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## **TEXT SIMPLIFICATION IN A CASE STUDY WITH A TRANSLATION STUDENT WITH ASPERGER'S SYNDROME<sup>1</sup>**

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### **Abstract**

The aim of our paper is to present a case study carried out with a Translation and Interpreting student with Asperger's Syndrome (AS) in the framework of the e-learning project "TRADICOR: Corpora Management System for the Teaching Innovation in Translation and Interpreting" (PIE13-054). Our hypothesis is the following: when students with AS translate texts, simplification at two levels (text simplification and instructions simplifications) represents an improvement on translation quality and entails a better understanding of instructions. To confirm this hypothesis, the following four goals have been established: 1) apply text simplification to instructions in Spanish and to source texts in Spanish using Anula's recommendations; 2) checking the readability of the Spanish simplified and non-simplified source texts and instructions using two Spanish formulae: the Flesch-Szigriszt Index and the Fernández Huerta Index; 3) assessing target texts using Toledo Báez's analytic assessment template in order to check whether text simplification implies an improvement on translation quality; 4) test whether the

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participant has better understood simplified explicit instructions than non-simplified explicit instructions. As a summary of the results, it has been proven that instructions simplification does have a positive impact on the comprehension and the participant could accomplish the assignment. However, non-simplified instructions hinder comprehension as the participant was not able to accomplish the assignment. Regarding translation quality, the difference between simplified texts and non-simplified texts is not relevant and texts show similar errors.

Keywords: Asperger's Syndrome, case study, instructions simplification, text simplification, translation quality.

## **1 INTRODUCTION**

Asperger's Syndrome (AS) is a disorder on the spectrum of autism disorders. "Individuals with AS are said to exhibit characteristics that fall into a 'triad of deficits' that include (a) communication, (b) socialization, and (c) interests and activities" (Graetz and Spampinato 2008, p. 19). Vogindroukas and Zikopoulou (2011, p. 391) explain that the diagnosis of AS refers to individuals who have "no history of language delay, their cognitive development is within the normal range, but they have significant social and communicative disability and restricted, repetitive, and stereotyped patterns of behavior, interests, and activities."

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Regarding the use of language in AS, as already stated, there is no delay in language development, but, on the contrary, people with AS show 1) a precocity in language development; 2) a rich vocabulary and 3) they might have a fluent or even pedantic language (Loukusa and Moilanen 2009). However, people with AS exhibit unsuccessful pragmatic communication and, therefore, it affects the inferences from social scripts, metaphors and speech acts, including instructions (Dennis, Lazenby and Lockyer 2001). Given that language learners are continuously faced with the need to use a variety of speech acts and speech act sets in order to communicate appropriately in L2, providing learners, including learners with AS, “with the opportunities to develop their ability to perform and understand speech acts in both L1 and L2 contexts is nowadays recognised as the ultimate goal of language teaching” (Martínez-Flor and Usó-Juan 2010, p. 4).

All educational institutions, from schools to colleges and Universities, need to be aware of the impairments of students with AS. Regarding higher education, university disabilities offices or services support students with AS and offer faculties and lecturers recommendations about the adjustments

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that need to be made to create inclusive and sustainable learning environments. An example of these recommendations are the suggested strategies by the Student Advice and Wellbeing from the University of London (2017) that include, among others, being aware of language-related issues, being as explicit, unambiguous and clear as possible, speaking clearly, and giving explicit instructions and directions.

These strategies become of paramount importance in the foreign language classroom and in the Translation and Interpreting classroom. One of the main goals of the already completed e-learning project “TRADICOR: Corpora Management System for the Teaching Innovation in Translation and Interpreting” (PIE13-054) was to address the specific needs of students with AS at the Bachelor's Degree of Translation and Interpreting at the University of Málaga. In order to being able to adapt to AS needs, a case study has been carried out in the framework of TRADICOR project with a Translation and Interpreting student with AS to test text simplification at two levels: instructions and source texts. The aim of this study is to test by means of a case study whether the two levels of simplification improve the target texts and outcomes by a student with AS.

