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# **THE IMPACT of WRITING TRAINING on TRANSEDITION in TRANSLATION, analysed from a PRODUCT and PROCESS PERSPECTIVE**

## **1: Introduction**

Translation is a form of text production (Dam-Jensen & Heine, 2013), since translators have to *produce* a text in the target language (TL) in which the message of the source text (ST) is re-expressed. The text-productive aspect of translation has received increasingly more interest and gained importance following the shift from an equivalence-based to a functionalist understanding of translation. Vermeer's (1987, 29) functionalist definition of the act of translating ('To translate means to *produce a text* in a target setting for a target purpose and target addressees in target circumstances') clearly emphasizes the purposeful and text-productive nature of translating. This new perspective opened up a broad spectrum of possible translations in which the source text (ST) - target text (TT) relationship can vary from strict to almost completely absent dependent on the function of the translation in the target culture (TC). The type of ST-TT relationship does not change the text-productive nature of the act of translating. However, it is likely to influence the nature as well as the visibility of the text production carried out during the translation process. When the function of the translation requires strict equivalence, text production will remain relatively 'limited' as the translator will primarily aim for a (linguistic) replacement of the ST by the TT. However, when the desired equivalence moves from strict to more dynamic, the text-productive aspect of translation manifests itself more clearly. Think for example about those instances when the translator has to manipulate or edit the ST to produce a target text (TT) that is understandable and acceptable in the TC. This occurs, for example, when a certain concept does not exist in the TL and needs additional explanation; when

text conventions in the TL differ from those in the ST; when the TT audience differs from the ST audience (in age or education); or when the ST is poorly written. Stetting (1989) introduced the umbrella term ‘transediting’ to refer to these instances of text production in the translation process that go beyond mere ST reproduction in the TL and imply acts of ST rewriting, sometimes ST re-ordering. Transediting can be defined as ‘the conscious or automatized cognitive route to solve a problem caused by either poor ST quality or differing function, audience, conventions and/or valid text norms in the TC’ (Schrijver, Van Vaerenbergh & Van Waes, 2012, 6).

Given the text-productive nature of translating, it is evident that translators should have text-productive competence in the TL. Translation professionals generally attest to this view (see ATA 2011 survey as summarized by Koby & Melby, 2013, 184), as do many scholars who have proposed models of translation competence (e.g., PACTE, 2007; Göpferich, 2009). The EMT reference framework for training programmes (EMT expert group, 2009) also alludes to text-productive competence. However, training in monolingual text-production, hereinafter called writing training, is not a universal feature of translation studies programmes (Göpferich, 2004), since the text-productive competence of translation students, especially in their mother tongue, is usually taken for granted (Merkle, 2010 referring to Kelly, 2005). Nonetheless, many scholars advocate the integration of writing training in translator education (e.g., Meyer & Russell, 1988; Jakobsen, 1994; Göpferich, 2004; Doloughan & Rogers, 2006; Merkle, 2010; Byrne, 2010). Writing training is believed to have a beneficial impact on translation students’ awareness of acceptability norms in the TL (Meyer & Russell, 1988; Jakobsen, 1994). It may also positively affect their self-concept as a text designer instead of a text reproducer (Gross, 2003). Based on these two suppositions, it is likely that writing training will have a positive influence on the translation students’ use of

transediting, since it trains them in drafting texts that fit the needs and expectations of the target readership, as well as comply with the valid linguistic and textual conventions and norms.

How commonsensical the call for writing training in translator education may be, the presumed beneficial impact of writing training on translators' translation performance (i.e., product and process) has not been the object of extensive empirical research. In this article, we will present an experimental framework that enabled us to study if, and how, writing training influences the translation product and process of translation students, and more specifically their use of transediting. This framework is characterised by a controlled intervention study, in which the experimental group received writing training and the control group placebo training. Moreover, the STs used in the experiments presented mainly text-productive problems that required the use of transediting, which allowed us to zoom in on the text-productive aspect of translation.

## **2: Research questions**

This study seeks to answer the following main research question: Does writing training have a positive effect on transediting in the translation product and process? In this context, a positive effect is interpreted as an increase in the amount of transediting on the one hand, and an improvement of transediting quality on the other hand.

Assuming a priori that writing training will influence transediting positively, we have formulated two additional secondary research questions:

- Does writing training influence transediting on both a macro-textual (i.e., above-sentence) and micro-textual level (i.e., at or below sentence level)?

- Does writing training change the moment when transediting is carried out, i.e., as a first translation solution or later on in the translation process?

### **3: Method**

To answer the research questions above, we set up a controlled intervention study, in which we gave writing training (focused on instructive texts) to the experimental group and placebo training to the control group.

