Targeted writing instruction for professional translators: How does it affect the translators' translation products and decision-making processes?

Iris Schrijver, Leona van Vaerenbergh, Mariëlle Leijten & Luuk van Waes

Abstract This paper reports on an exploratory study into the effects of targeted writing instruction on the translation products and decision-making processes of professional translators. A pretest–posttest experimental design was used, in which five professional translators were trained in writing instructive texts in their L1 (Dutch). In the pretest and posttest, the translators were asked to translate into Dutch a Spanish user manual of a household appliance. The transfer of the writing-instruction information to the translation task was examined by means of product and process analyses. The analyses suggest that overall the professionals took into account many elements from the writing instruction in the translation process. However, the types and number of writing-instruction elements that they used in their translation products differed considerably among the professionals, as did the quality of their translation products. The writing instruction nonetheless seems to improve the professionals' genre knowledge and their target-audience awareness. Moreover, it seems to lead to fewer style- and genre-related translation errors and appears to deepen reflection. Targeted writing instruction could therefore be interesting to include in in-service training for professional translators or for other language specialists, especially to familiarize them with new text genres.

Keywords writing instruction, translation education, rich points, translation product, translation process, decision-making

1 Introduction

Should translators be able to write a text? This seemingly rhetorical question is a rather platitudinous way to start a paper. However, it is important to state the obvious in an age when the perception of the essence of the profession of translation is sometimes clouded by major technological advancements such as machine translation. Then again, is the question indeed a rhetorical question? Should translators actually be able to write texts? An affirmative answer seems plausible when one views translation as part of the superordinate category of text production (as argued by Dam-Jensen/Heine 2013) or, in the case of technical translation, as a subset of technical communication and, consequently, of specialized communication (as argued by Schubert 2012). Following this line of thought, translation and writing are not believed to be "watertight compartments, but poles on a continuum" (Schubert 2012: 125) and, as such, they may overlap not only in terms of professional activities but also with regard to their processes and the skills they build upon.

The belief in the necessity of writing skills for translators is shared by many translation scholars. Although most translation-competence models (e. g. Kelly 2005, Göpferich 2009, PACTE 2011) do not explicitly refer to writing skills, they (implicitly) include text-production competence in the target language (TL). Knowing how to write a text in the TL seems to be imperative given the final step in the process of translation, which can be roughly represented

as an iterative and recursive three-step sequence of source-text (ST) interpretation, transfer and target-text (TT) production. The competence of knowing how to write a text may also be useful for solving translation problems that can occur during the first two steps in the translation-process sequence: ST interpretation and transfer. Newmark (1988: 17) already expressed this belief nearly three decades ago by stating that "all translation problems finally resolve themselves into problems of how to write well in the target language". When translators encounter, for example, a ST segment that they do not fully understand, they can fall back on their writing skills to produce a TT segment that sounds natural in the TL and that is coherent with the content that comes before and after it in the TT even though this TT segment may not completely or accurately capture what the ST states. Research by Carl/Dragsted (2012) into parallel and sequential processing in translation has also recently provided limited empirical evidence that translation problems, defined as the re-reading of ST or TT passages, are mostly triggered by production problems instead of ST-interpretation problems.

Professional translators and representatives of the translation market also generally acknowledge the importance of writing skills, as the following examples demonstrate. In a survey conducted by the American Translators Association (ATA), many professional translators consider general and, to a lesser degree, technical writing skills the most highly ranked core skills that translators must master (ATA 2011 reported in Koby/Melby 2013). Fluent writing skills not only feature in job advertisements for translation-related positions today, as Bowker (2004) has shown, but are also believed to be fundamental for translators in the future (DGT 2011). The fact that translators cannot do without writing competence has become evident in the evolution of the translation profession, especially in the domain of technical communication. The European EN 15038 standard regarding translation service quality has pinpointed technical writing as one of the added-value services that can be offered by translation service providers. In addition, Gnecchi et al. (2008) have shown that the roles of translators and technical communicators are increasingly converging in the North American and European markets. In a follow-up survey, Gnecchi et al. (2011) confirmed these results, but also highlighted that, whereas the role of the translator in North America is expanding by incorporating activities previously carried out by technical writers, many European translators in fact migrate into the technical communication profession.

If we answer the question "Should translators be able to write texts?" affirmatively, the following question ensues: "*Are* translators able to write texts?" To our knowledge, there is little to no empirical evidence to suggest that translators are *not* able to write texts. This may not come as a surprise, since the EMT model of translation competence states that one of the learning objectives of translation training programmes should be that graduates know "how to compose a document in accordance with the conventions of the genre and rhetorical standards" and know "how to draft, rephrase, restructure, condense, and post-edit rapidly and well (in languages A and B)" (EMT expert group 2009: 6). This model serves as a guideline for MA programmes in translation. The question as to whether translators are able to write texts may, therefore, be unusual, since it calls into question the efficacy of the programmes that have educated today's professional translators and will train tomorrow's translators.

Nonetheless, the question as to whether translators are able to write texts seems pertinent for at least two reasons. First, there is a lack of writing instruction and/or training in some translation-studies programmes (Göpferich 2004). Although undergraduate-level translator training usually includes L2 writing instruction, deliberate practice in L1 writing is generally absent. Courses, in either L1 or L2 writing, are even more difficult to find in MA curricula.

Merkle (2010) tries to explain this phenomenon by referring to what Kelly (2005: 115) describes as a myth, that is, that translation students' language competence, and thus their writing competence, is generally taken for granted. Second, it is stated in a report issued by the Directorate-General of Translation of the European Commission (DGT 2011: 5), which summarizes the conclusions of a symposium on translator profile, that representatives of translation-studies programmes claim that their students' writing skills have deteriorated over the last ten years. Thus, if we consider the discrepancy between the learning objective related to writing competence and the educational means offered to acquire that competence, it might be possible that some translation graduates are not able to write texts successfully, let alone technical texts. If we go back to the previously discussed expansion of tasks demanded from technical translators, this inability might be disastrous for graduates aspiring to specialize in technical translation. Byrne points out that, to meet the quality standards required of technical translation today,

> a translator needs to be trained as a technical writer – someone who has been trained to understand issues such as usability, information design, instructional design and communication theory. Unfortunately, these are not typically things which are taught to translators because they were never really a part of their job (Byrne 2010: 25).

Risku (2004) has shown that translators who migrated to technical writing and/or usability indeed felt not adequately prepared for target-group analysis, content selection and writing in their own words.

Let us assume for the sake of argument and based on the reasoning above that the writing competence of recently graduated translators is not sufficient to meet the requirements of the translation market. In that case, the most logical step to take would be to incorporate (more) general and technical writing training into translation curricula. This is precisely what a fairly limited number of translator-training programmes have done in recent years: to name a few examples, the BA "Traduction et Rédaction" at the Université du Québec en Outaouais (Merkle 2010); the module "Technical writing for translators" in the MA "Translation Studies" at the University of Portsmouth[1]; the module "Français, redaction technique" in the MA "Translation Studies" at Institut Libre Marie Haps in Brussels[2]. But the question is: what will the writing instruction or training for translators lead to? It will most likely enhance the translators' writing competence, but how will it influence their translation performance? Will it positively influence the quality of their translation products? Will it change the manner in which translators organize their translation processes?

