

Exploring the Cognitive Processes of Students and Professors of Translation

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Abstract: Translation is a cognitive process where the translator decodes the meaning of the source text, and re-encodes this meaning in the target language (Zlateva, 2000). Since thought processes are not directly observable, researchers use Think Aloud Protocols (TAPs) - a method based on translators' verbalization of their thoughts- while translating a text. Many observational studies were conducted with the attempt of understanding what goes on in the mind of translators during translation process. They focused on individual TAPs on various aspects of the process including comprehension, revision (Mossop, 2001), creativity (Kusssmaul, 1997) professional and student approaches (Séguinot, 1989; Tirkkonen-Condit, 1989; Jääskeläinen & Tirkkonen-Condit, 1991), time pressure (Jensen, 1999). However, to my knowledge, very few studies have investigated individual TAPs of teachers of translation as opposed to collective TAPs of students of translation. The aim of this research is to observe and compare the cognitive processes of students and teachers to find out better translation practices. Through a set of experiments, involving master students and professors of translation, the study revealed that students were less strategic than professors. Yet, their non-automatic way of solving problems provided rich data. Students' collaborative TAPs, as opposed to professors' individual TAPs, helped them provide higher numbers of tentative and selected solutions.

Keywords: Cognitive processes, collective TAPs, individual TAPs, Think Aloud Protocol, translation teaching

1. Introduction

Monologue protocols method has been frequently used in the past studies. It consists of experiments where one subject is asked to talk aloud while translating. This request is repeated if necessary during the problem-solving process thus encouraging the subject to tell what he/she is thinking. Thinking or 'concurrent verbalization' refers to "type of data collecting method, which is used in empirical translation process research. In think-aloud method the subjects are asked to verbalize whatever crossed their minds during [...] translation activity. The transcription of verbalization is called think-aloud protocols (TAPs) (Baghiat Esfahani, 2015, P.84).

Monologue protocols have been considered as inaccessible to the translation process. In fact, subjects "tend to stop verbalizing" or they produce poor verbal reports when they are thinking deeply (Ericsson & Simon, 1980, p. 242). Whereas, in other studies, (Jääskeläinen & Tirkkonen-Condit, 1991, p. 91. Qtd in Kussmaul & Tirkkonen-Condit, 1995) in familiar tasks, where professional translators do "little thinking", they produce few verbalizations, since problem solving has often become "habitual" for them. Nevertheless, monologue protocols are still frequently the most useful tool for accessing the translation process in spite of the criticism leveled against it. In this study, TAP method has been used, in testing professors of translation who preferred to work individually.

Monologue protocols were not only considered as inaccessible to the translation process; they were also regarded as "unnatural". Normally, talking to oneself is "not a natural" thing to do. Therefore, Krings (1986) suggested that the subjects should be given some time to get used to this behavior in a "warming-up phase." The researcher should attend and listen "quietly but attentively". This makes the situation less artificial (Krings, 1986a, p.56. Qtd in Kussmaul & Tirkkonen-Condit, 1995). In addition, "the atmosphere in which the experiment takes place should be stress-free and the subjects should not have the feeling that they are being criticized for their translations" (Krings, 1986a, p. 56. Qtd in Kussmaul & Tirkkonen-Condit, 1995). According to Krings, (1986) think-aloud monologue method fits translation process research since there is a close correlation between translating and thinking aloud. He thought that that translation is itself a linguistic process and, therefore, the linguistically structured information available in short-term memory can be accessed through verbal monologues (p.58. Qtd in Kussmaul & Tirkkonen-Condit, 1995).

