Is subtitling equally effective everywhere? A first cross-national study on the reception of interlingually subtitled messages

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Is subtitling equally effective everywhere? A first cross-national study on the reception of interlingually subtitled messages

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Abstract: Recent research on the reception of interlingual subtitling revealed that it is cognitively effective: watching a subtitled film results in a good understanding of the film content, it does not require a significant tradeoff between image processing and text processing, and it leads to a good performance in the recognition of the words and expressions contained in the subtitles. To date, the studies that revealed the effectiveness of subtitle processing have been conducted mono-nationally – e.g. d'Ydewalle and De Bruycker (2007) in Belgium; Wissmath et al. (2009) in Switzerland; Perego et al. (2010, 2015) in Italy; Hinkin et al. (2014) in the US. However, it has not yet been demonstrated empirically whether subtitle effectiveness varies depending on the familiarity of viewers with subtitles. The cross-national study described in this paper aims to fill this gap and appraise the cognitive performance and overall appreciation of a moderately complex subtitled film by viewers with different degrees of familiarity with subtitles, i.e., viewers living in countries (Italy, Spain, Poland and Dutch-speaking Belgium) with different audiovisual translation traditions. The

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main findings reveal that subtitling is effective irrespective of users' familiarity with it, although it is not enjoyed equally among the tested populations.

Keywords: cross-national, reception, subtitling, familiarity, processing effectiveness

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1. Introduction

Since the birth of sound cinema and the consequent establishment of audiovisual translation (AVT), European countries have had to choose the AVT method that best complied with their cultural beliefs, economic resources, language policies and population density (Chiaro 2009; Danan 1991; Gottlieb 2004). Accordingly, Europe was split into typically dubbing and typically subtitling countries (Kilborn 1993; Koolstra, Peeters and Spinhof 2002; Luyken, Herbst, Langham-Brown, Reid and Spinhof 1991), a division that oversimplified a composite scenario. The structural, linguistic, translational and receptive differences of these two methods (Chaume 2012; Díaz Cintas 2001; Gottlieb 1994) soon sparked off a lively debate on which one was better (Díaz Cintas 1999). For a long time, this debate was encouraged by a series of speculative claims on the merits and the drawbacks of dubbing vs. subtitling based on intuition and rules of thumb, but seldom supported by systematic empirical studies (for a review see Koolstra et al. 2002 and Perego, Del Missier and Bottiroli 2015; Marleau 1982).

The question of the efficacy of subtitle (vs. dubbing) processing remained open until the issue began to be explored scientifically and empirical results have started to undermine old beliefs. Contrary to expectations, research on the users' cognitive and/or affective reception of translated audiovisual materials has demonstrated that processing a moderately complex subtitled film is generally effective and relatively automatic and effortless (d'Ydewalle, Van Rensbergen and Pollet 1987; d'Ydewalle, Praet, Verfaillie and Van Rensbergen 1991; d'Ydewalle and De Bruyker 2007; Hinkin, Harris and Miranda 2014; Perego, Del Missier, Porta and Mosconi 2010, Perego et al. 2015) – even though subtitles might pose challenges in specific cases. In particular, d'Ydewalle and his team revealed that