Few empirical studies have addressed the effect of writing instruction or training on translation performance. Schrijver et al. (2014, 2015) have shown that L1 genre-specific writing instruction led to a more critical stance towards ST coherence among BA-level translation students, as well as to an increased focus on and compliance with TL genre conventions. However, the students' transfer of the knowledge acquired during writing instruction to their translation contexts was partial, since the students applied this knowledge only at the macro-textual

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1 Source: Programme specification of the MA Translation Studies 2014 at the University of Portsmouth, 16. 01. 2015 <http://psd.docstore.port.ac.uk/C0680F.pdf>.

2 Source: Programme specification of MA in Translation at Institut Marie Haps, 16. 01. 2015 <http://www.vinci.be/fr-be/mariehaps/Pages/ListeCours.aspx?formation=Master%20en%20traduction&cat=Long&lang=fr>.

(i. e., suprasentential) level of the TT. Moreover, the writing instruction did not undoubtedly prove to have a beneficial effect on the overall translation quality, although the number of genre-related translation errors decreased significantly. Since the students who participated in this study were still in the process of acquiring translation competence, Schrijver et al. (2015) suggest that working-memory capacity might have been insufficient to tackle the problems posed by the translation task and, at the same time, to relate all acquired writing knowledge to those problems and/or to use it for problem-solving. Integration of writing knowledge into the students' problem-solving behaviour appeared to be more problematic for the students at the micro-textual (i. e., subsentential) level than at macro-textual level. When confronted with non-chronological information structure at the macro-textual level, most students split up the problem-solving task by first translating the sentence and then changing the text order. However, students did not seem able to use the same strategy to solve similar problems at the micro-textual level, perhaps because they had to solve more issues simultaneously: linguistic issues (e. g. structure of the main and subordinate clauses, and choice of the right illocutionary indicator) as well as coherence issues.

If writing instruction has a beneficial effect on translation students' translation products and processes, how will it influence professional translators' performance? After all, translation education not only encompasses the undergraduate and graduate levels, but also concerns refresher courses or in-service training targeted at professional translators. The European EN 15038 standard (EN 15038 2006) emphasizes the importance of life-long learning for professional translators. If writing instruction indeed proves to have a positive effect on professional translators' translation products and processes, it might be an interesting idea to include writing instruction in professional translators' refresher courses or in-service training to optimize their performance or to help familiarize them with new text genres. It may also be of interest to language professionals who already have experience with specialized language but would like to optimize their writing performance for different audiences (e. g. laypeople instead of professionals) or within genres that they are less familiar with.

The present article will therefore follow the line of research initiated by Schrijver et al. (2014) and will present the results of an exploratory, quasi-experimental study of a similar design among professional translators. The term 'professional translator' has been used in different ways in translation research. It usually refers to people who earn their living translating, who form a relatively heterogeneous group given the differences in qualifications, as well as length, intensity and type of work experience. The heterogeneity of the group of professional translators is further increased because some group members have specialized in particular fields or domains (e. g. legal translation, technical translation), while other group members are generalists. The term 'professional translator' is also frequently used as a synonym for 'expert translator'. However, professional translators can be experts but they need not necessarily be characterized by "consistently superior performance" (Shreve 2002 in line with what has been expressed by Ericsson/Charness 1997). In fact, professional translators do not necessarily produce higher-quality translations than translation students, as a number of process studies (e. g. Jääskeläinen 1999) have shown. Hence, translation competence does not equal translation expertise, although it can evolve into expertise through deliberate long-term practice, informative feedback and non-routine tasks (Shreve 2002). To refer to professional translators who do not meet the criterion of expertise, Jääskeläinen (2010: 218) proposes the term *experienced professionals*.

In the present study, we use the following definition of *professional translators*: anyone who has a master's degree in translation and for whom translating is the main source of income. This definition allows us to explore the effect of writing instruction in those who meet the criteria of both translation qualifications and professional experience, but who are not necessarily experts. Since they have had formal translation training as well as professional experience (and thus a larger episodic memory to tap into, as pointed out by Shreve [2002: 157]), it is nonetheless likely that these participants have automatized certain translation processes (e. g. Jääskeläinen/Tirkkonen-Condit 1991), which the undergraduate translation students in the study by Schrijver et al. (2014, 2015) had not. Examples of such translation processes are ST interpretation and certain standard transfer operations such as avoiding false friends (Jääskeläinen 2010). Due to this presumed automaticity of certain processes, more cognitive resources might be available for the transfer and use of acquired writing knowledge in the translation process. In turn, this might lead to a more extensive use of writing-instruction information in the translation process. The degree of automaticity will be even higher among those professional translators who exhibit "consistently superior performance" in the translation of the text genre under investigation.

2 Research questions and methods

This exploratory study aims to formulate answers to the following two research questions:

1. What effect does writing instruction have on professional translators' translation products?
2. How does writing instruction influence professional translators' decision-making processes?

To answer these questions, we conducted a controlled intervention study, which involved a classic pretest–posttest quasi-experimental design. In this design, five professional translators received a two-and-a-half-hour instructional session, in which they were taught how to write and edit instructive texts in their L1 (Dutch).

2.1 Participants

Five professional translators participated in this exploratory study, 3 females and 2 males (average age = 36.4 years; *SD* = 9.86), who were contacted through the online registry of members of the Belgian Chamber of Translators and Interpreters[3] and through the primary author's network of professional contacts.

The participants were all native speakers of Dutch with master's degrees in translation. Two participants were bilingual and had graduated from translation-studies programmes in Flanders, with Dutch as the L1 in the programmes. They all had more than five years of experience as professional translators working from Spanish into Dutch (average = 9 years, 3 months; *SD* = 4 years, 9 months), four of them as freelance translators and one as an in-house translator at an insurance agency. The thematic domains and translation modalities they specialized in were diverse, but they all had in common that their experience with translating user manuals was limited. This can be explained by the lack of demand for translation of this text genre in the

[3] 16. 01. 2015 <http://www.cbti-bkvt.org/en>.

language combination Spanish–Dutch. The two translators who did mention technical translation as their translation specialization elaborated that the text genres they translated did not include user manuals. All five professional translators rarely wrote texts in their professional activities or in their spare time, but the few text genres they occasionally wrote were not of an instructive nature. The participants had not had any formal writing education either. By selecting translators with limited experience in translating user manuals and no actual writing experience or education, we were able to examine whether writing instruction could be helpful to prepare professional translators for a new text genre.