The claim that think- aloud monologues are not natural has led some scholars (House, 1988; Honig, 1991; Kussmaul, 1989, 1993 and 1994; Schmid, 1994. Qtd in Kussmaul & Tirkkonen-Condit, 1995) to get subjects to talk to each other in order to make the verbalization more natural. House (1988) compared monologue protocols and dialogue protocols in her study; she found that monologue protocols contained a large amount of useless data and that many processes such as choosing, selecting and deciding about an equivalent in the target language text were not verbalized (p. 89. Qtd in Kussmaul & Tirkkonen-Condit, 1995). However, in verbalization performed in pairs, House (1988) found that selection and suggestions to translation problems were "negotiated and all partners in the pair thinking aloud sessions benefited in terms of incidental clarification of their own thoughts, and each individual's thoughts appeared to have been consistently shaped through the necessity of having to verbalize them" (p. 93. Qtd in Kussmaul & Tirkkonen-Condit, 1995).

House (1988) emphasized that dialogue protocols have provided richer data than monologue protocols in which the subject talks to himself (p. 96 p. 93. Qtd in Kussmaul & Tirkkonen-Condit, 1995). In the latest “think- aloud experiments, “the richness and usefulness of data relies on the type of subjects and the shortness of the translated text” (Qtd in Kussmaul & Tirkkonen-Condit, 1995). Moreover, it depends on the “priorities” of the experimenter; the verbal reports that one experimenter finds “poor” can be “rich” to another researcher (Kussmaul & Tirkkonen-Condit, 1995).

Séguinot (1996) stressed the usefulness of “collaborative” protocols by saying that both subjects who were translating “collaboratively” seemed to be more concerned and responsible for the task; the translation was negotiated, sometimes with “overt reasoning” since this resembled “normal life” activities. However, in a monologue protocol analysis, subjects were much more preoccupied by their thinking without justifying their thoughts (p. 88. Qtd in Pavlovic, 2007). Moreover, collaborative protocols have a further advantage in the sense that they make us see “the integration of world knowledge”, lead subjects to understand the text “as they argue for particular versions [...] show how meaning is gradually built during a conversation” (Séguinot, 2000, p. 146. Qtd in Pavlovic, 2007).

Thanks to its very “interactive” nature, the dialogue protocol leads subjects to “express, comment and even justify their strategies in the process of negotiating solutions for problems without the need for external intervention or prior training in the think-aloud technique” (Barbosa & Neiva 2003, p. 52. Qtd in Pavlovic, 2007). So, dialogue or “collaborative” protocols are expected to provide a way out of those controversies and criticism; they are also expected to provide rich data in novice translators in our study. In fact, pair work in translation task fitted our study, particularly in master students of translation more than in professors; students are used to collaborative work in translation classes. As a result, no further training was required for this study. The experiment was rather a natural situation for them and, therefore, data was spontaneous and plentiful.

There are, however, problems with dialogue protocols. Normally, one is supposed to find out what goes on in a translator’s mind not two translators’ minds. For this reason, Kussmaul & Tirkkonen-Condit, (1995) remarked that “we record thoughts that would never have occurred to a single translator. This is true, but even if we use monologue protocols, we eventually may not want to find out what went on in one mind, but rather to draw conclusions from our observations of a sample of minds” (Kussmaul & Tirkkonen-Condit, 1995).

Another problem with dialogue protocol is related to the “psychodynamic” interaction situations that happen between the subjects. This is what Kussmaul & Tirkkonen-Condit (1995) termed “group-dynamic processes” that may distort the data. The term “psychodynamic” refers to the fact that one of the pair (subjects) may be a leader not because he or she is better than the other; but because of personality characteristics. Therefore, solutions to translation problems “may be accepted not because they are better but because they are proposed by the most dynamic person” (Kussmaul & Tirkkonen-Condit, 1995). This is emphasized by the study done by Pavlovic (2007, p. 47), she found that “collaborative translation protocols are not think aloud protocols in the strict sense as they include both social interaction and thinking aloud and as subjects verbalize their thoughts spontaneously, testing different ideas. This method has its own disadvantages, such as a considerable degree of rationalization (subjects justify their decisions,

explain their choices, etc.) or the dependence on the interpersonal relations between the subjects” (Pavlović, 2013, p. 552) Likewise, a subject may “hold back his or her ideas for reasons of politeness” (Kussmaul & Tirkkonen-Condit, 1995) or people’s decisions are sometimes guided by what is called a “feel-good” criterion. “Depending on the cultural norms, social situation, and/or personality traits, this may take the shape of either exaggerating one’s superiority over others”(Wilson, 2002, p.38.Qtd in Pavlovic, 2007).