this is true irrespective of age (in adult populations), gender, and familiarity with the translation method (d'Ydewalle and Van Rensbergen 1989; d'Ydewalle and Gielen 1992). Wissmath, Weibel and Groner (2009) concluded that the potential differences in the evaluative effects of dubbing and subtitling have been overstated. Perego and her colleagues (2010, 2015) further demonstrated that there is no tradeoff between text and image processing, irrespective of film genre and age (in spite of a general performance decline observed in older (65+) adults), and that dubbing does not offer any cognitive or evaluative advantage over subtitling, with subtitling leading to better memory for specific words and phrases contained in the dialogues (see also e.g. Hinkin et al. 2014). It has also been found that regardless of their type – be they standard interlingual (foreign language audio with native language subtitles), intralingual (audio and subtitles in the same language, foreign or native), or reversed (native language audio with foreign language subtitles) – subtitles constitute a major gaze attractor (Bisson, Van Heuven, Conklin and Tunney 2014; Kruger, Szarkowska and Krejtz 2015). Although people follow subtitles for a significant share of their presentation time (d'Ydewalle, Muylle and van Rensbergen 1985; Jensema, Danturthi and Burch 2000), the influence of the language of the soundtrack on subtitle processing has so far yielded contradictory results. Some researchers found that the familiarity with the language of the audio increases the probability of subtitle skipping (Laskowska, Szarkowska, Pilipczuk and Oliver 2015 and Szarkowska et al. in this volume). Other researchers, however, found that students watching subtitled lectures paid more attention to subtitles in the language of their instruction (English) and avoided looking at subtitles in their first language (Sesotho) (Kruger and Steyn 2014). What is more, depending on their characteristics, subtitles can leave viewers ample or insufficient time to follow the on-screen action (Szarkowska, Krejtz, Kłyszejko and Wieczorek 2011)[1].

These results represent an important advance in subtitle reception research. In spite of their relevance, however, they neglected to investigate, for instance, whether the increased difficulty of the task (e.g., watching a film that is structurally, linguistically and narratively more complex), or whether a greater (vs. more limited) familiarity with subtitling could provide a different picture. In this paper, we shall focus specifically on the impact of familiarity with standard interlingual subtitling on viewers' cognitive performance and overall appreciation of the subtitled film experience. Undertaking a cross-national study, we will

[1] See also the concept referred to as 'viewing speed' by Romero Fresco 2015.

attempt to assess whether watching a subtitled film is perceived as a more challenging activity by viewers who have traditionally been exposed to other forms of AVT, and we will attempt to determine whether users' viewing habits mirror their country's AVT policy in terms of AVT choices.

2. Familiarity and audiovisual translation

The idea that familiarity with a given translation method can influence reception is not new, but it has not yet been researched empirically. Some authors claim that people who are used to reading subtitles perform the task more easily and efficiently: they learn to read faster and have more time to allocate their attention to all aspects of the AV message (Gottlieb 2008). In a study carried out in the US, Jensema (1998) found that hearing people, unfamiliar with subtitling, preferred slightly slower subtitles compared to deaf and hard of hearing people, which, as the author states, "apparently related to how often they watched [subtitled] television" (1998:318).

Although empirical literature has started to shed light on subtitle reception, it is not yet definitive regarding the impact of familiarity on it. The *subtitle effectiveness hypothesis* (Perego et al. 2010, 2015), for instance, resulted from studies conducted in Italy, where dubbing still prevails both on TV and at the cinema (MGC 2011; Chaume 2012). This hypothesis supports the idea that, for viewers living in a dubbing country and claiming to have a limited experience with subtitled programs, the activity of processing a relatively simple subtitled film is cognitively effective (i.e., it results in good levels of general film content comprehension, memory for film dialogues, and visual scene recognition), and it does not negatively affect film enjoyment and viewers' appreciation (De Bruyker and d'Ydewalle 2007; Hinkin et al. 2014; Wissmath et al. 2009). In spite of their significance, these findings fail to include familiarity among the investigated variables: they only test Italian viewers and they do not include other population samples in the study by way of comparison. However, in these studies, it is hypothesized that a full replication of the results is to be expected in other dubbing countries, and that improved subtitle effectiveness is to be expected in subtitling countries (Perego et al. 2010:264, 2015:16).

The need to substantiate these claims and to corroborate the robustness of these findings led us to extend our research to European countries with different AVT traditions. This is in line with the growing importance of replication in empirical research (Pashler and

Wagenmakers 2012) and with the recent growth of interest for cross-national and cross-cultural studies (Hoffmeyer-Zlotnik and Harkness 2005a). Extending the same study to other countries leads to an assessment of whether cross-cultural commonalities exist in the way subtitled products are used, processed and enjoyed, and in the way they shape users' preferences and choices. To this end, we extended the study to Spain, Poland and Belgium besides Italy – i.e. European countries that are representative of different distribution and familiarity patterns for AVT.