2.2 Materials[4]

At the start of the experiment, the participants received a paper copy of the ST together with a written translation brief. The brief instructed the participants to translate the Spanish ST into Dutch in compliance with the quality requirements of user manuals in Dutch (e. g. text conventions, comprehensibility, readability, consistency) without providing any additional information on what the requirements entailed specifically.

The STs used in this experiment were two original Spanish user manuals of approximately 250 words, describing the uses of a fabric shaver and a turnspit oven respectively. The former was found on the Spanish company's website,[5] whereas the latter was selected from a corpus of original Spanish user manuals composed by Murcia Bielsa (1999). The STs had also been used in the study by Schrijver et al. (2014). In that study, translation students were asked to translate four Spanish user manuals, of which they considered the fabric shaver and turnspit oven STs the most difficult to translate. Moreover, no statistically significant difference could be found between these two STs in terms of the students' general satisfaction with the translation product or the number of translation errors made. This suggests that both STs have a high, yet similar, degree of complexity, which determined our decision to use them in the present study.

In the STs, a number of rich points, which the PACTE research group describes as "specific source-text segments that contain translation problems" (PACTE 2011: 37) were defined. The problems can be of a linguistic, textual and extra-linguistic nature, but can also be related to pragmatic factors, such as specific characteristics of the TT readers, ST intentionality and/or specific requirements stipulated in the translation brief. The fourteen rich points selected in each of the STs used for this study were assumed to cause primarily text-production problems, created by textual problems as well as problems relating to the translation brief and/or TT reader. A panel of three experts in the field of technical writing and translation analyzed the selection of rich points and agreed that a literal translation of the rich points would yield lexically and syntactically acceptable TTs, but would go against text TL conventions, as well as TT readers' expectations and needs. In other words, the rich points required transediting (Stetting 1989, Schrijver/van Vaerenbergh/van Waes 2012) for the translation to comply with the translation-brief stipulations. The selected rich points were examples of instances in the

4 All materials used in this study (e. g. source texts, detailed overview of rich points, questionnaires) can be consulted on www.writingpro.eu (search for Iris Schrijver).

5 This source text can be found on the following website: 01. 07. 2015 <http://www.solac.com/Solac/detalleProductos.do?menu=productos&page=detalleProductos&identificadorarea=c83269533d8ddd429071e59dd2ac4dc8&area=HOGAR&subarea=QUITAPELUSAS&item=f8e5f5214b650e43879a3ae5ce61ad1f&areaPadre=c83269533d8ddd429071e59dd2ac4dc8&idioma=es_ES>.

translation process when literal translation no longer suffices and writing competence seems to come into play. Consequently, they allowed us to investigate how writing instruction may influence translation performance.

The fourteen rich points were located below and above sentence level in various ST segments and concerned different textual features. They were categorized as follows: titles, information structure, illocutionary indicators and terminology. We will illustrate the rich-point types by discussing a number of examples.

2.2.1 Titles

Each ST contained two title-related rich points, since the titles in the STs represented two problems: (1) the titles were not formulated in a consistent manner, (2) not all of the titles were formulated from the user's point of view. For example: the fabric-shaver ST contained two content sections, entitled *Funcionamiento* ('Functioning') and *Mantener el quitapelusas* ('Maintaining the fabric shaver'). Steehouder (2008: 108) states that, given the selective and scanning manner in which users read instruction manuals, it is important to formulate titles in such a way that users can easily and swiftly retrieve the information that they are looking for, for example by using consistently formulated titles. Byrne (2010) recommends using verbs in headings or phrasing headings as questions to enforce the action-driven function of titles. Steehouder (2008: 110) states similar conventions for titles in Dutch user manuals: Titles ought to contain an action verb and an object in Dutch. If we take into consideration these criteria, possible translation solutions for the ST titles mentioned above are: *De ontpluizer gebruiken* ('To use the fabric shaver') and *De ontpluizer onderhouden* ('To maintain the fabric shaver').

2.2.2 Information structure

The STs contained several coherence problems, which were primarily caused by the non-chronological order in which information was given to the readers. Chronological information structure is fundamental in user manuals (Steehouder 2008: 108), especially given the reading habits of most users, who usually perform the instruction that they have read before moving on to the next instruction (Byrne 2012: 181). Therefore, Byrne (2012: 181) advises the translator to rearrange the order of individual steps in a set of instructions when the ST sequence is not logical or not chronological. This is, for instance, the case with the warning *No limpiar cuando el aparato esté todavía caliente* ('Do not clean the oven when it is still warm'). This warning should come before or at least at the beginning of the various instruction steps that provide information about cleaning the device. However, the warning is featured in the ST *after* all of the instructions. Each ST contained two rich points of this type.

The importance of chronological information order also has to be applied at and below sentence level (micro-textual level; two rich points in the ST). For example, the fabric-shaver ST features the following sentence: *Antes de insertar las pilas, debe asegurarse que el interruptor de funcionamiento del aparato está en posición de apagado* ('Before inserting the batteries, you must ensure that the operating switch of the device is in the off position'). The prepositional phrase starting with *antes de* indicates that the action described in the main clause should be carried out *before* inserting the batteries. It is preferable to switch these subordinate and main clauses around in the TT to give the information in the order in which the reader needs it (Göpferich 2010: 45).

2.2.3 Illocutionary indicators

Another problem that typically arises in the translation of instructive texts in general, and user manuals in particular, are the linguistic forms used to express the instructions. In Spanish, the most frequently used illocutionary indicators are the infinitive, the imperative, the verb *deber* ('must') in personal or impersonal form and the future tense in the passive voice (Gamero/Öster 1999). However, the imperative is the preferable form in Dutch, followed by the infinitive and, only in certain circumstances, the passive voice, as stated by Steehouder (2008: 115 f.). Byrne (2012: 146) and Göpferich (2010: 48) agree that in instructive texts, it is preferable to speak directly to the users, by using direct, active language instead of passive sentences, which can be unnecessarily long and confusing. Following this line of thought, many of the Spanish illocutionary indicators in the STs had to be transedited by an imperative to yield acceptable Dutch TTs (in total seven rich points of this type).

2.2.4 Terminology

Steehouder (2008: 258) highlights the importance of using terminology that is understandable for and familiar to the users. In addition, Byrne (2012: 145) advises translators to use terminology consistently throughout the instructive TT to enforce its communicative function, because synonyms for the same concept may cause confusion. In the STs used in this study, terminology use was sometimes inconsistent and imprecise due to the use of synonyms or hypernyms (e. g. alternate use of *device* and *fabric shaver*). In light of the translation brief, the inconsistent terminology use (one rich point in the ST) had to be corrected in the Dutch TT.

2.3 Design and procedure

This study was organized as a within-subject design. In this section, we will briefly describe the design and procedure of the various experimental sessions.