In the analysis of the protocols, in master students of translation, this study attempted to observe only the processes where both subjects showed equal efforts to solve translation problems and where the process was achieved without extra-arguments of one of the subjects. One way of reducing the problems, the study has chosen “matching subjects, that is, subjects where there is no psychological or social superiority of one over the other and where temperaments are fairly similar” (Kussmaul, & Tirkkonen-Condit, 1995). Furthermore, this study has relied on both monologue protocols in professors and dialogue protocols in students.

2. Aim

The aim of this study is to apply TAPs on students and professors of translation to observe their cognitive processes and behaviors during translation tasks. The study, specifically, attempts to observe and compare students’ dialogue protocols as opposed to professors’ monologue protocols to come up with better translation methods that would contribute to the teaching of translation. The study will, thus, provide some tentative, pedagogical recommendations for more advanced and effective teaching of translation. Knowing what is going on in the mind of the translators such as decision making, problem solving and decoding cultural aspects while translating will serve better in the assessment of translation rather than the traditional evaluation of translation as a product. In fact, this method might enable students or teachers of translation to develop a critical attitude towards their ideas, recognize good solutions and discard unsatisfactory ones while translating.

This study will also provide students with better, practical method(s) of tackling translation; in fact, the processes leading to creative solutions obtained from professors, during their think- aloud protocol, can be used as models of successful translating. So, this study is not only a data collecting method, but also it is also a classroom technique which would help students “construct their own understanding in group and in joint translation with their teachers; [it is] a useful technique in helping students have active participation in class, and helping them self-understand, self-discover and self-construct their own knowledge” (Baghiat Esfahani, 2015, P.86). The outcome of this study will, therefore, be open and applicable for future researches to find out whether the provided recommendations would be successful in teaching translation.

This study will, therefore, answer the following questions:

- a) What are the cognitive behaviors (e.g. problem solving) of students of translation?
- b) What are the cognitive behaviors of professors of translation?

3. Key issues investigated in this study

Translation processes

Translation processes are defined as a series of strategic actions and behaviors that translators adopt to render the source text into the target text “in accordance with the translation assignment, from the moment they start working until they finish” (Hansen, 2003, p 26.Qtd in Pavlovic, 2007). So, all the following issues such as solving translation problems, automaticity,

(non)linearity and verbalization length, unit choice, subjects' actions and behaviors are all part of translation process.

Translation problems

Translation problems are “any word or phrase in the text, or any aspect of such a word or phrase, which is verbalized by any single participant and for which he or she expresses any degree of doubt about its proper translation [...] or for which the translator considers more than one possible translation” (Lorenzo, 1999, p. 128. Qtd in Pavlovic, 2007).

A problem can be clearly identified by a subject for example when he or she asks “how can we translate the word *yaidan* into English?”. Problems can be also inferred when some tentative solutions are provided as a translation for one element (see appendix D for more examples about subjects verbalizations).

Subjects, mainly trainees have encountered a Variety of problems such as: Orthographical problems, Morphological problems, Syntactic problems, Textual problems. Our main focus in this study is the investigation of lexical problems in both trainees and professionals.

Lexical problems

This category is defined as “a situation in which the subjects are weighing one word or phrase against another or others, as they attempt to decide on the right word or phrase that would fit their target text vision” (Pavlovic, 2007). Cultural specific terms are included in this category.

Solutions provided by subjects

This study has adopted Pavlovic's (2007) classification of solutions provided by subjects. Solutions, in our study, can be, then, divided into four categories:

Tentative solutions

It is any portion or aspect of the target text provided by the subjects “as a possible way to resolve a problem” (Pavlovic, 2007).