3. The European audiovisual landscape and users' viewing habits

Familiarity refers to the knowledge and mastery people have of something. Familiarity typically develops as a result of exposure to that something. Speaking of AVT, we could connect familiarity to the way AVT methods are distributed over different countries. However, as mentioned earlier, the European AVT scenario is fragmented and inconsistent when it comes to labelling each country according to the dominant AVT method, and the problem is exacerbated when users' actual viewing habits and preferences are taken into account. The traditional dubbing vs. subtitling division (Chiaro 2009; Danan 1991; Gottlieb 2004; Luyken, Herbst, Langham-Brown, Reid and Spinhof 1991) is in fact as handy as it is inaccurate. Other forms of AVT have always been used to make audiovisual products available beyond their original borders, and different AVT methods have always coexisted in the same country across different platforms (Chaume 2012; MCG 2007, 2011). Indeed, nowadays, mixed situations seem to be taking over from previous clear-cut settings, and individual habits and preferences seem to be generating a growing discrepancy between each country's official AVT policy and actual viewers' habits.

If we limit our overview to the countries involved in this study, we notice that classifying Italy and Spain as dubbing countries, Poland as a voice-over country, and Dutch-speaking Belgium as a subtitling country is outdated and risky. In the era of Internet, YouTube, Digital Video, Video on Demand, fansubbing and the like, subtitling is becoming more accepted even in traditionally NOT dubbing countries, particularly for younger generations. In fact, Spain and Italy are dubbing countries. However, especially in Spain, subtitling is gaining popularity thanks to digital broadcasting and the option offered by many cinemas to watch a film either dubbed or subtitled (Chaume 2012; MCG 2007, 2011). Data from 2009 gathered by MCG (2011:7) indicate that in Spain dubbing still is the dominant

practice for both European and American films: 53% of the European box-office films were released only in their dubbed version and 29% in both dubbed and subtitled versions. The percentage of American films only released in dubbed versions is even higher (69%). According to MCG (2011:7), in Italy this percentage is higher: retrieving data from Cinecittà Luce, without specific mention of the year, the report indicates that around 89% of European films and 63% of American films are dubbed, although some films are also released in their subtitled version.

Poland, on the other hand, is considered a stronghold of voice-over even though in fact it is a "mixed" country (Bogucki 2004; Garcarz 2007; Gottlieb 1998; Szarkowska 2009): surveys on audience preferences regarding AVT modes showed that a dozen years ago the majority of respondents still preferred voice-over (52%) to subtitles (4.5%) (e.g., Subbotko 2008). Voice-over, however, has been dominant only on Polish analogue television. Nowadays – with a wider availability of subtitling on digital TV channels – the AVT preferences seem to be slowly changing (Szarkowska and Laskowska 2015). Subtitling is the dominant mode in Polish cinemas, where dubbing is used for children's productions. On DVD/Blu-ray, viewers are most often given a choice between voice-over and subtitling.

Finally, Flemish Belgium, where subtitling is the only AVT method, is a subtitling country. In Flanders, subtitling is standard practice in all cinemas and on all TV channels (of both public and commercial broadcasters), including channels from the Netherlands (Ockers 2010). Dubbing is used only for a limited number of children's programmes on TV and for animation films in the cinema. In addition, some DVD releases will offer both subtitled and dubbed versions. However, subtitling remains dominant and even Flemish dialects are often subtitled in standard Dutch on TV (De Houwe, Remael and Vandekerckhove 2008).

Generally speaking, the current situation, determined by a blend of individual and country-related factors, makes it difficult to follow the traditional differentiation between dubbing and subtitling countries. Nowadays, subtitling is present in each researched country to varying degrees – and we expect that this will be reflected in the viewing habits of the participants in our study.

4. A cross-national study on subtitle processing

We set up a cross-national study designed to analyze the subtitle reception of a moderately complex film comparing the way the process is received across different countries with

different AVT traditions. The study was meant to replicate part of a previous study (Perego et al. 2015) conducted in Italy, and to extend it to Spain, Poland and Dutch-speaking Belgium. To the best of our knowledge, this is the first study comparing the cognitive and evaluative consequences of subtitling among viewers from different European countries that do not share the same level of familiarity with the investigated translation method.