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As far as the author is aware, there have been no previous studies aimed at examining text simplification with Translation and Interpreting students with AS. Therefore, this article presents a pioneer work in translation studies because text simplification has never been part of an empirical study with Translation and Interpreting students with AS.

The article is organized as follows. In Section 2, related work that is relevant to our project is detailed. Section 3 presents the hypothesis, aims and goals of our study and Section 4 describes the experimental methodology. In Section 5 results and discussion are detailed. Conclusions, limitations of the study and an outlook on future work in Section 6 close the article.

## **2. RELATED WORK**

Each of the sections in related work addresses one of the three theoretical aspects of our study: 1) Text simplification for people with an autism spectrum disorder or Asperger's Syndrome; 2) readability assessment for people with an autism spectrum disorder or Asperger's Syndrome; and 3) translation assessment.

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## **2.1 Text simplification for people with an autism spectrum disorder and/or Asperger's syndrome**

As Yaneva, Temnikova and Mitkov (2016a, p. 293) explain, “the main task of automatic text simplification is to convert texts into a more understandable form for readers with lower than average reading skills, without changing the original meaning of the text.” The original approach to text simplification is to manually simplify texts. However, given that manual text simplification is time-consuming and expensive, automatic text simplification (Saggion 2017) has been developed to have a lower cost and effort.

Regarding the purpose of manual or automatic text simplification, early work in simplification was carried out without considering the reader of the simplified text (Saggion 2017), but current work is targeted to specific user groups, such as, for instance, people with an autism spectrum disorder (ASD). Yaneva, Temnikova and Mitkov (2016b) investigated the linguistic constructions which pose reading difficulties for people with autism thanks to a corpus of text data and its corresponding gaze

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fixations obtained from autistic and non-autistic readers. Štajner, Evans and Mitkov (2014) investigated the potential to exploit resources developed for autistic readers, such as the Britannica TS and the Weekly Reader TS parallel corpora, to support the development of a text simplification system for use by people with ASD. Evans, Orasan and Dornescu (2014) presented and evaluated a set of rules for syntactic simplification for people with autism.

It is worth highlighting two projects that share relevant characteristics for our study since both are targeted to people with cognitive disabilities and both are focused on Spanish: the FIRST project and the Simplext project. The European project FIRST (Flexible Interactive Reading Support Tool)<sup>2</sup> was aimed at developing the tool Open Book<sup>3</sup>, designed to assist people with autism spectrum disorders to adapt written documents into a format that is easier for them to read and understand. Simplext<sup>4</sup> project developed a tool to simplify texts into a format that is easier for a broad of range of people (including people with cognitive disabilities) to read.

Unfortunately, as it is explained below (see Section 4.3.), neither Open Book nor Simplext could be used in our experiment. Consequently, manual text

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simplification for Spanish (Anula 2007), also used in Simplext project, was the chosen method.

## **2.2 Readability assessment for people with an autism spectrum disorder and/or Asperger's Syndrome**

Readability is based on the notion that a text is easier to read if it contains shorter words and sentences (Stephens 2010). Text difficulty is predicted via readability formulae which are equations exploiting surface text features such as word and sentence length, number of suffixes, number of pronouns, etc. (DuBay 2004).

Since the second half of the last century, over 200 readability formulas have been developed for the English language to determine a mathematical correlation between word and sentence size and readability. The most used formula is the Flesch Reading Ease formula (Flesch 1948). Regarding Spanish, most developed formulae are adaptations from the Flesch Reading Ease formula, and the Flesch-Szigriszt Index (Szigriszt 1993) is considered to be the baseline formula for Spanish (Barrio Cantalejo 2007), albeit there are other formulae, such as, for instance, the Fernández



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Huerta Index (Fernández Huerta 1959) (see Section 4.3.).

Regarding readability for people with ASD, most readability research is focused on texts simplified by experts considering the reading difficulties of people with autism (Štajner et al. 2014). Eye-tracking technology with ASD participants is also used to evaluate text documents in terms of readability (Yaneva et al. 2016b). The six indicators that have a high discriminatory power when considering a text easy or difficult (Yaneva and Evans 2015) have also been investigated. Among these six indicators, two readability formulae are found: Flesch-Kincaid Grade Level and the Automated Readability Index. Consequently, readability formulae are considered to be as good indicators when working with people with an autism spectrum disorder, at least with a discriminatory function. In our study, two readability formulae for Spanish will be used: Flesch-Szigriszt Index (Szigriszt 1993) and the Fernández Huerta Index (Fernández Huerta 1959) to evaluate the readability of the simplified and non-simplified instructions and source texts (see Section 4.3.).