Solutions based on internal resources

Some solutions have been proposed “spontaneously” based on “internal resources,” of subjects. Internal resources are defined by Pavlovic's (2007) as subjects' “past experiences, competences and knowledge stored in the long-term memory” (Pavlovic, 2007).

Solutions based on external resources

Other subjects provide alternatives based on “external resources” (Pavlovic, 2007). External resources are source of aid such as dictionaries, software and internet.

Selected solutions

They are defined by Pavlovic (2007) as “any segment or aspect of the target text selected by the translator(s) as the final translation of a problem”; they are the versions that the subjects submit at the end of the experiment.

Automaticity

Automaticity is the process of performing a translation task in a spontaneous way without great effort or without being stopped by translation problems. This makes the subject control his or her processes “nearly automatically” (Bernardini, 2001).

(Non)- linear processes in translation

Linearity” is the process of proceeding in an organized manner in solving translation problems and providing equivalences, whereas “non-linearity” is a non-ordered way of progressing while rendering a text (Schmidt, 2005).

Verbalizations

Verbalizations are the verbal reports of subjects’ thoughts either during their monologue protocols (in professionals) or dialogue protocols (in trainees) (see section above about dialogue protocol method versus monologue protocol).

Translation units

Translation units are defined as a “linguistic level, word, terms, smaller than the sentence level and bigger than the term level as clauses, phrases and so on, sentence level and beyond the level of sentence” (Baghiat Esfahani, 2015, P.88). According to past studies (e.g. Fraser, 1996; Tirkkonen-Condit, 2000) students translators used word levels, whereas professional translators adopted sentence and beyond the sentence level (Baghiat Esfahani, 2015, P.88).

4. Methodology***Participants***

The target population in this study is:

5 male and female professors of translation with a good academic and professional experience; they are all from Morocco.

- 6 master students of translation from Chouaib Doukkali University - El Jadida, Morocco (5 females and 1 male). (class of 2008)

- 6 master students of translation from Hassan the Second University- Mouhammadia, Morocco (4 males and 2 females). (class of 2008)

Observation

Adopting Lauffer’s (2002) method in direct observation, the undertaken study was conducted in two ways. First, notes were taken and the overall process was observed. Second, the performances of subjects were recorded by a video camera so as to be analyzed in closer detail. The camera was used to record facial expressions and body language since they are indicators of mental processes.

Retrospective interview

Apart from the introspective types of data, the study also resorted to retrospective interviews. They are reports in the form of post-process elicitations such as questionnaires about actions that were performed. In these reports, subjects were asked about how they felt about their translation (Williams, 2002, p. 31). This method is usually used immediately after Think Aloud Protocols (Honig, 1988; Kiraly, 1990; Kalina, 1991. Qtd in Kussmaul & Tirkkonen-Condit, 1995).

Transcription

The collaborative protocols of students, which were recorded on video, were transcribed before they were analyzed. "That is a lot of work, which is why studies based on verbal protocols usually do not involve very large samples. This does not necessarily invalidate a study" (Pavlovic, 2007). Bernardini's (2001) method "coding" (a way of linking ideas together to make sense of the data) has been used to compile the "raw" protocols that do not make sense.

Text used

Most texts dealt with in the past research were paragraphs from newspapers. Unlike the past studies, our research puts much focus on text type since it is a major element that can trigger the mental behavior of translators. For example, the difficulties encountered in translating a cultural specific term can be a stimulus to the translator's decision making and strategic problem solving.

Usually texts that are chosen to be translated in TAPs experiments are texts translated in real life or professional reality (Kussmaul & Tirkkonen-Condit, 1995). In our study, subjects were asked to translate a text from a tourism brochure about the Moussem (festival) of Moulay Abdellah Amghar in El Jadida, Morocco (festival of a saint called Abdellah Amghar); the text has to be translated from Arabic into English. The text includes some cultural specific words such as names of places: *Tit-an-fitar*, *Tit*, *Ribat*, and religious words such as: *ṣaix*, *At-taṣawuf*, *Nuskan*, *Zuhd*, *Al-kara:ma*.