4.1. Method

4.1.1. Participants

The participants (n = 114) were 35 Italian (26 females, age range 19-25 years, *M* = 20.34, *SD* = 1.45), 26 Spanish (19 females, age range 20-30 years, *M* = 23.12, *SD* = 2.61), 20 Polish (14 females, age range 18-29 years, *M* = 23.00, *SD* = 2.27) and 33 Belgian (25 females, age range 19-26 years, *M* = 21.82, *SD* = 1.98) undergraduates and postgraduates. In general, participants were students of translation and interpreting, applied linguistics and psychology. Only a few came from a different background. Participants did not differ in their years of education ($F(3, 110) = 2.54$, $p > .05$). Ethical procedures were followed in the experiment, and participants signed a written informed consent form before taking part in the study.

4.1.2. Design

We presented the same video excerpt with its original soundtrack (Lebanese Arabic) with subtitles in the mother tongue of the viewers (Italian, Spanish, Polish and Belgian Dutch) to participants in these European countries. No participant had any knowledge of the original language of the film used in the experiment, so film comprehension depended entirely on the subtitles (vs. spoken dialogues) and on the paralinguistic and extralinguistic elements of spoken communication. Subtitle-reading checks were administered after each viewing session to all participants (see 4.1.3. Materials). The main dependent variables were measures of cognitive performance as well as evaluative measures. Cognitive performance was assessed through measures of general comprehension, dialogue recognition, face-name association, and visual scene recognition, thus encompassing both visual and verbal aspects of performance. Evaluative measures included film appreciation, self-reported effort related to the film vision, and metacognitive judgements of memory. These measures concern the evaluation of the

hedonic aspect and subjective judgements of facets of performance that can be related to cognitive and evaluative effects. Materials, procedures and measures used in the study were taken from Perego et al. 2015 and adapted; they also followed previous research on subtitled audiovisual processing (d'Ydewalle and De Bruyker 2007; Wissmath et al. 2009; Perego et al. 2010).

4.1.3. Materials

Video

The 25-minute video fragment used in the study consisted of the opening scenes from *Caramel* (*Sukkar banat*, 2007, N. Labaki), a Lebanese film set in a beauty parlour in Beirut. The film explores the lives of five working-class women whose aspirations are in conflict with social expectations. *Caramel* has elements from both comedy and drama, two of the most pervasive, fuzzy and structurally complex film genres (Stam 2000)[2] and it received generally favourable user and critic reviews.[3] The film's narrative structure was conventional, featuring a linear story told chronologically (Barsam 2007; Murphy 2007). Its pace can be termed "medium" (as operationalized by Lang, Bolls, Potter, and Kawahara 1999; Lang, Zhou, Schwartz, Bolls and Potter 2000). Neither the gist of the story nor its visuals are either extremely easy or too difficult to understand and remember (as shown in the descriptive statistics in Perego et al. 2015, where the same film had been used in experiments). Overall, the film reflected a common viewing situation of moderate complexity.

Subtitles

We used the official DVD subtitles in the four languages of the countries involved in the study (i.e., Italian, Spanish, Polish and Belgian Dutch). All subtitles were crafted professionally in line with each country's standards and they were not manipulated by the researchers. The subtitles were all in white characters (i.e. "denser and more luminous",

[2] *Caramel* is a "comedy, drama, romance" for IMDb; it is a drama encompassing the sub-genres "ensemble film" and "slice of life" for AllMovie; it is "an astute cultural study, and a charming comedic drama" for Rotten Tomatoes; it is a "brisk dramatic comedy that combines melodrama, humor and social critique in equal measure" in Ken Fox's review on TV Guide (retrieved at http://www.tvguide.com/movies/caramel/review/292292/).
[3] IMDb: 7.2/10 stars; Rotten Tomatoes: 3.8/5 stars, with 92% of positive reviews by critics. AllMovie: 4/5 stars.