#### ***3.1: Participants***

Seventeen third-year BA-level students participated in this experiment. These participants were native speakers of Dutch and had had two years of Spanish language training, reaching EFR level B2. They had had one year of Spanish-Dutch translation training, mostly in translating general informative texts.

The participants were uniformly distributed over the experimental group (n=9) and control group (n=8). To control for variation in their overall translation competence and writing skills, the assignment of participants to the two groups was carried out on the basis of the mean of three scores: (1) the mark for the general translation course Spanish-Dutch in the previous (i.e., second) year of the participants' bachelor studies; (2) a pretest translation task, and (3) the mean score of three writing tasks. The mark for the general translation course was a score on a scale from 0 (lowest score) to 10 (highest score), based on several translation tasks that had been assessed with regard to ST interpretation, stylistic and linguistic correctness in the TL. The score for the pretest translation task was a raw score (i.e., representing the total number of translation errors committed), but this raw score was subsequently transformed to a ranked score (from 0 –lowest score– to 10 –highest score) to allow for statistical analysis with the other

ranked scores. The three writing tasks were assessed on a scale from 0 (lowest score) to 10 (highest score), according to evaluation criteria based on the linguistic and rhetorical problems that each task presented. A two-tailed Mann-Whitney U-test showed no significant differences between the two groups on the mean of these three tests, nor on each of the tests separately.<sup>1</sup> Moreover, the participants' experience with similar translation or writing tasks previous to or during the experiment was monitored.

### ***3.2: Design and procedure***

The experimental sessions were part of the participants' translation course. The participants were informed that these experimental sessions formed part of a research project, but they were not notified in advance of the contents of these sessions or the project. After the experimental sessions, we also gave writing training to the control group and placebo training to the experimental group to guarantee equal information to all participants.

The sessions took place over a period of six weeks and entailed five hours of training. The pretest (T1 is translation task 1 in Figure 1) was conducted one week prior to the training, the immediate posttest (T2 and T3) and delayed posttest (T4) one and three weeks after the training respectively. The immediate posttest consisted of two tasks (T2 and T3 in Figure 1) to increase reliability of the data. Between the pretest and posttests, the participants received three training sessions: one theory session (1 hour) and two practice sessions (2 hours each). The training for the two groups differed in the practice sessions alone: writing training vs. placebo training. The aim was to analyse two groups of translation students that only differed in writing practice and experience, whereas their translation experience and competence would be comparable.

(Figure 1)

The theory session provided the participants with information on the main pragmatic and linguistic characteristics of (Spanish and Dutch) instructive texts, its structure and content parts. Since declarative genre knowledge is believed to be essential in translation (cf. Montalt Resurrecció, Ezpeleta Piorno & García Izquierdo, 2008), as well as in writing (cf. Tardy, 2006), the two groups received the same theory session to ensure similar declarative genre knowledge.

During the practice sessions, the experimental group was trained how to edit and compose instructive texts in Dutch. In these two training sessions, no link to translation or other languages than Dutch was made. Rewriting and writing exercises were used to teach the participants which social functions user manuals have and how information design, readability and usability influence the composition process. Special attention was paid to titles, information structure, illocutionary indicators and terminology. These are some of the problems represented in the translation tasks, which allowed us to check the supposed transferability of knowledge gained in writing training into a translation context.

The control group received two practice sessions that did not involve writing, but which allowed them to interact with instructive texts without increasing their experience in translating this text genre or enhancing their writing skills. In the first session, they were trained in finding relevant scientific articles on the translation of instructive texts in abstract databases of Translation Studies journals. In addition, they had to read and give an oral synthesis in Dutch of two theoretical Spanish articles (Gamero Pérez, 2000; 2001), in which Spanish and German user manuals are compared with regard to structure, typical phrasing and the use of discourse markers. In the second session, the control group was taught how to create a terminology database for a

selection of key words of a Spanish instruction manual by using the program Trados Multiterm.

### ***3.3: Materials<sup>2</sup>***

In the pretest and posttests, the participants were asked to translate a Spanish user manual of a household appliance (gas cooker, fabric shaver, refrigerator and turnspit oven) of approximately 250 words into Dutch. The STs used in this study were selected from a corpus of original Spanish user manuals composed by Murcia Bielsa (1999).<sup>3</sup> These STs were not difficult to comprehend, but rather presented TT formulation problems.

The STs used in this experiment were adapted to contain a number of rich points, which are ‘specific source-text segments that contain translation problems’ (PACTE, 2011, 37). A literal translation of these segments would result in a lexically and syntactically acceptable TT, but would not comply with the textual norms and the target readers' expectations in Dutch. In other words, they required transediting. The use of these rich points allowed for a more systematic and controlled analysis of the effects of writing training on transediting over various translation tasks and various participants.