2.3.1 Pretest

The participants took part individually in the pretest, which took place in the Antwerp Humanities Lab (AnHuLab) experiment room at the University of Antwerp. They were asked to translate the Spanish fabric shaver ST (250 words) into Dutch in MS Word and were given 60 minutes to do so. The participants were allowed to use the Internet and electronic (monolingual and bilingual) dictionaries. The researcher was not present in the experiment room where the participants produced their translations. She observed the translation process via screen recording on a computer in an adjacent observation room. During observation, she highlighted a number of interesting moments in the translation process (e. g. long pauses, revisions, translation of rich points), which she replayed and discussed with the participants after the translation task.

Process data of the translation task were collected using the keystroke-logging software Inputlog (Leijten/van Waes 2013). This collection method is unobtrusive and does not disturb or interfere in the cognitive problem-solving processes taking place during the translation process. Inputlog registers and stores all keystroke and mouse actions (in a Windows environment) during a particular task, as well as their distribution across time. This enabled us to

investigate how the TTs were created in real-time. Screen recording was used to complement the Inputlog data with visual input of the screen activity. The participants were also asked, immediately after having completed the translation task, to fill out a 7-point Likert-scale questionnaire, which measured their level of agreement or disagreement with five statements. These statements concerned the translators' satisfaction with their translation products, as well as difficulties related to ST interpretation, to TT formulation, to the assessment of TT requirements and to the translation task as a whole. The questionnaire also contained three open questions about how the translators had gone about the translation task, which quality requirements they had taken into account during the translation process and what their opinion was of the quality of ST content and formulation. Subsequently, a cued retrospective interview was conducted to obtain qualitative information about a number of interesting instances in the translation process, such as the translation of rich points. The replay of the screen recording served as stimulated recall for the participants' memories (similar to the method used and discussed by Hansen 2006). During the retrospective interview, the researcher alternated between questions about particular rich points and questions about other issues. This was done in an attempt not to direct the participants' attention to the rich points. We acknowledge that retrospection might elicit a (small) learning effect, since it could trigger participants to reflect more explicitly upon their performance (cf. Bowles 2010). However, the study by Schrijver et al. (2014) among students showed that in similar conditions (with two weeks in between the test moments) no learning effects could be detected. Although this does not guarantee a similar outcome in the present study, we deemed a learning effect unlikely, since the translation task of the pretest was only one of the many translation assignments that professional translators had to complete that week (or even that day), in contrast to students for whom each translation task can be considered a more pronounced learning event given the considerably lower amount of translation work that students complete. The data collected did not reveal or hint at any learning effects caused by the retrospective interview either (e. g. comments in the questionnaire referring to the pretest translation process and to the retrospective interview).

2.3.2 Treatment

Three to seven weeks after the pretest (depending on participant availability for the pretest), the participants were given a joint, two-and-a-half-hour writing instruction session. The instruction took place in the computer lab at the University of Antwerp. It was made explicitly clear to the participants that the instruction was exclusively aimed at writing instructional texts in Dutch, and that, consequently, no links would be made with languages other than Dutch or with translation practice.

The writing instruction consisted of an interactive lecture, in which the instructor and participants discussed the main characteristics, components and functions of user manuals. Moreover, the instructor and participants explored how users read, interact with and use these texts, and how writers take into consideration linguistic, pragmatic and rhetorical issues when drafting such texts. Questions, brainstorming, editing and writing exercises were used to actively involve the participants in how they could strive for the optimal content, structure, formulation and visual design of instructive texts. The texts used and created during these exercises were derived from authentic didactic materials[6] and had been previously used in the

[6] These materials had been based on exercises developed by Joyce Karreman (University of Twente), an

study reported on by Schrijver et al. (2014). The texts did not concern devices that were the objects of the STs used in the experiment. This decision was consciously taken to avoid a one-to-one correspondence between the writing instruction and the translation tasks.

Given the limited duration of the instruction, four important features were addressed: (1) titles, (2) the sequence of instruction steps, (3) action–reaction information and (4) warnings in user manuals. With regard to titles, the participants were asked to analyze, compare and improve two tables of contents. In this exercise, peer feedback and group discussion were used to examine how writers accommodate the selective, scanning and action-driven reading manners of users in the formulation of titles. The participants also explored how they could optimize the usability and readability of instructions by breaking down the instructions into action sequences of various steps and by formulating these steps from a reader's perspective, using imperatives as well as unambiguous and consistent terminology. A number of Dutch excerpts were used to stimulate the participants' critical reflection about possible pitfalls in the information order of action sequences and in the combination of individual steps. Moreover, the participants were asked to write an instructional text based on a linear, prose-like text. This exercise allowed for deliberate focus on information structure, action-driven formulation of instructions, specific and unambiguous formulation, as well as the visual design of instructions (i. e., using bullet points or action–reaction schematics). In relation to the action sequences, the participants were also taught how to integrate action–reaction information into the instructional steps. This type of information enables users to verify whether they have carried out the various steps correctly, but it also serves as a motivation to continue reading. The importance of warnings in user manuals, their placement in the texts, either as a separate section or as part of an action sequence, was discussed with the participants by means of a number of textual examples. To conclude the writing instruction, the participants were asked to write a set of instructions based on a video clip that teaches viewers how to create a bamboo plant.[7] This exercise, which has been used in previous research (Lindgren/Leijten/van Waes 2011), integrated all previously addressed issues regarding titles, the sequence of instruction steps, effect–result information and warnings. The instructor provided individual feedback on the participants' written texts and ended the writing instruction by summarizing the primary pitfalls as well as good solutions in the writing exercise.

2.3.3 Posttest

Fifteen minutes after the writing instruction, the participants took part in a posttest in the same computer lab where they had received the writing instruction. The setup of this posttest resembled that of the pretest: an instructive ST (in this case a text about a turnspit oven) was used of similar length, difficulty, content and rich points as the ST in the pretest, and the same translation brief was used. Moreover, the participants had Internet and the same electronic dictionaries at their disposal, as was the case in the pretest. The time restriction of one hour

expert in usability, as well as on a course developed at the University of Antwerp (de Meyer, Fleur et al. [2010]: *Calliope. Instructieve Teksten.* 26.01.2015 <http://www.calliope.be/dutch/html/topic_0C088C2F-4331-4127-85BC-9FC4DEE8D861_9E48C765-6C79-46A3-A7B1-BDD0BF3C9AA8_1.htm>).

[7] This videoclip can be found on the following webpage: <http://www.calliope.be/dutch/html/topic_17B3F25F-A45B-4193-9228-6717992546 B9_5FC8183D-CB0A-4604-8FCE-9D14D89B2BDD_1.htm> (01.07.2015).

was also maintained. Participants were not allowed to consult the writing instruction materials during the translation task.