Ivarsson and Carroll 1998:45), centered on the screen, and made no use of a black box background. The main features of all the subtitle sets are displayed in Table 1. We included the overall number of characters with spaces to provide a clear picture of the size of each subtitle set, which depends on differences between languages. We included the total number of words to give an account of the overall level of complexity of the subtitles – word counts can be safely considered as a reliable measure for syntactic complexity (Szmrecsányi 2004) – and to assess subtitle speed using a traditional measure (e.g., Jensema 1998, where 145 words per minute equals the preferable speed for hearing users). We calculated our word counts based on the displays of the Word Count window of Word Microsoft.

Insert Table 1 about here

Questionnaires

We used the same questionnaire that was used in Perego et al. (2015). We translated it into English to create a questionnaire template, which was then translated into Spanish, Polish and Belgian Dutch by each partner, and adapted to fit the new subtitles. A brief outline of the questionnaire follows; further details on each section are included in Perego et al. (2015).

General questions. The questionnaire included a *subtitle-reading check* section that verified whether viewers actually paid attention to the subtitles, and it enabled us to collect the viewers' opinions on the ease of subtitle reading. All participants were administered a *questionnaire on viewing habits* appraising on 7-point Lickert scales their appreciation of different audiovisual translation methods (i.e., subtitling, and, depending on the country involved, dubbing and voice-over).

Cognitive measures. Cognitive measures included a 20-item multiple-choice *questionnaire on general comprehension* to appraise whether participants understood the plot and the main conceptual aspects of the film fragment. A 20-item multiple-choice *questionnaire on dialogue recognition* was used to assess the participants' ability to recognize specific words or phrases presented in the film. An 8-item *face–name association test* served to assess whether participants could associate the name of each character, from among eight alternative names, with the corresponding freeze-frame. A 60-item *visual scene recognition test* aimed to assess

whether participants remembered which ones were part of the video they saw; only half of the frames had been presented, the remaining frames were foils.

Evaluative measures. Evaluative measures included a 19-item *evaluative questionnaire* to appraise the degree of film enjoyment (five items), dialogue and voice appreciation (nine items), and self-reported effort during film viewing (three items). *Metacognitive judgements of memory and comprehension* (three items) referring to general comprehension, dialogue recognition, and visual scene recognition, were also collected. A final question was included to enquire whether, if participants were to watch the whole film, they would rather watch it dubbed or subtitled.

Cognitive tests

After the viewing experience and the administration of the film-related questionnaires, the participants were administered some cognitive tests, as in Perego et al. (2015). Raven's Coloured Progressive Matrices (CPM; Raven 1995) were used as a measure of fluid intelligence. Letter and Pattern Comparison Tasks (Salthouse and Babcock 1991) were used as indicators of processing speed. A Vocabulary Test (Magez, Tierens, Bos, Van Huynegem and Decaluwé 2015; Thurstone and Thurstone 1963) was used as a measure of verbal ability indicating the range of a person's passive vocabulary used in activities where information is obtained reading or listening.

4.1.4. Procedure

We organized both collective and individual viewing sessions depending on the country and logistic limitations (see 4.3. Discussion). Participants were given instructions and a general introduction ("You will be watching a film excerpt. Watch it as if you were at home. Then, you will be asked to fill in some questionnaires"). No mention of the film language or translation method was made. After viewing the video, participants filled in a booklet containing the questionnaires in the following order: (1) evaluative questionnaire; (2) face-name association test; (3) general comprehension; (4) visual scene recognition; (5) dialogue recognition; (6) subtitle-reading checks; (7) questionnaire on viewing habits; (8) socio-demographic questions. Filling in the questionnaires was a self-paced task and it took

approximately 60 minutes. The cognitive tests were administered in the following order: (1) CPM (self-paced, approx. 20 to 30 mins); (2) Letter and Pattern Comparison test (max. 6 minutes); (3) Vocabulary Test (max. 8 minutes).