Data analysis

This study is based on quantitative and qualitative methods of research since they both complement each other. In fact, there were specific aspects of translation processes that were easier to quantify such as the number of problems that subjects encountered while translating a text and the number of useful solutions that were found. However, other aspects, such as subjects' thoughts, were not measurable. So, they were treated qualitatively.

5. Results and Discussion***Lexical problems in translation task***

In the comparison of translation processes of students (who worked collaboratively) and professors of translation (who worked individually), students verbalized a high number of lexical problems (between 9.64 % and 12.42 %). However, professors produced less verbalization of problems (between 3.55 % and 7.73%). Students were more preoccupied with lexis and attempted to render all lexical items. On the other hand, professors tended to be more strategic; they provided the general meaning of phrases or sentences. Students stopped at each problem they encountered; they mentioned clearly and "in a natural way" the problems they faced during their translation. For instance, the trainee (Y.T, a master student in Mouhammadia, Morocco) tended to stop at each difficult word (e.g. *Taqṣuṣ* which means frugality in English) and repeat it nearly four or five times trying to find an equivalent. This led his partner to carry on repeating the same word. While students displayed a clear and direct way of reporting the problems, professors did not verbalize most of the problems they encountered; most of them mentioned very few words at the end of the task. Some professors (e.g. J.P.M) displayed a kind of hesitation to talk about the problems they encountered during translation.

Tentative solutions

The study revealed that students provided higher numbers of spontaneous (internal) solutions than professors. This small number of tentative solutions is related to the small number of lexical problems that professors encountered. While, almost all tentative solutions of professors of translation came from internal resources, students' tentative solutions came from both internal and external resources. Students largely relied on external solutions to complement their internal resources and to expand the number of their tentative solutions. The large number of tentative solutions they provided was related to unfamiliar words such as cultural specific terms or words which they did not come across in all their tasks of translation in the class. They showed their ignorance of these difficult words; they became aware of their ignorance and got sensitive of any difficult words they encountered. As a result, their problem processing was time-consuming as they spent much time discussing their solutions. For instance, the trainees (Y.A and N.A) provided three spontaneous solutions "eye, stream, water outlet" for the word "Aynun". Likewise, the trainees (H.KH and M.W) came up with three spontaneous solutions "Austerity, frugality, humility" for the word "Taqa'uf". They checked these words in the dictionary. Still, they were not able to come up with a final decision.

On the contrary, the professors displayed higher fluency and spontaneity in translation than students; they applied routine task approach on the difficult words they encountered. Their familiarity with such lexical problems led them to "problematize" little. They, therefore, provided less alternatives (solutions) to these problems; for example, one professional and professor of translation (subject 2) came up only with one spontaneous solution "spring" for the Arabic word "aynun". Similarly, a professor (subject 4) provided the word "modesty" for "Taqa'uf". Most professors did not show any hesitation in selecting these words as equivalents. They also did not show any need to check these words in external references. Moreover, they did not spend much time thinking to find out the solutions for these words; their familiarity with the task helped them translate quickly and effortlessly.

Selected solutions

Students selected solutions from internal resources as well as external resources far more often than professors. Most of the time professors tended to suggest only one equivalent such as "spiritual power" for the Arabic word "Al-kara:ma:t". At other times, they tended to provide no more than two spontaneous alternatives such as "savage area and jungle", "wild and fearful" as an equivalent to the Arabic word "Mu:hi'an". They did not spend much time in selecting one solution as a final equivalent. Students, on the other hand, showed hesitation and uncertainty in selecting the final equivalents; they tended to provide three or four solutions for one problem and spend much time discussing and monitoring their choices. For instance, pair 3 suggested three spontaneous solutions "Existed, located, built" for the Arabic word "ixtattat", but they were not satisfied with their choice; they decided to check the word first in the dictionary, then in Google translation. They came up with other external solutions "charted, mapped". They did not find the words from external resources appropriate equivalents. So, they returned back to the first three suggestions and selected the word "built". Still, they showed hesitation and uncertainty about the selected word "built".