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### **2.3 Readability assessment for people with an autism spectrum disorder and/or Asperger's Syndrome**

Quality has been a concern for Translation Studies researchers since the very beginning of the discipline back in 1960's (House 2015). Nevertheless, for centuries translations have been assessed according to stylistic criteria (Waddington 2000; Martínez Melis and Hurtado Albir 2001). However, assessing translations is considered to be “one of the cornerstones in translators training” (Rabadán and Fernández Nistal 2002, p. 24) and consequently it should be based on valid and reliable approaches to testing and assessment (House 2015).

Chesterman (2016) proposed two approaches to translation evaluation: analytic assessment, for which the notion of error and error typologies are basic (Gouadec 1981; House 2015; Toledo Báez 2010 and 2015) and holistic assessment, where translation competence is the key concept (Bell 1991; Waddington 2000; Toledo Báez 2010 and 2015). In this study, the focus will be on analytic

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assessment and Toledo Báez's assessment template (see Section 4.2.) will be used.

With regards to translation assessment for people with ASD or AS, as far as the author is aware, there have been no previous studies aimed at assessing students with ASD or AS.

### **3. HYPOTHESIS, AIMS AND GOALS**

Our hypothesis is the following: when students with AS translate texts, simplification at two levels (text simplification and instructions simplifications) represents an improvement on translation quality and entails a better understanding of instructions.

Given this hypothesis, the main aim of our study was: Test by means of a case study whether the two levels of simplification improve the target texts and outcomes by a student with AS. To achieve this aim, four specific goals have been established:

1. Apply text simplification to instructions in Spanish and to source texts in Spanish using Anula's (2007) recommendations.
2. Check the readability of the Spanish simplified and non-simplified source texts and instructions

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using two Spanish formulae: the Flesch-Szigriszt Index (Szigriszt 1993) and the Fernández Huerta Index (Fernández Huerta 1959).

3. Assess target texts using Toledo Báez (2010 and 2015)'s analytic assessment template in order to check whether text simplification implies an improvement on translation quality.

4. Test whether the participant has better understood simplified explicit instructions than non-simplified explicit instructions.

## **4. EXPERIMENTAL METHODOLOGY**

The following elements of the study will be detailed below: participant, materials, methods, and results and discussion.

### **4.1 Participant**

The participant of the study is a Translation and Interpreting 4th-year student with AS. He is male and he was 20 years old when the case study was carried out. He is a Spanish native speaker and English is his L2. He had already taken courses on specialised translation in the English-Spanish and Spanish-English language combinations. Despite

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being important information for our study, it was not possible to obtain participant's IQ.

## 4.2 Materials

Two main materials have been used in our case study: on the one hand, the source texts and, on the other hand, the translation assessment template to assess the target texts translated by the participant.

As to the source texts, AS experts recommend using repetitive texts because they will be easier to translate. Therefore, recipes were the genre chosen. It is a genre where a structure is shared (list of ingredients followed by a set of instructions) and it draws a similar pool of grammatical and lexical features (Nunan 2008).

The following three recipes were chosen as source texts:

1. The “beef pot roast”<sup>5</sup> recipe to be translated from English to Spanish with non-simplified instructions.
2. The “lasagna”<sup>6</sup> recipe to be translated from English into Spanish with simplified instructions.

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3. The “albóndigas caseras de pollo o pavo con salsa de tomate”<sup>7</sup> recipe to be translated from Spanish into English. This recipe was divided into two parts: the first part (“Preparación de la salsa de tomate”) was not simplified as the original text was used; the second part (“Preparación de las albóndigas”) was simplified (the simplified second part is detailed in Appendices).