The data-collection methods used during the posttest entailed computer keystroke logging. To obtain information about the translators' decision-making processes, we asked them to fill out a questionnaire after completion of the translation task. Unfortunately, the use of cued retrospective interviews was not possible, since all participants took part simultaneously in the posttest. The posttest questionnaire was slightly longer than the questionnaire used in the pretest. It contained the 7-point Likert-scale statements and open process-related questions that were featured in the pretest questionnaire. However, the posttest also included two open questions about which writing-instruction elements the translator had used and had deliberately decided *not* to use in the translation task. In addition, the posttest questionnaire contained several 7-point Likert-scale statements about the use and usefulness of the information discussed in the writing instruction. To give a few examples: The translators had to state their levels of agreement or disagreement with statements such as "I have used the information from the writing instruction while revising", "My customers' requirements and expectations do not allow me to apply the information in my professional translation practice", "The information from the writing session is difficult to apply in professional translation practice due to the translation software that I must use".

2.4 Data analysis

We analyzed the translations of the rich points as well as the overall quality of the translation products to examine what elements from the writing instruction the participants had taken into account while producing the translations. The quality of the translation of every rich point was assessed on the basis of the genre conventions discussed in Section 2.2 (in particular those valid for Dutch user manuals, as discussed by Steehouder 2008, which are based on professional best practices and extensive usability testing). If the translation of a rich point complied with the genre conventions, it was considered a correct (i. e., genre-appropriate) translation. Moreover, correct translations also implied that the participant had learned something from the writing instruction and had taken it into account while producing the translations, because many of the translation problems posed by the rich points could be solved by implementing information received during the writing instruction. The total number of correctly translated rich points in the pretest and posttest were compared at the level of rich-point type to ascertain changes from pretest to posttest. In addition, we analyzed the keystroke-logging data for each of the correctly translated rich points in the posttest to verify whether the translators had used writing-instruction information for the rich points immediately (i. e., a genre-appropriate translation being the first translation solution visible in the log file) or whether they had used it later on in the translation process (i. e., as a revision). Since the rich points did not cover all the elements discussed in the writing instruction (e. g. visual-design elements, action–reaction information), we also carried out a textual analysis of the TTs to find any salient ST deviations in both formulation and structure. The shifts observed in the TTs of the pretest and posttest were compared systematically for each participant to verify whether a potential change in general translation method (e. g. from literal translation to a freer translation) and changes in type of shifts (e. g. lexical, syntactical, textual deviations) had taken place after the writing instruction. We subsequently combined the results of these two analyses to establish what kind of writing-training elements that the participants had taken into account while producing the translations.

The translation products were assessed by two trained raters, one being the first author of this contribution and the other an external rater. Both raters analytically assessed the translations using an error-based scheme, which comprised four error categories:

- category A: ST interpretation and TL formulation errors that hinder the understanding of the ST content by the target audience;
- category B: translation choices that violate idiomatic and stylistic preferences in the TL;
- category C: errors against TL genre conventions;
- category D: language-system errors in TL, such as grammar, spelling and punctuation errors.

The fact that one of the raters was aware of the research conditions may be considered problematic. However, we feel that this concern is partially alleviated by the satisfactory interrater reliability that was obtained for most of the error categories. The interrater reliability for the total number of translation errors was .995 for the pretest scores and .984 for the posttest scores (calculated using the Intra-Class Coefficient; one-way, consistency, single measures). The interrater reliability for the four error categories was above .77, except for error categories A and B in the pretest, which obtained lower agreement rates of .50 and .47 respectively. In light of these data on interrater reliability, we used the mean of the two raters' assessment scores in the data analysis. Given the limited number of participants (n = 5) and the absence of a control group in this exploratory study, no statistical tests were carried out on the data concerning the quality of the rich points or the overall product.

The analysis of the translation processes focused on the reasoning and motivation behind the (lack of) use of writing-instruction information in the translation task. For this qualitative analysis, we contrastively analyzed the questionnaires that were filled out in both the pretest and the posttest to reveal changes in task knowledge (i. e., knowledge of the characteristics of the commissioned TT). We also analyzed the data provided by the retrospective interviews, which had been collected only in the pretest. They allowed us to verify not only whether the professionals already showed awareness of certain translation problems *before* the writing instruction, but also whether the criteria of their problem-solving behaviour regarding certain translation problems had changed (as expressed in the posttest questionnaires). In particular, we checked if the participants' answers to the question "Which information from the writing instruction did you use in the translation task; and which did you deliberately decide not to use?" in the posttest questionnaire were reflected in their translation products. We also analyzed the keystroke-logging data: to gain insight into how information from the writing instruction had been used for the translation of the rich points, we analyzed for each correct translation solution of a rich point that was visible in the final product whether the translation constituted the first translation solution or not, and how many times the translation for that rich point had been revised in the translation process. To detect potential differences between the pretest and posttest in terms of process organization, revision and pausing behaviour, we also analyzed the pausing data as well as the process graphs generated automatically by Inputlog. In these graphs, we focused on the process line, which shows the number of characters produced (including deletions), the product line, which reveals the actual document length, and the cursor line, which shows the position of the cursor in the text (cf. Leijten et al. 2014: 298 for more information).

3 Results and discussion

In this section, we will present the findings to answer the research questions formulated in section 2. Section 3.1 contains a general overview of the effects on the translation products of all five professional translators. Section 3.2 addresses the effect of writing instruction on decision-making processes. In Section 3.3, we will discuss which factors may influence the transfer of writing-instruction information to a translation task, and consequently the usefulness of writing instruction for professional translators.

3.1 The effects of the writing instruction on the translation product

From the textual analysis of the translation products, we cannot deduce that the writing instruction inspired a radical change in translation method (i. e., general translation approach [free vs literal]) among the participants. However, the writing instruction appeared to help them to detect (and to solve) specific translation problems better and to pay more attention to particular TT features (such as TT formatting and visual design). This became particularly clear in the analyses of the translations of the rich points in the pretest and the posttest. Table 1 shows the percentage of rich points translated correctly (i. e., in a genre-appropriate manner) on average as well as the standard deviation (*SD*).[8] The number of rich points that each rich-point category consists of is mentioned in between brackets after the title of the category.

