approach when interpreting speeches at any of the three input rate categories. The results appear in Table 7 below. Note that, because three tests were conducted, alpha had to be adjusted using Bonferroni's Correction in order to avoid a Type I error. Therefore, only p values below 0.01667 result in a rejection of H_0.

Table 7: Chi Square GoF test: Interpreting approaches for each input rate

		Form-based	Meaning-based	Omission	Total
Slow	*Observed*	21	19	8	**48**
	Expected	16	16	16	
Medium	*Observed*	22	20	11	**53**
	Expected	17.7	17.7	17.7	
Fast	*Observed*	14	22	12	**48**
	Expected	16	16	16	
Total		**57**	**61**	**31**	**149**

	Slow	Medium	Fast
alpha	0.01667	0.01667	0.01667
chi2	6.125	3.886792	3.5
df	2	2	2
p	**0.047**	**0.143217**	**0.173774**

Although it appears as if interpreters show a slight preference for the use of form-based (as compared to meaning-based) interpreting when confronted with slow source speech input rates, this trend cannot be statistically confirmed. According to the Chi Square Goodness-of-Fit test, interpreters do not have a preferred interpreting strategy when interpreting source speeches presented at a slow input rate. The p value of 0.047 is greater than 0.01667, suggesting that H_0

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is not rejected and that interpreters resort to the use of form-based and meaning-based approaches with (statistically) comparable frequency when the source speech input rate is slow.

Likewise, the tendency for interpreters to prefer form-based (as opposed to meaning-based) approaches when interpreting medium-paced speeches cannot be statistically confirmed. The p value of 0.143217 supports the idea that interpreters resort to the use of form- and meaning-based interpreting with comparable frequency when interpreting medium-paced source speeches, and do not have a preferred strategy when interpreting at this input rate.

Lastly, although it appeared that interpreters prefer meaning-based over form-based interpreting for fast input rates, this trend is again not confirmed by the Chi Square Goodness-of-Fit test and the p value of 0.173774 indicates that there is not enough evidence to support the claim that interpreters have a preferred interpreting approach when coping with fast input rate speeches. Instead, interpreters use form- and meaning-based interpreting with statistically similar frequency when the source speech input rate is fast.

The above Chi Square tests therefore reveal that based on the data in this study, interpreters' choice between a meaning-based and a form-based interpreting approach is not conditioned by the source speech input rate, and that interpreters do not have a preferred approach for dealing with either slow-, medium-, or fast-paced source speeches. Input rate does not appear to determine whether an interpreter will resort to a form-based or a meaning-based interpreting approach. The fact that omission is the least-used approach is not the result of input rate but perhaps the result of a general avoidance of this approach amongst interpreters.

5. Conclusions

Professional interpreters working in authentic interpreting settings do not, in fact, exclusively or even mainly rely on meaning-based, formally dissimilar approaches to interpreting, as has been argued by Seleskovitch (in Dam 1998:50). Instead, the interpreters in the present study make use of both form- and meaning-based strategies to a similar extent when rendering the English ing-clause into German. However, as no German present participle clause is produced by any of the interpreters, it can be concluded that those form-based renditions which are uncommon in the TL are avoided by interpreters regardless of the source speech delivery rate. Experienced interpreters probably consider form-based approaches acceptable only if the

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relevant structures occur naturally in the TL, but will avoid their use if they result in unnatural-sounding TL renditions, perhaps because acceptability of their TL output is considered paramount.

In the present English/German parallel corpus, omissions occur somewhat more frequently at faster input rates, as also found by many other authors (e.g. Pio 2003; Korpal 2012; Barghout and Garcia 2015). Professional interpreters may be using omission as a deliberate strategy, together with meaning-based approaches, more frequently when confronted with fast input rates in order to select, summarize and transfer only the most pertinent information from the SL speech and to prevent processing capacity overload resulting in a total breakdown of performance under extreme working conditions (Gile 2009:210) such as very fast input rates of more than 160 wpm. An increasing number of omissions may also occur unintentionally when processing capacity overload does in fact occur.

Interpreters who are confronted with higher input rates show a slight preference for meaning-based, formally dissimilar approaches whereas interpreters working with slower input rates appear to favour form-based interpreting. This finding contradicts the findings reported by other researchers (Shlesinger 2003; Meuleman and van Besien 2009; Barghout and Garcia 2015) who conclude that interpreters are prone to resort to form-based approaches more frequently at higher source speech input rates. This tendency towards more meaning-based interpreting at higher input rates does, however, make sense in light of Gerver's (1971) and Pio's (2003) findings that, at higher input rates, interpreters start lengthening their ear-voice span, which would allow for more extensive reformulation and summarization of the SL message, resulting in meaning-based interpreting.

Professional interpreters working in authentic interpreting settings as the one examined in the present study may favour meaning-based approaches when confronted with faster input rates because such settings provide more surrounding co-text and context for the interpreters than the experiments and fabricated texts used in most other studies on speed in interpreting. The availability of sufficient context could make it easier for interpreters to reformulate more extensively and to discard the form of the SL speech to which they are bound more closely in situations in which less context is available. In authentic interpreting settings in which ample context is available, interpreters may find more extensive reformulation, and hence a meaning-based approach, less capacity-consuming than the retention of the source-language form, and

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they could hence resort to this approach more frequently when confronted with a very fast SL input rate. The presence of more co-text and context in authentic interpreting settings could hence explain some of the discrepancies between the findings of the present study and those of other studies on speed in interpreting (such as Shlesinger (2003), Meuleman and van Besien (2009) and Barghout and Garcia (2015)).

However, statistical analysis reveals that the observed differences in the use of meaning- and form-based interpreting are not caused by differences in input rate, and that interpreters do not in fact have a preferred approach for dealing with either slow, medium, or fast input rates. Input rate does not seem to have the pivotal effect on professional interpreters' performance that it is believed to have, and it is not the (sole) predictor for interpreters' choice of interpreting approach according to the data analysed in this study.

These findings could be further investigated in the context of Isham's (1994) conclusion that there is a yet unknown "predictor variable" which determines why some interpreters retain a "memory trace for the form of the source-language sentence" while others do not (Isham 1994:205). It is possible that variables other than source speech input rate (for which the present study does not control), or an interplay between different variables, could also have an effect on interpreters' selection of either meaning- or form-based interpreting approaches.

These include interpreters' familiarity with the co-text and the context of the event, which may allow for more extensive reformulation; the language pair under investigation, with cognate languages lending themselves more readily to form-based approaches than unrelated languages; the interpreting direction, with interpreters being more comfortable with some approaches than with others when working into their A and their B languages respectively; or a possible interpreting fatigue effect, which may lead interpreters to behave differently than they otherwise would. The present study is limited to a single interpreting setting and the type of training the interpreters have undergone as well as their individual preferences as far as interpreting strategies and style are concerned could also affect interpreters' choice between meaning- and form-based interpreting.

Lastly, the present study is limited to interpreters' approaches to the translation of one specific structure, the English ing-clause, and different findings may be yielded if other and/or larger

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units of speech were to be analysed. Further research in this direction is necessary in order to shed more light on the above questions.

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