Regarding the materials for the assessment of target texts, as explained above, the analytic translation assessment template by Toledo Báez (2010 and 2015) has been used. This template combines the templates developed by Hurtado Albir (1995) and MeLLANGE<sup>8</sup> project. The template has been slightly modified for this study: two sections (the accuracy section and the inadequate renderings which affect the transmission of the function of the source text section) were deleted as they were not relevant and only main categories were included (subcategories of inappropriate linguistic variation, grammar, lexical items and style were not included). The target text was assessed by one of the Translation and Interpreting lecturer that monitored the experiment (see Section 4.3.). The resulting analytic assessment template is outlined in Table 1.

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Table 1. Analytic assessment scale (Toledo Báez 2010 and 2015).

Analytic assessment scale	Number of errors
1. Inappropriate renderings which affect the understanding of the source text.	
- Mistranslation (CS)	
- False sense (FS)	
- Senseless (SS)	
- Addition (AD)	
- Omission (OM)	
- Loss of meaning (LM)	
- Inappropriate linguistic variation (LV)	
2. Inappropriate renderings which affect expression in the target language.	
- Spelling (SP)	
- Punctuation (PUN)	
- Grammar (GR)	
- Lexical items (LEX)	
- Style (STY)	

### 4.3 Methods

The experiment was carried out in a classroom of the Faculty of Arts from the University of Málaga in March 2015. To avoid peer pressure, the participant was the only student taking part in the experiment. Another important aspect is that the

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participant was always assisted by the volunteer student that had been helping and assisting him during the previous three years.

The experiment was monitored by two Translation and Interpreting lecturers. The participant was asked to use the lecturer's computer (a classroom computer) and the two supervisors registered all the translation process.

The experiment lasted 2 hours. As the student did not have enough time to translate the three chosen recipes, it was divided into two parts: a) the first part was carried out in the classroom and the student translated the recipes with simplified instructions and with non-simplified instructions; b) the second part was designed as homework and the student had to translate the other recipe in two weeks' time.

With regards to the methods for text simplification, as explained above, neither OpenBook, from FIRST project, nor Simplext worked properly with our texts and, therefore, the manual simplification methodology by Anula (2007) was applied. This methodology is proven to contribute to the reduction of complexity in written language. Two



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types of simplifications are considered in Anula (2007):

1. Lexical simplification, based on principles such as frequency of use (e.g., frequent terms are preferred) and lexical density (e.g., repetition).

2. Syntactic simplification, where elements such as length of discursive segments, abundance of subordinate structures, use of impersonal or passive sentences, among others, are taken into consideration.

Below an example (Example 1) of the instructions and how they have been simplified is presented (full simplified and non-simplified instructions are detailed in Appendices).

**Example 1**

Non-simplified instruction:

Traducir recetas supone un ejercicio a priori sencillo, pero que puede llegar a complicarse más de lo previsto a causa del empleo de una terminología compleja o del uso de determinados elementos culturales cuya traducción puede suponer un escollo.

Simplified instruction:

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Traducir recetas constituye en teoría un ejercicio sencillo, pero puede complicarse por dos motivos: el uso de una terminología compleja o el uso de elementos culturales difíciles de traducir.

Both lexical and syntactic simplifications are found in the example. As to the lexical simplification, the modifications are the following:

- “A priori” has been replaced by “en teoría.”
- “Puede llegar a complicarse” has been simplified as “puede complicarse.”
- Instead of using the synonyms “uso” and “empleo”, only “uso” is used.

Regarding syntactic simplification, the modifications are the following:

- A colon is added before the enumeration of the two elements “uso de terminología compleja” and “uso de elementos culturales.”
- It is added “por dos motivos” before the colon to make clear that there are two elements that render translation difficult.
- The subordinate clause “cuya traducción puede suponer un escollo” has been simplified and it has been replaced by “difíciles de traducir.”

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As explained above, recipe 3 consisted of two parts. The first part was not simplified and the second one was simplified. The non-simplified part of the recipe includes elements whose translation might be challenging, such as the verb “tunear” (to tune), a colloquial verb used in Spanish instead of “adapt”, the verb “pegarse (la comida),” a colloquial way of expressing in Spanish “overcooked food,” although with other meanings in Spanish such as, for instance, “to paste” or “to hit someone”. Another particularly difficult element is the word “chino,” the colloquial Spanish equivalent for “chinois” or “sieve.”