Table 1: Percentage of rich points translated correctly in the pretest and posttest

Rich-point categories	**% Pretest (SD)**	**% Posttest (SD)**
Titles action-driven (1)	0 (0)	20 (45)
Titles consistency (1)	20 (45)	60 (55)
Information structure Micro (2)	80 (27)	90 (22)
Information structure Macro (2)	0 (0)	50 (50)
Illocutionary indicators (7)	69 (23)	71 (17)
Terminology (1)	60 (55)	80 (45)
All – categories	**38 (19)**	**62 (27)**
All – rich points (14)	**51 (18)**	**67 (21)**

Table 1 shows that the participants translated 51 % of all rich points correctly in the pretest and 67 % in the posttest. If we draw a general picture based on a calculation in which all six rich-point categories are weighted equally, there is an increase from 38 % in the pretest to 62 % in the posttest. This increase seems to suggest that the participants took into account a large number of writing-instruction elements in their translation processes. The data for the

[8] The data for each subcategory in table 1 were calculated on the basis of the mean percentage of correct translation solutions for each participant within that category. Since the rich-point categories consisted of a different number of rich points, the total percentage of rich points translated correctly (All) was calculated in two ways: (1) on the basis of the mean percentage for all rich points independent of the rich-point category; (2) on the basis of the mean percentage of correctly translated rich points in each rich-point subcategory.

rich-point categories also seem to suggest that the translators' attention for certain features changed after receiving the writing instruction. In the pretest, the participants' relatively successful performance concerned mainly the linguistic micro-textual level, since the translation quality was highest among the rich points represented by illocutionary indicators and micro-information structure (although less distinctively so for terminology, given the high standard deviation). Yet, in the posttest, the participants also appeared to become slightly more attentive to macro-textual features, such as the formulation of titles in a consistent manner, as well as chronological macro-information structure.[9] What did not seem to transfer particularly well from the writing instruction to the translation task was the action-driven formulation of titles. None of the participants used action verbs and objects for the titles in the pretest, and only one participant did so in the posttest.

On the basis of these relative data, we could argue that there is a transfer of information from the writing instruction to the translation task. However, it is important to interpret these results with caution, not only given the exploratory nature of this study but also because the extent to which the individual participants (i. e., professional translators) applied information from the writing instruction to their translation tasks varied considerably. The inter-individual differences at a global level (All) seem to be somewhat limited, given the relatively small standard deviations. Indeed, four out of five translators improved in terms of the total number of correctly translated rich points, although the individual improvement rates differed. However, the inter-individual differences are larger with regard to the rich-point categories that represent macro-textual features, such as Titles consistency and Information structure Macro. Increased attention to macro-textual features seems to be characteristic of three participants only. These three translators were also those who took into account most of the writing instruction elements in their translation products and translated most rich points in a genre-appropriate fashion. Interestingly, the three professional translators also paid more attention to text layout and design after the writing instruction, as could be observed in their introduction of bullet points, different font styles and warning signs into the TTs produced in the posttest. The other two translators seemed to be less aware of the macro-textual features. For one of them, the translation product (and the posttest questionnaire) did not contain any indicators to suggest awareness of the translation problems posed by the non-chronological suprasentential content structure. However, the other participant did appear to have noticed a certain translation problem: although she did not change the ST content structure in the TL, she did introduce Dutch warning signs (*Let op* – 'Beware') in bold prior to two TT sentences that did not follow the chronological content structure. Another indicator of translation-problem awareness might be that the same participant stated – in the posttest questionnaire – that the ST was incoherent on some occasions. These two participants also appeared to have trouble applying what they had learned about the formulation of titles in the writing instruction. They translated the first two section headers of the posttest ST in a consistent manner, but failed to do so for the third section header. It remains unclear what caused this inconsistent approach and partial transfer of writing instruction information.

The writing instruction seemed to have a relatively larger beneficial effect on the quality of the translation products. As shown in table 2, the total number of errors that were made on average (i. e., sum of errors produced by all translators divided by 5) decreased considerably from pretest to posttest. It went from 31.2 errors in the pretest to 19.9 errors in the posttest,

[9] This result could also be observed in research related to translation students (Schrijver et al. 2014).

which amounts to an average decrease of 36 %. This is a result observable across all translators. The writing instruction seems to have had most effect on style- and genre-related errors (categories B and C), which all professionals committed less frequently in the posttest (i. e., decreases of 72 % and 36 % respectively). More variation among the translators could be found with regard to content (category A) and linguistic (category D) errors. Two of the five translators committed those errors less frequently in the posttest. Interestingly, it was the three professional translators who took into account the most writing-instruction elements who committed slightly more content (category A) and linguistic (category D) errors in the posttest than in the pretest, although they still improved in terms of overall score.

Table 2: Translation quality assessment

Error categories	**Average number of errors**	
	Pretest (SD)	***Posttest (SD)***
Category A: contents	2.4 (2.1)	4.8 (1.8)
Category B: idioms and style	13.7 (2.3)	3.9 (2.0)
Category C: genre conventions	12.1 (3.1)	7.7 (3.6)
Category D: grammar, spelling and punctuation	3.0 (1.2)	3.5 (2.6)
All	**31.2 (6.8)**	**19.9 (3.9)**

3.2 The effects of the writing instruction on the decision-making process

Triangulation of the comments made during the retrospective interviews, the answers in the pretest and posttest questionnaires and the translation solutions visible in the translation products suggests that the writing instruction may have influenced the professional translators' decision-making processes in three respects.

- First, the writing instruction seems to have provided the professional translators with more detailed knowledge of the characteristics of quality user manuals and, consequently, of the translation task at hand. In the pretest, the professional translators manifested rather general, linguistically focused genre knowledge during the retrospective interview. Moreover, most translators mentioned two to three criteria when they were asked in the pretest questionnaire which TT quality criteria they had taken into account during the translation process: the use of imperatives in Dutch (as one of them stated "you should say 'do this, do that'"), natural sounding sentences that are not too "stiff" or "bombastic" and the use of standard Dutch instead of Flemish linguistic variants. In the posttest questionnaire, the translators answered the same question in a more detailed manner, referring to specific textual components: consistently using imperatives, avoiding synonyms, striving for conciseness and clarity, using unambiguous and motivating titles, and clearly explaining and visualizing the steps that users have to carry out. The considerable decrease in genre-related translation errors (i. e., category C) as well as the transediting of rich points further supports this finding. This increased task knowledge may have broadened the array of factors that the professional translators took into account while translating the STs.
- Second, the writing instruction appears to have stimulated the professional translators to consider 'the bigger picture' during the translation task. More specifically, it seems to make them take into account the target readers and the readers' interaction

with the TT more consciously in their translation processes. In the pretest, the retrospective interviews and the answers to the open questions in the questionnaires did not contain any indicators to suggest that the target readers played any specific role in the professionals' decision-making processes. In contrast, four out of five translators stated in the posttest questionnaire that they had taken on the users' point of view in their translation tasks in response to the question "Which elements from the writing instruction did you use in your translation task?". Even the two professional translators whose translation products did not reflect a considerable transfer of writing-instruction information to the translation task referred to an increased focus on the target audience. This pattern seems to be confirmed by the average level of agreement on the posttest questionnaire statement "The writing training has stimulated me to pay more attention to the target readers while translating": 6.2 on a scale of 7 (*SD* = .84). The new or increased focus on the end users was also observed in the product data. The writing instruction seems to have helped to extend the translators' awareness of linguistic, stylistic aspects to pragmatic non-linguistic elements, as can be deduced from the change in ST titles and paragraph order, as well as the adaptation of the visual design of the ST in the posttest. The previously mentioned user perspective also seems to have influenced the linguistic formulation of the TT, as can be deduced from the important decrease in stylistic translation errors (i. e., category B). In fact, even the two professional translators who took into account relatively few writing-instruction elements while producing their translations improved considerably in this area, making fewer errors related to both non-idiomatic phrases and inconsistent terminology in the TL. Nonetheless, it is difficult to establish how the writing instruction actually influenced the professionals' translation of terminology, because this rich-point category consisted of only one rich point. Moreover, three out of four translators who translated the rich point correctly in the posttest had done so in the pretest as well. Furthermore, these translators had also elaborated during the retrospective interviews in the pretest on having tried to use clear and consistent terminology throughout the TT.