Accordingly, the study deduced that the role of external resources was monitoring the output of students; external resources helped students in making final decisions about their word

choice. In other words, external resources were more useful in confirming the solutions than in finding solutions and “getting ideas”. Professor’s spontaneity in translation (with the exception of subject 4) confirms the idea that spontaneity in translation is related to proficiency and familiarity with a task.

Automaticity

The qualitative study of novice and professors of translation showed that professionals and teachers translated more automatically than students. The study, then, deduced that automaticity results from experience and proficiency in the task of translation. There were only few instances of conscious control of problems that professors encountered and, thus, a very small amount of verbalization. Students, however, performed their tasks non-automatically; they solved their problems consciously. They, therefore, provided rich amount of verbalization.

Linearity versus Non-linearity

Looking at the protocols of students and professors of translation, the study found that non-linearity in solving translation problems is not related to experience. On the contrary, the majority of professors progressed in a linear way since most of them were translating spontaneously and effortlessly. The study, therefore, confirmed that there is a relationship between professors’ familiarity with a task and linearity in translation. On the other hand, there was no consistency among students; some of them proceeded in a linear manner in solving translation problems while others progressed in a non-linear manner.

Translation units

The results of the study confirmed the idea that the length of translation units is an indication of proficiency. Professional translators rendered larger units such as sentences and discourse. They displayed proficiency features when they focused on large units of translation and decision-making. Students, however, adopted a “form-oriented” approach; they preserved single words of the source text.

Translator’s behaviours

Students’ behaviours in the process of translation were different from professors. They spent much time discussing problems and proposing tentative solutions. They left some gaps about cultural aspects in the target text to check them on the internet or in the dictionary. They frequently confirmed tentative solutions, produced spontaneously, in external resources. Their verbalization was richer than professors especially those related to tentative solutions. The students’ translation process was less linear than professors since it took them much time to finish the task. There were a few periods of silence among novice than in professors.

In dialogue protocols, students felt that the experiment was rather a natural situation for them which, therefore, helped the study obtain a rich and plentiful data. On the other hand, monologue protocols of professors were not as successful as dialogue protocols; individuals were most of the time silent. As a result, the data was poor.

Post-translation results

Students expressed their dissatisfaction with lexical items of the source text paragraph, mainly specific cultural words. This supported our protocol data that showed that lexical problems were

the main difficulties that prevented the subjects from proceeding in a spontaneous way in the process of translation.

6. Recommendations for translations training

Strategic verses non-strategic practices

Novice translators working on translation from Arabic into English (touristic) texts encountered similar problems (mainly cultural) and responded to them with similar “non-strategic” procedures motioned in the above summary. Most of their “non-strategic” behaviours can be summarized in their frequent preoccupation with lexis, their progress in a “form-oriented” or “local” manner, their excessive use of external resources, their frequent postponements of solutions and waste of time in long discussions of problems. This affected the quality of their translation.

Unlike students, professors displayed successful procedures that led to a better translation. They displayed conscious decision-making. They frequently progressed in “global”, “sense-oriented” method which was more useful than “local” decisions; they did not translate sentence by sentence. They dropped unnecessary details. They did not spend much time reading, identifying, discussing problems and monitoring tentative solutions. They did not rely on excessive use of external resources to provide selected solutions. Their process of translation was more spontaneous.