Each ST contained a total of fourteen rich points, which were discussed with and approved by a panel of three experts in the field of technical writing and translation. Among these fourteen rich points, four categories of rich points were established that corresponded with the textual norms of a user manual in Dutch (Steehouder, 2008) and the conventions explained by Byrne (2012) (the number of rich points pertaining to each category is mentioned between brackets):

- Titles (2): titles must be formulated in such a way that the readers can easily locate the information that they need. This can be best achieved by formulating titles in:
  - an action-driven manner, i.e. by using an object and an action verb in Dutch (1): *Instalación* [Installation] -> *De koelkast installeren* [To install the refrigerator]
  - in a consistent manner throughout the text (1): *Instalar el frigorífico* [To install the refrigerator] and *Limpieza* [Cleaning] -> *De koelkast installeren* [To install the refrigerator] and *De koelkast schoonmaken* [To clean the refrigerator]
- Information structure (4): the order in which instructions are given in the TT must be logical and chronological. This applies to two levels:
  - micro-level, i.e., at and below sentence level (2): *Antes de colocar las ollas, encender el quemador* [Before placing the pots, you should light the burner]-> *Steek de brander aan voordat u de pannen op het fornuis zet* [Light the burner before you place the pots on the stove]
  - macro-level, i.e., above sentence level (2): the warning “*Para su limpieza, desconectarlo de la red*” should come before or at least at the beginning of the various instructional steps of how to clean the refrigerator, and not at the very end
- Illocutionary indicators (7): the grammatical form to express instructions must be in compliance with the textual conventions in the TL, i.e., the imperative form in Dutch. *Debe lavarse el interior con agua templada* [The interior must be

washed with tepid water] -> *Maak de binnenkant schoon met lauw water* [Clean the interior with tepid water

- Terminology (1): identical concepts must be represented by the same terms throughout the text, since lexical variation is not acceptable in user manuals.

*Congelador* [Freezer] and *compartimento congelador* [Freezer compartment] -> *Diepvriesvak* [Freezer compartment]

Action-driven titles, micro-level information structure, illocutionary indicators and terminology concern aspects that are situated at or below sentence level (i.e., micro-textual level), whereas consistency in titles and macro-level information structure transcend the sentence level (i.e., macro-textual level).

### ***3.4: Data collection and analysis***

For the stipulated research purpose, it was important to use data collection methods that would yield no or minimal intrusion in the translation processes. Moreover, it was important that despite the controlled setting of the experiment and its interventionist nature, the translation tasks resembled the participants' familiar working environment and conditions as much as possible. For these reasons, computer keystroke logging (Inputlog<sup>4</sup>), screen capturing (CamStudio and Morae) and cued retrospective interviews were used.

The use of data collection methods differed slightly in the pretest and posttests. In the pretest, the participants' translation processes were registered using only computer keystroke logging and screen capturing. We decided against using introspective data collection methods in the pretest to avoid any carry-over effects: introspection may trigger conscious or unconscious learning among the participants, which could be transferred from pretest to posttest and may yield data noise. In the

immediate posttest, these data collection methods were complemented by cued retrospective interviews. These interviews took place in the second task of the immediate posttest alone, for practical reasons of operationalization. During the cued retrospective interviews, we used the replay of the screen captures as a reminder and retrieval cue for the participant's memory (Hansen, 2006).

The data collection methods provided both product and process data. We first examined the anonymized translation products. We coded the translation for each rich point dichotomously, with transedited rich points being awarded a '1' score and literal translations a '0' score. We also checked the quality of these translation solutions: the correct translations (i.e., those transedited in compliance with the Dutch text conventions stipulated in Steehouder (2008)) were assigned a '1' score, whereas the incorrect translations (i.e., literal translation and incorrectly transedited rich points) were awarded a '0' score. To verify whether there were significant differences in transediting and the translation quality of the rich points between the experimental group and control group, we carried out a between-group analysis (Mann-Whitney U-test, one-tailed). We also conducted a within-group analysis (Wilcoxon signed-rank test, one-tailed) to examine the learning effect, i.e., a significant change in the transediting and translation quality of the rich points from the pretest to the posttest<sup>5</sup>, for each group. To confirm that writing training had an effect on transediting, we established that all of the following three criteria must be met: (1) there had to be a significant difference between the two groups in the posttest (with the experimental group transediting more rich points and doing so more correctly); (2) this significant difference had to be observable in at least one of the two posttests (i.e., immediate or delayed posttest); (3) this significant difference should be met with a learning effect for the experimental group from pretest to one of the two posttests<sup>6</sup>.