The second part of the recipe “Albóndigas caseras,” despite having been simplified both lexically and syntactically (see Appendices), it presents some elements that might be hard to translate such as “pasar las albóndigas por harina” (to flour the meatballs) or “a fuego medio” (over medium heat).

In order to check whether this simplification process is suitable, the readability of both simplified and non-simplified instructions has been measured with the two indexes already mentioned: the Flesch-Szigriszt Index (Szigriszt 1993) and the Fernández Huerta Index (Fernández Huerta 1959) (see Section 5.2.).

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Regarding instructions, as explained above, students with AS exhibit unsuccessful pragmatic communication, which may include the understanding of speech acts, including instructions (Dennis, Lazenby and Lockyer 2001). In this study, the instructions explained 1) that the recipes 1 and 2 had to be translated from English into Spanish; 2) that a translation report was compulsory when translating recipes 1 and 2 (two different reports for each recipe); 3) that recipe 3 had to be translated from Spanish into English. The most complicated instruction was the one related to the fact that a translation report was compulsory. For the study, the strategy of “giving explicit instructions and directions” recommended by the Student Advice and Wellbeing from the University of London (2017) has been followed, though in the non-simplified instruction —used when translating recipe 1— the instruction of submitting the translation report is not as clear as it is in the simplified instruction —used when translating recipe 2—.

**Example 2**

Non-simplified instruction:

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Los elementos que han supuesto una mayor dificultad a la hora de traducir pueden ser incluidos en el informe que ha de acompañar a la traducción que has de entregar.

Simplified instruction:

Además de la traducción, deberás redactar un informe sobre los elementos que te han resultado difíciles de traducir.

Above it is shown an example (Example 2) of the two types of instructions when the translation report is mentioned (full simplified and non-simplified instructions are detailed in Appendices):

Regarding the methods to assess the readability of both simplified and non-simplified texts, as explained above, two methods have been used: the Flesch-Szigriszt Index (Szigriszt 1993) and the Fernández Huerta Index (Fernández Huerta 1959). The Flesch-Szigriszt Index is the validation of the Flesch Reading Ease Formula for the Spanish language and it is calculated by means of the following formula:

$$\text{FLESCH-SZIGRISZT Index} = 206.835 - (62.3 * \text{S/P}) - \text{P/F}$$

where 'P' is the number of words in the text, 'S' is the number of syllables and 'F' is the number of sentences. The degree of difficulty of a text

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establishes five levels of difficulty with the following scores: very difficult (<40), somewhat difficult (40-55), normal (55-65), quite easy (65-80) and very easy (>80).

The Fernández Huerta Index was created by José Fernández Huerta (1959). He proposed the adaptation to the Flesch formula into Spanish, by using the same factors but by changing the weighting, probably as a result of a multiple regression analysis. The formula is the following:

$$\text{FERNÁNDEZ HUERTA Index:} = 206.84 - (60 * (\text{S/P})) - (1.02 * (\text{P/F}))$$

where 'P' is the number of words in the text, 'S' is the number of syllables and 'F' is the number of sentences. The degree of difficulty of a text establishes seven levels of difficulty with the following scores: very easy (90-100), easy (80-90), somewhat easy (70-80), normal (for an adult) (60-70), difficult (30-50) and very difficult (0-30).

To calculate readability of the non-simplified and simplified instructions and source texts, Legible.es<sup>9</sup>, an online calculator, has been used. Results will be shown below (see section 5.2.).

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## **5. RESULTS AND DISCUSSION**

Results will be divided into three sections: 1) results and discussion concerning instruction simplification; 2) results and discussion concerning readability; and 3) results and discussion concerning translation assessment.