4.1.5. Statistical procedure

The differences between country groups (four levels: Italians, Spaniards, Poles, and Belgians) were examined with χ^2 tests for categorical variables and oneway analysis of variance (ANOVA) for quantitative variables using post hoc comparisons, calculated with the Tukey test with .05 level of significance according to Keppel (1991). An alpha of 0.05 was used for all statistical tests. All analyses were conducted using SPSS.

4.2. Results

4.2.1. Cognitive tests

The results of the cognitive tests that were administered after the film-related questionnaire are shown in Table 5. Country groups differed in terms of Vocabulary scores ($F(3, 109) = 33.36$, $p < .001$), with Poles being outperformed by the other three country groups. No differences were observed between Italians, Spaniards and Belgians. Groups significantly differed in terms of Raven's Coloured Progressive Matrices scores ($F(3, 110) = 15.25$, $p < .001$): Italians were outperformed by the other three country groups, and Belgians scored lower than Spaniards. Poles did not differ from Belgians and Spaniards. Country groups did not differ in terms of processing speed (as obtained by the means of the Letter and Patterns Comparison Tasks) ($F(3, 110) = 2.71$, $p = .05$).

Insert Table 2 about here

4.2.2. Subtitle-reading checks

As shown in Table 3, Italian, Spanish, Polish and Belgian participants did not differ in remembering the color of the subtitles (χ^2 (3, n = 104) = 2.09, $p = .56$), but they did for their correct alignment (χ^2 (3, n = 104) = 11.43, $p = .01$). Groups did not differ in how often they used subtitles (χ^2 (12, n = 105) = 19.35, $p = .08$): the majority of Italians, Spaniards, Poles and

Belgian participants reported having used subtitles *often* and *always* to help their understanding of the film. Regarding the difficulty of reading subtitles, almost all participant samples were similar in providing judgments ranging from *neither easy nor difficult* to *very easy* (χ^2 (15, n = 105) = 15.96, p = .39). Finally, the majority of Italians, Spaniards, Poles and Belgians – without any difference (χ^2 (6, n = 105) = 0.32, p = .99) – stated that subtitles remained on the screen at least for a *fair amount of time*.

Insert Table 3 about here

4.2.3 Questionnaire on viewing habits

Means and standard deviations are reportyed in Table 4.

Analysis of the reported frequency of subtitled film viewing habits revealed a significant effect according to country group (F(3, 101) = 8.77, p < .001). Post hoc comparisons showed that Italians claimed to be less familiar with subtitling than Poles and Belgians, but not Spaniards. No differences were reported among Belgians, Spaniards, and Poles.

Analysis of the reported frequency of dubbed (or voiced-over) film viewing habits again highlighted a significant effect according to country group (F(3,101) = 67.33, p < .001). Differences emerged among Italians, Spaniards, Poles, and Belgians, except for Poles and Belgians, who were similar in the degree of familiarity expressed with regard to dubbing.

A question on the role of subtitles in helping film understanding during the experiment revealed that the results of Italians, Spaniards, Poles, and Belgians were similar (F(3, 101) = 0.74, p = .53).

A question on the role of subtitles in helping scene recognition during the experiment revealed a significant effect according to country group (F(3, 101) = 5.21, p = .002). Poles considered subtitles less helpful for recognizing the scenes than Spaniards, Italians, and Belgians did. Belgians did not differ from Italians and Spaniards, and Italians did not differ from Spaniards.

A general enquiry on how pleasant watching a film in a foreign language is revealed a significant effect according to country group (F(3, 101) = 7.45, p < .001), with more pleasant evaluations for Spaniards and Poles than Italians. Belgians did not differ from Spaniards, Poles, and Italians, and Spaniards did not differ from Poles.

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Insert Table 4 about here

4.2.4. Cognitive measures

Data analysis was carried out on summative performance scores for each cognitive test: general comprehension, dialogue recognition, face-name association, and visual scene recognition with the independent variable country group (4 levels: Italians, Spaniards, Poles, and Belgians). Results are shown in Table 5.

Insert Table 5 about here

Regarding general comprehension, the ANOVA did not highlight any effect according to country group ($F(3, 110) = 2.07$, $p = .11$).