The cued retrospective interviews, log files and screen captures yielded the process data. We transcribed and analysed the interviews to verify the reasoning behind the use of transediting and possible lack thereof. Moreover, we analysed the keystroke logging data to gain insight into how the final translation solution for a particular rich point was reached. Since we were particularly interested in transediting, we designed a coding system to structure the process analysis of transediting (see Figure 2).

(Figure 2)

For each of the rich points, we analysed the various translation solutions —as they were visible in the log data— to verify whether the participant had opted for transediting instead of a literal translation at a particular moment during the translation process. When transediting was observed in the process data, we analysed whether this constituted the first translation solution (i.e., immediate transediting) or not (i.e., delayed transediting). Furthermore, we examined whether the translation solution involving transediting had been revised at a later stage in the translation process. Moreover, we assessed whether it entailed a correct transediting. To illustrate this coding system, we will give the following example: the illocutionary indicator in *debe instalarse la cocina* [the cooker must be installed] was first translated literally in Dutch by the modal verb must in the passive voice [*het fornuis moet worden geïnstalleerd*]. The participant in question subsequently revised this translation solution, by foregoing a literal translation and using the modal verb must in the active voice instead: *u moet het fornuis installeren* [you must install the cooker]. In the final revision phase, this translation was revised yet again, now by an imperative in Dutch: *Installeer het fornuis* [install the cooker]. This rich point was coded as a trace of delayed transediting that was incorrect at first but then revised correctly at a later stage (TE-n+).

For the data analysis, the absolute data of the various transediting coding-categories were transformed into relative data (i.e., relative to the number of transedited rich points). The nature of the relative data did not allow for statistical comparison between the experimental group and control group, but its descriptive analysis complements the product analysis and yields insights into the moment of transediting and the quality of immediate and delayed transediting. The coding system also allowed us to examine recursivity, i.e., how many times the participants had revised their translations of the rich points. The coding labels TE+1-n, TE-1+n, TE-1-n, TE+n, TE+n-, TE-n, TE-n+ and TE-n- are all examples of recursivity. An increase in the relative frequency of all these coding labels among all translation solutions implies an increase in recursivity in the translation of the rich points.

#### **4: Results**

In the following sections, we will discuss the effect of writing training on the transediting of the rich points by reviewing both product and process data.

##### ***4.1: Product data***

According to the criteria stipulated in section 3.4, the writing training had a positive effect on the transediting of three out of four rich point categories: titles, information structure and illocutionary indicators. More specifically, writing training significantly increased transediting of titles for consistency, of macro-level information structure and of illocutionary indicators. The pretest did not show any differences in the amount of transediting of the rich points between the two groups. However, the experimental group ( $Mdn= 1.50$ ) transedited more titles than the control group ( $Mdn=0.00$ ),  $U=8.00$ ,  $p=.002$ ,  $r=-.67$ , in the posttest. Moreover, the participants of the experimental group transedited significantly more titles in the posttest ( $Mdn=1.50$ ) than in the pretest

( $Mdn=0.00$ ),  $z=-2.035$ ,  $p<.05$ ,  $r=-.48$ . Within this rich point category, only transediting for consistency of titles was positively affected by the writing training. The experimental group transedited significantly more than the control group to obtain consistent titles ( $Mdn=1.00$  vs.  $0.00$ ,  $U=8.00$ ,  $p=.002$ ,  $r=-.69$ ). This significant difference between the groups was met with a learning effect for the experimental group from pretest to posttest:  $Mdn=0.00$  pretest vs  $1.00$  posttest,  $z=-1.811$ ,  $p<.05$ ,  $r=-.43$ .

With regard to transediting of information structure, the experimental group ( $Mdn=2.75$ ) transedited significantly more than the control group ( $Mdn=1.00$ ) in the posttest,  $U=5.50$ ,  $p=.001$ ,  $r=-.72$ . A significant increase in transediting could also be observed for this group from pretest to posttest: ( $Mdn=1.00$  vs.  $2.75$ ),  $z=-2.670$ ,  $p<.01$ ,  $r=-.63$ . However, within this rich point category, only transediting of macro-level structure yielded significant results. The experimental group transedited significantly more than the control group ( $Mdn=1.25$  vs.  $0.00$ ,  $U=4.50$ ,  $p=.000$ ,  $r=-.77$ ) and showed a learning effect ( $Mdn=0.00$  pretest vs  $1.25$  posttest,  $z=-2.539$ ,  $p=.004$ ,  $r=-.60$ ). The third category positively influenced by writing training was illocutionary indicators: these rich points also were transedited significantly more by the experimental group ( $Mdn=6.75$ ) than by the control group ( $Mdn=5.5$ ),  $U=4.00$ ,  $p=.001$ ,  $r=-.76$ . Transediting of illocutionary indicators also significantly increased after the writing training: ( $Mdn=5.00$  pretest vs  $6.75$  posttest),  $z=-2.552$ ,  $p<.05$ ,  $r=-.60$ .