### **5.1 Results and discussion concerning instruction simplifications**

As explained above, the most complicated instruction given in this study was the one related to the fact that a translation report was compulsory when translating recipes 1 and 2. The non-simplified instruction was used when translating recipe 1 and the simplified instruction when translating recipe 2. The participant did not understand that a translation report was required when translating recipe 1 and the translation report was not submitted. However, the participant did understand that a translation report was required when translating recipe 2 and during the experiment, he asked the two translation and interpreting lecturers monitoring the study whether the translation report had to be written in a separate document. He was explained that he could choose

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whether to submit the report in a separate document or in the same document where the target text for recipe 2 is submitted. He finally decided to write both target text and translation report in the same document.

Therefore, the instruction simplification has helped the participant understand and accomplish the assignment required. Consequently, simplification has had an impact on the understanding of instructions in our study.

## 5.2 Results and discussion concerning readability

The results of measuring the readability of both simplified and non-simplified instructions and the readability of both simplified and non-simplified recipes are shown in Table 2.

Table 2. Readability results of simplified and non-simplified texts in Spanish.

Text	Flesch-Szigriszt Index	Fernández Huerta Index
Non-simplified instructions	46.98 (somewhat difficult)	51.41 (somewhat difficult)
Simplified instructions	60.98 (normal)	66.21 (normal)
Non-simplified	66.14 (quite)	70.46 (somewhat)



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recipe in Spanish	easy)	easy)
Simplified recipe in Spanish	72.26 (quite easy)	76.4 (somewhat easy)

As can be seen, the readability of simplified instructions is higher than the readability of non-simplified instructions, specifically 14 points higher according to the Flesch-Szigriszt Index and 14.8 points higher according to the Fernández Huerta Index. It needs to be checked whether a higher readability implies that the instructions will be understood and they will be followed and accomplished (see Section 5.2.).

Regarding the recipe in Spanish, the readability of the simplified recipe is also higher than the readability of non-simplified recipe, though the difference is lower than the difference in the instructions. Specifically, the readability of the simplified recipe is 6.12 points higher according to the Flesch-Szigriszt Index and 5.94 higher according to the Fernández Huerta Index than the readability of the non-simplified recipe. It needs to be checked whether a higher readability implies a better quality in the target texts (see Section 5.3.).

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### 5.3 Results and discussion concerning translation assessment

Results of assessing the translations of the non-simplified part and the simplified part of recipe 3 are shown in Table 3.

For reasons of space, only some inappropriate renderings found will be commented. As to the translation of the non-simplified text, the participant translated properly some of the challenging elements included in the non-simplified part of recipe 3 —an example is “tunear”—, but he mistranslated “chino” as “china” (Chinese). Also, the translation of “pegarse (la comida)” is a false sense since he translated it as “\*attach”.

Table 3. Results of translation analytic assessment of non-simplified part of recipe 3.

Analytic assessment scale	Number of errors in translation of non-simplified text	Number of errors in translation of simplified text
1. Inappropriate renderings which affect the understanding of the source text.		
- Mistranslation (CS)	3	5

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- False sense (FS)	4	3
- Senseless (SS)	1	2
- Addition (AD)	0	0
- Omission (OM)	1	0
- Loss of meaning (LM)	1	0
- Inappropriate linguistic variation (LV)	0	0
2. Inappropriate renderings which affect expression in the target language.	1	0
	0	0
- Spelling (SP)	3	4
- Punctuation (PUN)	1	0
- Grammar (GR)	0	0
- Lexical items (LEX)		
- Style (STY)		

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An example of a senseless translation is “\*bread without layer”, the translation for “pan sin corteza,” which should have been translated as “crustless bread”. As to inappropriate renderings affecting expression in target language, the following phrase contains two grammar mistakes: “\*2 big can of peeling natural tomato.”

With regards to the translation of simplified text, the participant did not translate properly most elements that could be hard to translate. He translated “pasar las albóndigas por harina” as “\*pass the meatballs by flour,” which is senseless. In addition, “a fuego medio” has been mistranslated

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as “\*on a medium fire” when it should be translated as “over/on a medium heat.” Another example of false sense is “\*jagged spaghettis.” As to renderings affecting the expression in target language, “unos tres minutos” has been translated as “\*some three minutes,” which is grammatically incorrect.