The ANOVA highlighted a significant effect according to country group for scene recognition ($F(3, 110) = 9.75$, $p < .001$), with Italians being outperformed by Belgians and Spaniards, and Poles being outperformed by Belgians. Poles did not differ from Italians and Spaniards and neither did Belgians from Spaniards.

As for face-name associations, the analysis did not highlight any significant effect according to country group ($F(3, 110) = 0.53$, $p = 66$).

Likewise, for dialogue recognition, the ANOVA showed that the country group effect was not significant ($F(3, 110) = 1.17$, $p = .32$).

In order to take into account the potential influence of individual differences in different aspects of cognitive functioning (Raven's Coloured Progressive Matrices and Vocabulary), we carried out a series of separate Analyses of Covariance (ANCOVAs) on the same dependent variables.

For general comprehension, again no significant effect emerged, and the same applied for the covariates, Fs < 2.22. The main effect of cross-country group ($F(3, 110) = 9.87$, $p < .001$) continued to be significant for scene recognition. Only the effect of the vocabulary covariate was significant ($F(1, 110) = 7.87$, $p = .006$). Considering face-name association, no effect proved significant, and again the same applied for the covariates, Fs < 0.77. Finally, the ANCOVA for dialogue recognition confirmed that the country group main effect was

non-significant ($F(3, 110) = 1.73$, $p = .17$). Only the effect of the vocabulary covariate was significant ($F(1, 110) = 6.07$, $p = .015$).

4.2.5. Evaluative measures

We took into consideration the same summative indices as Perego et al. (2015) (i.e., film enjoyment, dialogue and voice appreciation, self-reported effort, and judgements of memory) and carried out an ANOVA for each of these variables. Chi-square was used to test association between country groups and participants' preference for seeing the film in the dubbed or subtitled version. Results are shown in Table 6.

Insert Table 6 about here

For film enjoyment ($F(3, 109) = 8.46$, $p < .001$), Italians reported less enjoyment in watching the film than the Spaniards and Belgians. Italians however did not differ from Poles. No differences emerged among Spaniards, Belgians, and Poles.

For dialogue and voice appreciation, the Poles reported significantly more satisfaction than the other three country groups, which had similar results among them ($F(3, 105) = 8.72$, $p < .001$)

For self-reported effort, again the country group effect was significant ($F(3, 110) = 4.41$, $p = .006$), with Poles reporting less effort than Belgians and Spaniards (but not than Italians). No differences emerged among Belgians, Spaniards, and Italians.

For judgements of memory, the country group effect was significant ($F(3, 109) = 3.36$, $p = .021$), with Poles judging themselves better at remembering than Italians (but not than Spaniards and Belgians). No differences emerged among Belgians, Spaniards, and Italians

Finally, analyses highlighted a statistically significant association between country group and participants' preference for a given AVT method (χ^2 (3, n = 113) = 8.34, $p = .04$). When asked what method they would prefer if they were to watch the whole film, all Belgians stated they would prefer the subtitled version; 27 Italians, 20 Spaniards and 17 Poles stated that they would prefer to watch the film subtitled, whereas 8 Italians, 5 Spaniards and 3 Poles stated that they would prefer to watch it dubbed.

4.2.6. Correlations between measures

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We assessed the relationships between different aspects of performance by carrying out bivariate Pearson's correlations on the dependent variables, as summarized in Table 7.

Insert Table 7 about here

The subtitle frequency of use during the experiment for helping film understanding and the reported frequency of subtitled film viewing habits did not correlate with any cognitive or evaluative measure (except for a weak correlation between subtitle frequency of use during the experiment and film enjoyment). Most of the aspects of cognitive performance were positively related. This shows that participants who performed better on measures that partly depend on language processing ability also performed better on image-related tasks. In addition, only some evaluative variables were positively related to the cognitive variables. In particular, the participants who reported having experienced more effort in following the film were also those reaching higher levels of performance (except for general comprehension and face-name association). Moreover, a better performance was also positively (but weakly) associated with higher metacognitive judgments (with the exception of dialogue recognition and face-name association). Finally, film enjoyment was positively related to two of the four cognitive measures we used, suggesting that film appreciation may be specifically related to specific aspects of film understanding. No significant correlation was found for dialogue and voice appreciation with cognitive and evaluative measures, except for metacognitive judgements.