The writing training did not only significantly increase the amount of transediting of the rich points mentioned above, but also their translation quality. No significant differences between the two groups were found in the pretest. In the posttest, however, experimental group ( $Mdn=1.0$ ) translated significantly more rich points correctly than the control group ( $Mdn=0.0$ ) for the category titles,  $U=7.50$ ,  $p=.002$ ,  $r=-.68$ . However, at subcategory level, only consistency in titles yielded significant results:

$Mdn=0.75$  (experimental group) vs.  $Mdn=0.00$  (control group),  $U=8.50$ ,  $p=.002$ ,  $r=-.67$ .

The within-group analysis matched these results: the experimental group translated significantly more rich points pertaining to the category titles correctly in the posttest ( $Mdn=1.00$ ) than in the pretest ( $Mdn=0.00$ ),  $z=-2.680$ ,  $p<.01$ ,  $r=-.63$ . For consistency of titles, the following learning effect was observed:  $Mdn=0.00$  pretest vs.  $Mdn=0.50$  posttest,  $z=-2.271$ ,  $p<.05$ ,  $r=-.50$ . Translation of the information structure was also significantly better in the experimental group ( $Mdn=2.50$ ) than in the control group ( $Mdn=1.00$ ),  $U=7.00$ ,  $p=.002$ ,  $r=-.68$ . This was true for both micro-level information structure ( $Mdn=1.50$  vs  $1.00$ ,  $U=18.00$ ,  $p=.045$ ,  $r=-.43$ ) and macro-level information structure ( $Mdn=1.00$  vs  $0.00$ ,  $U=5.00$ ,  $p=.001$ ,  $r=-.77$ ). The experimental group also translated the rich points pertaining to information structure significantly more correctly in the posttest ( $Mdn=2.50$ ) than in the pretest ( $Mdn=1.00$ ),  $z=-2.670$ ,  $p<.01$ ,  $r=-.63$ . However, in this rich point category, the translation quality of macro information structure alone manifested a significant change from pretest ( $Mdn=0.00$ ) to posttest ( $Mdn=1.00$ ),  $z=-2.539$ ,  $p<.01$ ,  $r=-.60$ . The experimental group ( $Mdn=5.75$ ) also translated significantly more rich points of illocutionary indicators correctly than the control group ( $Mdn=3.38$ ) after the training sessions ( $U=6.00$ ,  $p=.001$ ,  $r=-.70$ ). This was met with a significant increase in translation quality of the illocutionary indicators from pretest ( $Mdn=2.00$ ) to posttest ( $Mdn=5.75$ ),  $z=-2.668$ ,  $p<.01$ ,  $r=-.63$ .

To summarize these results in a visual manner, Table 1 shows the effect of writing training on the amount of transediting as well as on the translation quality of the rich points, differentiating between rich point categories.

(Table 1)

#### **4.2: Process data**

Absence of transediting in the translation product does not necessarily mean that no transediting takes place during the translation process; a translator may well carry out transediting for a particular rich point at one moment in the translation process, but decide in favour of a literal translation as the final translation solution. We therefore analysed the log file data to verify for each rich point whether and when transediting was chosen as a translation solution in the translation process, differentiating between traces of immediate transediting (imm), delayed transediting (del) and no transediting ( $\emptyset$ ). Table 2 gives an overview of the relative distribution of these traces, for the two groups with regard to each rich point category. For example: in the pretest, 74.6% of all rich points pertaining to the category of illocutionary indicators were immediately transedited by the participants of the experimental group; 3.2% only later onwards in the process; and for 22.2% of these rich points, no traces of transediting could be found in the translation process.

(Table 2)

When comparing the pretest and posttest data visualized in Table 2, we can deduce that writing training did not influence the moment of transediting much. *If* transediting was chosen as a translation solution for a particular rich point, this was mostly carried out as a first translation solution. This general preference did not change much in the course of the experiment.

The general preference of both groups for immediate transediting was evident for the categories illocutionary indicators and terminology, but less clear-cut for titles and information structure. The control group was in comparison to the experimental group rather consistent: titles were almost exclusively transedited for consistency and this was primarily done immediately, whereas information structure was transedited at micro-level alone but without any clear preference for immediate or delayed

transediting. The experimental group seemed to have the following preference: immediate transediting for titles and micro-level information structure, delayed transediting for macro-level information structure. However, separate analysis of the immediate and delayed posttest data showed much more variation in transediting approach. For the transediting of titles and micro-level information structure, immediate transediting was indeed dominant in the delayed posttest, but no clear preference could be observed in the immediate posttest. Moreover, transediting of macro-level information structure was preferably carried out immediately in the immediate posttest, but this preference changed to delayed transediting in the delayed posttest. Thus, we cannot conclude that writing training changed the moment of transediting, because the transediting of titles and information structure increased significantly after the writing training and implied a rise of immediate and delayed transediting alike.