As can be seen, the translation of the simplified text presents more inappropriate renderings affecting the understanding of source text and has more mistranslations and false senses than the translation of the non-simplified text. However, the same number of inappropriate renderings affecting understanding is found in both texts (5). With regards to inappropriate renderings affecting the expression in target language, the simplified translation presents 4 and the non-simplified translation 5.

The quality of both target texts is similar. Consequently, simplification has not had a direct impact on quality in our study.

## **6. CONCLUSIONS**

The pioneer work described in this article is concerned with simplification at two levels (source

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text simplification and instruction simplifications) and its impact on students with AS. Four specific goals have been achieved:

1. Goal 1 was to apply text simplification to instructions in Spanish and to source texts in Spanish using Anula's (2007) recommendations. This goal has been completed in Section 4.3. where two types of simplification have been carried out: lexical simplification and syntactic simplification.

2. Goal 2 was to check the readability of the Spanish simplified and non-simplified source texts and instructions using two Spanish formulae: the Flesch-Szigriszt Index (Szigriszt 1993) and the Fernández Huerta Index (Fernández Huerta 1959). This goal has been completed in Section 5.1. where the results show that the readability of simplified instructions is higher than the readability of non-simplified instructions (14 points higher according to the Flesch-Szigriszt Index and 14.8 points higher according to the Fernández Huerta Index) and the readability of the simplified recipe is higher than the readability of the non-simplified recipe (6.12 points higher according to the Flesch-Szigriszt Index and 5.94 according to the Fernández Huerta Index).

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3. Goal 3 was to assess the target texts in English using Toledo Báez (2010 and 2015)'s analytic assessment template in order to check whether text simplification implies an improvement on translation quality. This goal has been completed in Section 5.3. where it is explained that the same number of inappropriate renderings affecting understanding is found in both texts (5), although the simplified translation has more mistranslations and false senses than the non-simplified translation. With regards to inappropriate renderings affecting the expression in target language, the simplified translation presents 4 and the non-simplified translation 5. Therefore, the quality of both target texts is similar. Consequently, simplification has not had a direct impact on quality in our study.

4. Goal 4 was to test whether the participant has better understood simplified explicit instructions than non-simplified explicit instructions. This goal has been completed in Section 5.2. where it is explained that, thanks to the simplified instruction, the participant understood that it was compulsory to submit a translation report when translating recipes 2. However, due to the non-simplified instruction in recipe 1, the participant did not submit the translation report. Therefore, the instruction simplification has helped the participant

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understand and accomplish the assignment. Consequently, clear instructions help students with AS exhibit successful pragmatic communication.

Regarding the hypothesis, the second part is achieved because instruction simplification entails a better understanding of instructions. However, the first part is not achieved because text simplification does not represent an improvement on translation quality.

Nevertheless, it is important to stress some limitations of our study for further analyses. First, it has been carried out with just one participant. Second, the experiment could have been carried out in different sessions in a classroom environment since it would have been useful to register participant's questions and problems while translating. Third, text simplification has been carried out manually. Fourth, target texts could have been assessed by more than one evaluator.

During this study, a series of possible future directions has emerged. The study could be replicated with more participants to check whether similar results are obtained. Another line of research is to carry out the study again but with a different text genre and/or a different topic.

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Motivation is very important for people with AS and it would be interesting to use a topic and/or genre that is motivating and exciting to the participant. A possible extension of this work is to explore the possibility of creating or adapting translation assessment templates to students with AS.

## NOTES

1. The research presented in this study has been (partially) carried out in the framework of research projects TERMITUR (HUM 2754), VIP (FFI2016-75831-P), INTERPRETA 2.0 (PIE17-015), UCOTerm (2017-1-1005) and the thematic network “TRAJUTEC: Traducción jurídica y tecnología”.
2. Further information about the FIRST project can be found at <http://www.first-asd.eu/>.
3. Further information about OpenBook can be found at <http://www.openbooktool.net/>.
4. Further information about the Simplext project can be found at <http://simplext.taln.upf.edu/>.



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5. The “beef pot roast” recipe is available at <http://allrecipes.com/recipe/slow-cooker-beef-pot-roast>.