- Third, the writing instruction seems to have yielded a more critical stance on ST quality. In the pretest, no translator voiced any criticism about the quality of the content, structure or formulation of the ST when answering an open question about this issue in the questionnaire. In contrast, four out of five translators expressed several concerns about ST quality when answering the same question in the posttest questionnaire. This criticism was mostly directed at the chronological content structure of the ST.

The three aspects mentioned above suggest that the professionals' reflection had deepened after the writing training. Another indicator that seems to support this interpretation can be found in the keystroke-logging data. These data showed that the professionals pausing behaviour changed slightly from pretest to posttest, becoming more focused. Their mean process time decreased from 54 min 2 sec (*SD* = 13 min 39 sec) to 43 min 14 sec (*SD* = 18 min 48 sec). Their mean pause length (calculated on the basis of pause ≥ 2 sec) slightly increased from 6.5 sec (*SD* = 1.0 sec) to 6.7 sec (*SD* = 0.9 sec), although the number of pauses and the total pause time decreased. The number of pauses (calculated on the basis of pause ≥ 2 sec) decreased from 194 (*SD* = 40) to 150 (*SD* = 80). The total pause time (calculated on the basis of pause ≥ 2 sec) decreased from 21 min 15 sec (*SD* = 7 min 2 sec) to 16 min 31 sec (*SD* = 7 min

27 sec). Given the decrease in mean process time, this implies that the relative time dedicated to pausing stayed approximately the same (i. e., 36 % of total process time in the pretest and 38 % in the posttest). Taking into account that the proportion of pausing time is similar for the pretest and the posttest, we contend that there is a shift in the manner in which the professionals reflect on certain issues. Since the product data have shown that the participants translated the rich points slightly different and the questionnaires have shown that they reflected more in detail about the rich points, the change in reflection is probably related to the integration of the writing training information in the translation task.

Finally, the product data have shown that the amount of writing-instruction information that the five translators took into account while translating varied considerably. Yet, the manner in which they used this information seemed quite similar. All translators assigned a high level of agreement to statements in the posttest questionnaire that expressed that they had used information from the writing instruction in various phases of the translation process: while reading the ST, but also when formulating the TT and revising the translation.[10] It is difficult to check the reliability of these data, since we did not use any methods that directly tapped into the translators' cognitive processes. However, these data can be partially confirmed by the keystroke-logging data, at least with regard to the phases of TT formulation and revision. The log-file data showed that when the professional translators took into account writing instruction information and produced genre-appropriate translation solutions for the rich points they did so immediately in most cases. Two translators did so always, whereas the other three did so in respectively 85 %, 86 % and 92 % of the cases. From the keystroke-logging data, we were also able to deduce that the translators revised on average 14.3 % (*SD* = 20.2) of all rich points in the pretest, whereas this percentage was 10 % (*SD* = 6.4) in the posttest. These data seem to confirm that the professionals indeed used information from the writing instruction while formulating the TT. It does not provide evidence that the participants used the information for revision. However, a comparison of the pretest and posttest process graphs suggests that the writing-instruction information may have influenced the translators' revision behaviour too. This was most visible in the process data of the translator who translated most rich points correctly in her translation task. Figures 1 and 2 contain the process graphs from the pretest and the posttest for this translator. In these graphs, the beginning of the final revision phase is circled and starts at the point where the number of characters of the TT (visualized by the product line; the process line represents the number of characters produced) maintains stable. A comparison of these two graphs reveals that, compared with the pretest, the final revision phase in the posttest was relatively much longer in duration (12 minutes vs. 4 minutes, amounting to 40 % and 13 % respectively of the total process time). Moreover, the cursor-position movements (visualized by the dotted line) were much more erratic in the posttest, not only in the formulation phase but also in the final revision phase. Since the translator went back and forth in the TT (during her final revision) considerably more often, there seemed to have been more than one revision episode in the posttest.

[10] While the scores attributed to the statements differed between the five translators, each translator assigned the same score in the pretest and in the posttest to each of the three statements.

Figure 1: Process graph pretest

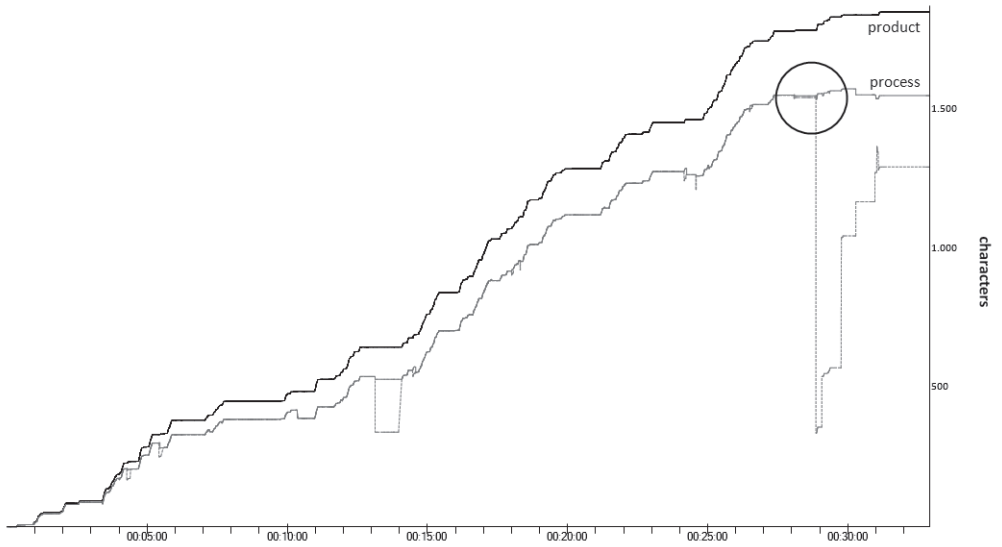
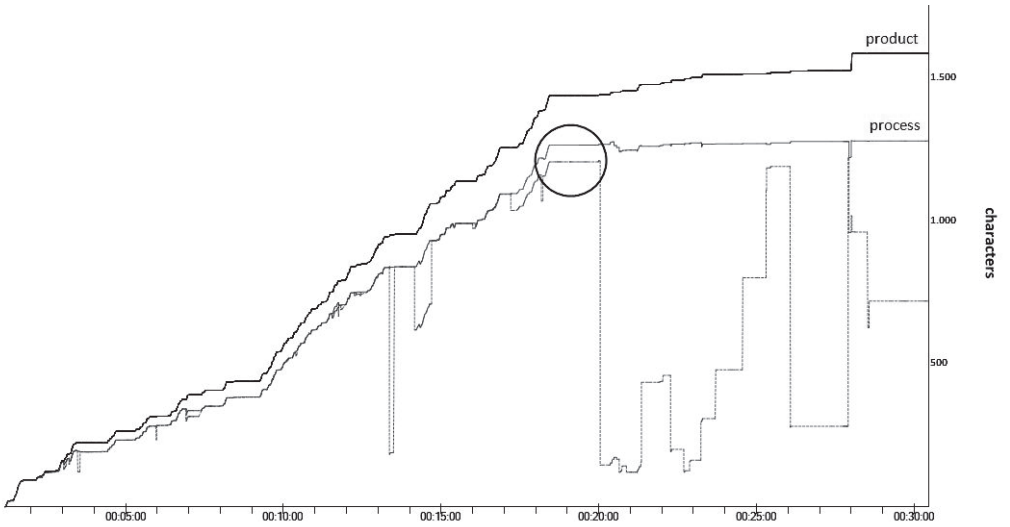