Writing training may not have changed the moment of transediting, but it seems to have fostered recursivity. Table 3 shows for each rich point category the percentage of rich points that was revised during the translation process (revisions) by the participants of each group, as well as the frequency with which the revisions led to a correct final translation solution (success rate). The frequency of revision increased from pretest to posttest, as well as the success rate of these revisions. This increase in recursivity is observable across all participants of the experimental group and in nearly all rich-point categories. The control group also manifested an increased recursivity, but only in the translation of titles and information structure and with much lower relative data than the experimental group.

(Table 3)

Writing training also improved the quality of transediting. A contrastive analysis of the total number of transediting traces and the number of transediting traces leading to

successful translation solutions confirmed what the product results in section 4.1 have already suggested: the success rate of transediting improved considerably after the writing training. It is unwarranted to state which of the two transediting approaches (i.e., immediate or delayed transediting) was more successful given the small absolute values and their unequal distribution across immediate and delayed transediting as well as across the two groups. However, we can ascertain that, although immediate transediting was the preferred approach, delayed transediting did not prove to be detrimental for transediting quality. The lowest success rate of delayed transediting in the posttest was registered in the experimental group and concerned the rich point category of illocutionary indicators: 56%. All other success rates were well above this percentage.

The retrospective interviews brought to light that participants of the experimental group based their use of transediting on more diverse and more specific strategies than the participants of the control group. The latter did not adduce other motives than the general principles of readability and usability stated in the translation brief, if they addressed the need for transediting at all. However, the former mentioned strategies such as using short sentences containing one instruction step; presenting the information in a chronological and logical manner; avoiding redundant formulations by using concise and clear wording; and addressing the reader in a consistent manner. Moreover, the conscious focus on how the target reader would read and use the TT was characteristic of the verbalisations of the experimental group. For example, when addressing the transediting of macro-level information structure, many participants motivated their decision to restructure the information order by stating that most users read and carry out the TT instructions simultaneously, thus the actions that they have to carry out must be mentioned in chronological order to avoid dangerous situations. Curiously, most participants were unable to implement this user-based reasoning below

sentence level (e.g., for ST sentences of the sort “before doing Y, do X”). Those participants who did transedit micro-level information structure, most frequently used the linguistic argument “it just doesn’t sound good, it sounds better if you turn the sentence around” to describe their thought process instead of usability issues.

Furthermore, the participants of the experimental group used another set of criteria that was completely absent from the verbalisations of the control group: text logic. For example, three participants of the experimental group had introduced an additional title in their translations. They argued that a particular ST segment should be broken down, as it contained too many steps for the reader to carry out. In addition, they felt that the title as formulated in the ST did not cover adequately what the ST segment was about: the first ST title indicated that there would be information on the usage of the device, but the first few lines instructed the reader how to insert the batteries into the device. The participants did not consider this to be very logical, which prompted them to introduce a title stating either what to do before usage or how to insert the batteries.

The retrospective interviews also yielded insight into the participants’ awareness of the need for transediting, as well as their cognitive processing skills in relation to transediting. Lack of transediting in the product data was often mirrored by a lack of verbalizations about the need for transediting, which suggests that the participants (primarily those of the control group) were simply unaware of the translation problems (in the sense of Nord, 1991) that the STs posed. However, the opposite pattern was also found in the present study: illocutionary indicators were hardly addressed in the verbalizations of the experimental group, contrary to their relatively high frequency in the translation products. This suggests that these participants no longer considered those features to be problematic and had (nearly) automatized their processing (Ericsson and Simon, 1984/1993). The interviews also showed that lack of awareness was not the only

reason why transediting was not carried out. Transediting was sometimes impeded by the participant's inability to implement transediting, as could be observed in the verbalizations of three participants of the experimental group regarding the transediting of macro-level information structure. These participants felt that a particular warning had to be mentioned before the respective instruction. However, they did not know where to place it in the TT, since they had already introduced bullet points in the TT to highlight the various steps of an instruction. Since they feared that the warning would not stand out enough if placed before the bullet points, they kept the warning in the same position as featured in the ST and put it in bold or in italics instead. ST interference was another reason why transediting was not carried out. For example, if an illocutionary indicator was preceded by a non-finite clause, some participants felt that transediting by means of an imperative would cause a rather unnatural wording in Dutch and they therefore decided not to transedit. Hence, the ST sentence structure seemed to have overruled the participants' genre knowledge and prevented them to come up with alternative formulations that would allow an imperative in Dutch, for example by using modal particles such as *dan* (then).