6. The “lasagna” recipe is available at <http://allrecipes.com/recipe/worlds-best-lasagna>.

7. The “albóndigas caseras de pollo y pavo” recipe is available at <http://recetasderechupete.hola.com/albondigas-caseras-pollo-pavo-en-salsa-de-tomate-receta-paso-a-paso/3924>.

8. MeLLANGE was a Leonardo da Vinci project whose main aim was to adapt vocational training of translators to the new needs arising from the globalisation process. The MeLLANGE template is available at [http://corpus.leeds.ac.uk/mellange/images/mellange\\_error\\_typology\\_en.jpg](http://corpus.leeds.ac.uk/mellange/images/mellange_error_typology_en.jpg).

9. Legible.es is available at <https://legible.es/>.

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## **APPENDICES**

### **INSTRUCTIONS FOR RECIPE 1 (NON-SIMPLIFIED)**

Traducir recetas supone un ejercicio a priori sencillo, pero que puede llegar a complicarse más de lo previsto a causa del empleo de una terminología compleja o del uso de determinados elementos culturales cuya traducción puede suponer un escollo. Los elementos que han supuesto una mayor dificultad a la hora de traducir pueden ser incluidos en el informe que ha de acompañar a la traducción que has de entregar. Dicho informe ha de contener los términos o conceptos problemáticos, definición en inglés y fuente, traducción al español y fuente y justificación.

A continuación, proponemos una receta en lengua inglesa que habría de traducirse al español. Dicha receta explica un plato tradicional en Norte América, que suele servirse con zanahorias, champiñones y patatas, y que, aunque de escasa complicación, requiere tiempo en los fogones. Imaginemos que esta receta será publicada en un

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libro de recetas que será disponible tanto en Latinoamérica como en España, por lo que será necesario decidir cómo solucionar este potencial problema en cada caso y justificar las decisiones tomadas en un informe.

Adelante con la traducción.

## **INSTRUCTIONS FOR RECIPE 2 (SIMPLIFIED)**

Traducir recetas constituye en teoría un ejercicio sencillo, pero puede complicarse debido por dos motivos: el uso de una terminología compleja o el uso de elementos culturales difíciles de traducir.

Traduce de inglés a español la siguiente receta tradicional italiana de lasaña. Se trata de un plato que no es complicado de cocinar y su resultado es muy sabroso.

Además de la traducción, deberás redactar un informe sobre los elementos que te han resultado difíciles de traducir.

### **INTRUCCIONES PARA LA TRADUCCIÓN:**

1. Traduce la receta al español.
2. La variedad de español debe ser español peninsular.
3. El formato debe ser igual que el del texto original (el del documento Word).



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#### INSTRUCCIONES PARA EL INFORME:

1. El informe deberá ser entregado en un documento Word aparte.
2. En este informe debes escribir sobre los problemas de traducción que te hayas encontrado siguiendo esta guía:
  - Término o concepto problemático.
  - Definición en inglés y fuente.
  - Traducción al español y fuente.
  - Justificación.

#### **SECOND PART OF RECIPE 3 (SIMPLIFIED)**

Preparación de las albóndigas

Primer paso: hacer las pelotas de carne. Intentar que todas salgan iguales.

En un cuenco grande, salpimentar la carne picada de pollo y de pavo. Añadir dos huevos y la nuez moscada. Añadir también las rebanadas de pan sin corteza que han estado remojadas en leche durante unos minutos. Por último, añadir el ajo machacado o muy picado (sin el brote interior o tronco para que no se repita).

Removemos todo bien con las manos hasta que se mezclen los ingredientes. Esta será la base de nuestras futuras albóndigas.

Empezamos a trabajar la masa haciendo albóndigas pequeñas o grandes. Luego pasamos las albóndigas por harina y las dejamos en un plato.

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Sacudimos las albóndigas un poco para retirar el exceso de harina y las freímos en aceite de oliva virgen extra bien caliente. Tres minutos son suficientes. Reservamos.

Pasamos las albóndigas a la cazuela con la salsa de tomate recién hecha. Calentamos a fuego medio durante unos 10 minutos hasta que quede una salsa de tomate ligeramente espesa.

Dejamos reposar las albóndigas 5 minutos mientras freímos las patatas. Cortamos las patatas con el corte que más nos guste.