Figure 2: Process graph posttest



3.3 Factors influencing the transfer of writing instruction to translation task

The decrease in translation errors, the heightened attention to TT function and to target readers, as well as the broadened genre knowledge may suggest that the professional translators in this study benefited from writing instruction. However, they did not all appear to do so in an equal fashion: while four out of five participants took into account many elements from the

writing instruction in their translation tasks, one did not follow this general pattern. This raises the question: what are some of the factors that may influence this (lack of) transfer?

The lack of sufficient retention and internalization of the acquired writing-instruction information seems to have been an important factor that influenced transfer to the translation task. Retention of the information provided during the writing instruction seemed to be particularly problematic for the translator who incorporated the fewest instruction elements. Although retention was not explicitly tested, her succinct and vague answers to questions about the quality requirements of user manuals and about the deliberate use or avoidance of writing-instruction elements in the translation task indicated little retention. The other four translators mentioned more writing-instruction elements in the posttest questionnaires, but did not refer to elements related to those rich points that they did not translate correctly either. This too hints at partial retention. Since the posttest immediately followed the writing instruction, the translators might not have had sufficient time to internalize all the information provided during the writing instruction. To increase the potential usefulness of writing instruction for translators, it is warranted to provide sufficient time for deliberate practice and knowledge retention.

A second factor that might negatively influence transfer from one context to another is cognitive overload. Some data in the current study suggest that for the professional translator who hardly made any use of writing-instruction elements in her posttest, a lack of available cognitive resources may indeed have played a role. She expressed in the posttest questionnaire and to the researcher after the experimental session that she had tried to "apply what we had previously learned", but that problematic ST interpretation had hindered her from implementing more elements in her translation and "thinking about the user" and using imperatives. Moreover, her responses to the questionnaire statements about the difficulty of ST interpretation, TT production and overall task difficulty showed that she had experienced the task as rather difficult.[11] In contrast, three of the other four translators reported similar or higher levels for TT production and overall task difficulty (although lower levels for ST-interpretation difficulty),[12] but still managed to transfer more writing-instruction information to their translation tasks than her. The contrasting data make it difficult to prove or disprove the interpretation that cognitive overload might have had an impact on transfer of information from the writing instruction to the translation task. In follow-up research, it might be necessary to integrate additional data-collection methods, such as eye-tracking (measuring pupil dilation, for example; cf. Seeber 2013), to assess changes in cognitive load and the potential role of cognitive overload in information transfer from one context to another.

A third factor that may influence transfer of writing instruction information to the translation task might be the translators' adaptiveness or flexibility to apply newly acquired information (or knowledge) to solve a familiar task. The ability and willingness to adapt core competences and routine problem-solving behaviour to new settings may differ among individuals, as has been suggested in research on transfer of learning (e. g. Schwartz/Bransford/Sears 2005). The perceived merit of 'going out of your comfort zone' may influence the willingness

[11] The levels of agreement for this professional translator on the posttest questionnaire statements concerning ST-interpretation difficulty, TT-production difficulty and overall task difficulty were 6, 4 and 4 respectively (on a scale of 7).

[12] The average levels of agreement to statements concerning ST-interpretation difficulty, TT-production difficulty and overall task difficulty were 3.3 (*1.2*), 4.3 (*0.6*) and 5 (*1.0*) respectively (on a scale of 7).

to change: when professionals consider it highly unlikely that they can and will use the writing information in their professional translation practices, for example, as a result of customer reluctance or even refusal, and/or software limitations imposed by translation memories, this may negatively affect transfer. Although the translators' answers to related questions in the posttest questionnaire did not provide conclusive evidence to support this interpretation in this study, this factor ought to be examined more in detail in future studies to assess if and how writing instruction can benefit professional translators.

4 Conclusion

In the introduction to this paper, we quite provocatively posed the question whether translators need writing skills and, if so, whether they actually have those skills since many of them do not receive any writing instruction during their studies. We did so to pave the way for the main topic: the effect of writing instruction on translation performance. The results of the present study suggest that writing instruction can positively influence professionals' translation products and decision-making processes. Overall, the translators in this exploratory study applied a reasonable number of writing-instruction elements in their translation processes. However, the type and amount of writing information that the individual translators applied differed considerably. Nonetheless, writing instruction seemed to have a positive effect on the professional translators' genre knowledge, as well as on their awareness of the needs and expectations of the target audience. Writing instruction also appeared to have a positive effect on translation quality, since the professionals committed fewer style- and genre-related translation errors.

Especially in light of the limited duration of the writing instruction (two-and-a-half hours), these results are quite promising and suggest that writing instruction might indeed be beneficial for professional translators (and by extension, for other language professionals), not only to familiarize themselves with new text genres but also to understand why text genres are composed in certain manners and how users read and process such texts. However, we have to treat these results with caution: the present study was of an exploratory nature and did not examine writing instruction in comparison to other types of learning activities or conditions (such as providing specific translation briefs) to improve translation performance. More research is necessary to confirm the results reported here and future studies would do well to include a control group (who receives no writing instruction), more participants, participants of various competence levels, other text genres, as well as texts in which literal translation suffices.

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Dr. Iris Schrijver
Department of Applied Linguistics/Translation and Interpreting
University of Antwerp, Antwerp, Belgium
Rodestraat 14
2000 Antwerpen, Belgium
iris.schrijver@uantwerpen.be

Prof. Dr. Leona van Vaerenbergh
Department of Applied Linguistics/Translation and Interpreting
University of Antwerp, Belgium

Dr. Mariëlle Leijten
Department of Management
University of Antwerp
Flanders Research Foundation (FWO), Antwerp, Belgium

Prof. Dr. Luuk van Waes
Department of Management
University of Antwerp, Belgium