## **5: Conclusions and discussion**

The present study indicates that writing training does indeed have a positive effect on transediting, in quantity and quality. It also yields a more detailed understanding of genre conventions in the TL, which seems to heighten students' awareness of these conventions and related acceptability norms during their translation process. In addition, writing training stimulates translation students to critically assess the ST and to take more (pragmatic) factors into account while drafting the TT. This behaviour is characteristic of experienced translators, who – in comparison to novice translators – adopt a more global approach during the translation process (cf. Hönig's (1995) macro-

strategy and Jääskeläinen's (1993) global strategy). These results provide some empirical evidence for the hypotheses formulated by Meyer and Russell (1988), Jakobsen (1994) and Göpferich (2004).

Writing training primarily altered the transediting of macro-textual features, which is a result open to several, interrelated interpretations. First, this may be explained by the abstract – not linguistically bound – nature of the two rich point subcategories (i.e., macro-textual information structure and consistency of titles) that are affected by the writing training. Studies have shown that abstract knowledge representation enhances transfer of knowledge to new situations (Bransford, Brown & Cocking, 1999, 51-52). This reasoning does not seem to apply to illocutionary indicators, but these are for each and every instruction the same in Dutch (the imperative form), which perhaps makes it easier to cognitively control this feature.

Second, writing training did not succeed in removing ST interference, especially at micro-textual level. In contrast, it seemed to be easier for the students to control ST interference at macro-textual level, presumably because fewer factors have to be juggled simultaneously. Restructuring information order above sentence level is less linguistically bound, primarily entails solving conflicting coherence, and was most frequently carried out later on in the translation process (i.e., delayed transediting). Furthermore, the log files of those participants who did transedit macro-level information structure immediately, show that they first selected the right location, paused (even up to 30 seconds) and then typed in their translation of the corresponding ST sentence.

Third, many of the linguistic, micro-textual problems that are characteristic for the translation tasks of this study may perhaps not surface as frequently in writing. Writers usually start from a mental, non-linguistic construct, which makes them less

likely to fall into the trap of inconsistent terminology. The same is true for non-chronological order of main and sub clauses, as well as for illocutionary indicators placed at the end of a sentence, since bullet points or single-clause sentences are usually used to write instructive texts.

Writing training does not influence the moment of transediting much. When aware of the need for transediting, students tend to implement transediting immediately regardless of whether they have had writing training or not. Since these findings are based on keystroke logging data alone, we cannot exclude the possibility that other translation solutions (e.g., a literal translation) may have passed through the participants' minds prior to drafting, and that, consequently, immediate transediting has been the result of internal revision. Moreover, some types of rich point seem more prone to immediate transediting than others. This may be explained by the grammatical hierarchy of the constituent that requires transediting as well as by the cognitive effort involved. Transediting of illocutionary indicators concerns words or phrases and appears to be more automatic, since these rich points are almost always transedited instantaneously without being revised (much) later on in the translation process. In contrast, transediting of information structure and titles usually affects clauses or even sentences. Moreover, this processing seems to be mainly conscious rather than automatic, because there was no clear preference discernible for immediate transediting without revision. Detailed pause analysis could shed more light on the difference in processing of these types of rich points.

The study reported on in this article has certain limitations, since it was exploratory in nature, used a relatively small sample and focused on a specific text genre. Moreover, this article did not address the question whether writing training has a beneficial influence on overall translation quality. Despite these limitations, the findings

of the present study open up a number of research avenues. First, replication on a larger scale will help determine the generalizability of the present findings. Second, it might be fruitful to open up the research to other text types, since the extent to which writing knowledge can and will be transferred to a translation context may differ according to the text type or genre addressed in the training. Third, it would be interesting to examine the effect of writing training on participants with differing levels of translation competence. Since cognitive overload may hinder complete transfer of writing knowledge to the translation context, it would be interesting to study the effect of writing training on professional translators, who are likely to have a higher text-productive competence and a larger working-memory capacity than the participants used in the present study.