So, these “strategic” translation practices of professors are recommended to be applied in translation training (teaching). Instead of focusing on translating small units, students should be better trained on translating larger units and leave unnecessary detail. Furthermore, students should be trained on spontaneous way of translating; this way, they might become used to spend less time in monitoring the solutions (of translation problems). Through spontaneous manner of translating, students might become independent from the excessive use of external resources (dictionaries, online resources and softwares) in selecting final solutions. To fulfil such trainings, teachers of translation should devote class sessions in which students should be given texts from different genres to translate without the use of references. The focus should be on developing students’ inferencing during a translation task but not on the final product (the translated text).

Accessibility to cognitive processes

The results revealed that cognitive processes of students were more accessible than professors; in fact, dialogue protocols and collaborative work of students led to a large amount of useful verbalizations. One managed to get most of students’ heeded information in their short memory. One, therefore, managed to get to the main behaviours of students during the process of translation. On the contrary, the cognitive processes of professors were mostly inaccessible; they did not provide much data. As a result we learned few behaviours and strategies in translation (mentioned above).

Through this comparison, the study deduced that accessibility to cognitive processes is related to collective protocols while inaccessibility to cognitive processes is linked to individual tasks of translation. If this conclusion is correct, one recommends that these strong points of collaboration in translation should be used in professional translators in order to access most of their cognitive behaviours during translation process. That is to say, researchers should use

dialogue think aloud protocols in professionals instead of monologue think aloud protocols to elicit better translation strategies and practices and, therefore, apply them on students.

Collaborative work in translation versus individual translation

Collaborative translation might help students of translation in terms of target text quality because students working as pairs or as a group suggest more solutions to choose from. They also provide a sophisticated system of monitoring those solutions. This way, students might acquire from each other different methods of monitoring, enferencing, decision-making and problem solving while translating. This, therefore, might be particularly beneficial for acquiring competence in language two (L2) translations.

The kind of collaborative work in translation that this study recommends refers to group tasks involving only L2. In such collective work, trainees of translation may help each other to solve the weaknesses that are related to L2 translation. This kind of collaborative translation may provide good preparation for individual translation that will take place later in the course of their professional careers. That is to say, translators who have been taught to think collectively may internalize the skills that they acquired and may apply them in their future career.

Another aspect of collaborative translation that should be taken advantage of in the teaching of translation is the fact that translation trainees learn from each other about useful resources. In fact, it was especially interesting to see the translation trainees show one another how certain recourses, such as electronic tools, could be used more profitably. Furthermore, the use of collaborative translation in the class may help students learn how to be open to critical remarks and suggestions from each other and how to be critical and ready to express their disagreement. This may, therefore, promote their self-confidence in performing translation takes in the future.

Familiarity with a text type

Professors who are familiar with this genre of texts (suggested by the author of this study) performed better than students who have never experienced this type of texts. The study, then, concluded that there is a relationship between the quality of translation and familiarity with a text type. The study suggested that translation training at the university should include a variety of texts from everyday life to be translated (e.g. newspapers, websites, brochures). Students should experience a wide variety of texts from a real context of translation (e.g. companies, agencies of translation) throughout their years of training. Their translations should range from fast performance tasks to long term assignments that require their responsibility, search for information, consultation with experts of all kinds, and responsibility for the final product.

7. Possible avenues for further research

There are many possible ways in which the present study could be replicated in the following ways:

Future research could use collective TAPs dialogue protocols of professionals instead of the use of individual protocols of professors. In fact, Monologue protocols, in which the subject talks to himself, proved to be unnatural and inaccessible to the translation process in this study. On the contrary, dialogue protocols, in which subjects work collectively, have provided richer data since this resembled “real life” activities. Therefore, another study is required to elicit more

strategic procedures in solving translation problems and, thus, answer the following question: What are the mental processes of professionals in a collective translation?

Future research could also use different directions of translation from Language1 to Language2 and from Language2 to Language1 in students of translation to answer the questions: Are cognitive translation processes in the two directions different? If so, in what ways exactly, and to what extent do they differ? How can we study these cognitive processes, and how can we measure the differences?

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