## Notes

1. Mean of all three scores: Mdn= 5.56 vs 5.75;  $U=33.00$ ,  $p=.815$ ,  $r=-.06$ . Overall score translation course: Mdn= 6.00 vs 5.25;  $U=26.50$ ,  $p=.379$ ,  $r=-.22$ . Translation pretest: Mdn= 5.56 vs 5.75;  $U=35.00$ ,  $p=.943$ ,  $r=-.05$ . Writing tasks: Mdn= 6.25 vs 6.08;  $U=32.00$ ,  $p=.721$ ,  $r=-.09$ .
2. All materials used in this study (STs, training materials, a detailed overview of the rich points, etc.) are available at the website [www.writingpro.eu](http://www.writingpro.eu) (search in Data Repository for researcher Iris Schrijver).
3. The exception was the manual of a fabric shaver from the Spanish brand Solac, found on [www.solac.com](http://www.solac.com).
4. For a detailed description of the program, we refer to Leijten and Van Waes (2013) and the program's website: [www.inputlog.net](http://www.inputlog.net).
5. We analysed the posttest data both as one data set as well as two data sets (i.e., immediate vs. delayed posttest). For the analysis of the posttest data as a single dataset, we took the mean of the immediate posttest and the delayed posttest. For the double dataset, we analysed the immediate posttest (using the mean of the two tasks) as well as the delayed posttest. The results reported in this article will concern the analysis of the posttests as one data set to increase the explanatory power of the results, but we will also refer to the other level of analysis when these data yielded different results or provided additional insights.

6. When we analysed the immediate posttest and delayed posttest as two separate data sets, we made the following comparisons to assess the learning effect: pretest-immediate posttest, and pretest-delayed posttest.

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Table 1 Effect of writing training on amount of transediting and translation quality of rich points

<b>Rich points</b>	<b>Amount of transediting</b>	<b>Translation quality</b>
<b>Titles</b>	*	*
<b>Action-driven</b>		
<b>Consistency</b>	*	*
<b>Information structure</b>	*	*
<b>Micro-level</b>		
<b>Macro-level</b>	*	*
<b>Illocutionary indicators</b>	*	*
<b>Terminology</b>		

\*: Significant difference between experimental group and control group in posttest

**Table 2. Relative frequency of transediting traces (in percentages)**

		<b>Experimental group</b>			<b>Control group</b>		
		imm	del	ø	imm	del	ø
<b>Titles</b>	Pretest	16.7	11.1	72.2	12.5	0.0	87.5
	Posttest	45.8	22.2	31.9	15.6	1.6	82.8
<b>Action-driven</b>	Pretest	0.0	0.0	100.0	0.0	0.0	100.0
	Posttest	33.3	16.7	50.0	9.4	0.0	90.6
<b>Consistency</b>	Pretest	33.3	22.2	44.4	25.0	0.0	75.0
	Posttest	58.3	27.8	13.9	21.9	3.1	75.0
<b>Information structure</b>	Pretest	11.1	16.7	72.2	6.3	6.3	87.5
	Posttest	34.0	31.3	34.7	14.1	13.3	72.7
<b>Micro-level</b>	Pretest	22.2	33.3	44.4	12.5	12.5	75.0
	Posttest	44.4	26.4	29.2	28.1	23.4	48.4
<b>Macro-level</b>	Pretest	0.0	0.0	100.0	0.0	0.0	100.0
	Posttest	23.6	36.1	40.3	0.0	3.1	96.9
<b>Illocutionary indicators</b>	Pretest	74.6	3.2	22.2	69.6	7.1	23.2
	Posttest	93.3	3.6	3.2	75.9	3.6	20.5
<b>Terminology</b>	Pretest	55.6	0.0	44.4	25.0	0.0	75.0
	Posttest	50.0	2.8	47.2	43.8	0.0	56.3

Table 3. Relative frequency of recursivity in the translation of rich points (in percentages)

		<b>Experimental group</b>		<b>Control group</b>	
		Revisions	Success rate	Revisions	Success rate
<b>Titles</b>	Pretest	11.1	0.0	0.0	N/A
	Posttest	33.3	75.0	10.9	85.7
<b>Action-driven</b>	Pretest	0.0	N/A	0.0	N/A
	Posttest	19.4	57.1	9.4	66.7
<b>Consistency</b>	Pretest	22.2	0.0	0.0	N/A
	Posttest	47.2	82.4	12.5	100.0
<b>Information structure</b>	Pretest	19.4	71.4	6.3	50.0
	Posttest	39.6	78.9	14.1	94.4
<b>Micro-level</b>	Pretest	38.9	71.4	12.5	50.0
	Posttest	34.7	92.2	25.0	93.8
<b>Macro-level</b>	Pretest	0.0	N/A	0.0	N/A
	Posttest	44.4	68.8	3.1	100.0
<b>Illocutionary indicators</b>	Pretest	12.7	50.0	17.9	70.0
	Posttest	19.0	85.4	9.4	76.2
<b>Terminology</b>	Pretest	0.0	N/A	12.5	100.0
	Posttest	5.6	100.0	0.0	N/A