4.3. Discussion

The aim of this cross-national study was to replicate part of a previous investigation (Perego et al. 2015) in four countries (Italy, Spain, Poland and Belgium) with different AVT traditions, and to determine the role of familiarity with subtitling on viewers' film reception, i.e., on their cognitive performance and appreciation of an interlingually subtitled product. In particular, the study aimed at understanding (i) whether watching a moderately complex subtitled film is more challenging and less enjoyable for viewers who are not habitual users of subtitles and (ii) whether subtitling offers greater benefits to those who are familiar with it – expectations based on the literature on the cognitive effectiveness of subtitle processing

(Perego et al. 2010, 2015; d'Ydewalle and De Bruycker 2007; Hinkin et al. 2014; Wissmath et al. 2009). A collateral aim was to gain data on users' viewing habits and to see if they still reflect the traditional division of dubbing, subtitling and "mixed" countries.

Regarding the latter point, we were aware that the traditional division of audiovisual countries based on the official dominant AVT method is not an accurate indicator of users' actual viewing habits, preferences and degrees of familiarity with subtitling (Chaume 2012; MCG 2007, 2011). In fact, results show that in traditionally dubbing countries (Italy and Spain) viewers do use more dubbed than subtitled products, but they are also more open to subtitles than they used to be. This is confirmed by the viewing habits of the Italian and the Spanish participants: the former reported that they use subtitles *occasionally*, the latter reported that they use subtitles *frequently* and like subtitles more than Italians do. Poles reported that they use subtitles *very frequently*, which confirms the recent preference shift from voice-over to subtitling as well as the role of Poland as a "mixed" country. Belgium has never used any revoicing techniques and this is confirmed by the Belgian participants. In fact, they reported that they use subtitles *very frequently*, and that they would not use other AVT methods even if they could.

This state of affairs therefore allows us to treat each country as representative of a given predominant trend within a fluid situation. In fact, even if data show that no actual dubbing country exists any more, dubbing is still used along with other forms of AVT: Italians watch dubbed products *frequently* to *very frequently*, Spaniards watch dubbed products *frequently*, Poles watch voiced-over products *very rarely*, and Belgians *almost never* watch revoiced products. Furthermore, in spite of the fact that nowadays subtitling has become a universal AVT method distributed unevenly over the European territory, dubbing and voice-over are still appreciated by their users.

Regarding the cognitive and evaluative results of the study, they reveal that although familiarity with subtitles does not influence the cognitive performance of viewers who are used to a different AVT method, it does seem to influence the way subtitles are perceived and the degree of enjoyment and appreciation of the subtitled product.

If we focus specifically on the cognitive measures, the current results corroborate previous findings and support the *subtitle effectiveness hypothesis* (Perego et al. 2010, 2015): when viewers watch a moderately complex film, subtitled film viewing seems to be cognitively effective irrespective of the viewers' familiarity with the translation method. In fact, all groups understood the film content well, performed well in the dialogue recognition

test, and obtained good results in the face-name association test – i.e., in those aspects of performance entailing lexical skills. We believe that this might be ascribed to the common educational background of all participants and their natural or acquired inclination for languages. Different results might be found from participants with a different (e.g. scientific) educational background.

The fact that subtitling is effective irrespective of familiarity, at least in moderately complex viewing scenarios, shows the cognitive robustness of subtitle processing and it has some practical implications. This further suggests that subtitling could be exploited more generally than it is today, even with populations who are less familiar with it. We already know, for instance, that healthy older adults (65+) who are not habitual users of subtitles perform relatively well when they access a subtitled video (Perego et al. 2015). Future research might consider assessing whether the same effect is gained with people lacking high-level literacy skills, with uneducated people, or with more vulnerable population groups (such as deaf and hard of hearing people, children who are developing reading skills, or even young people with specific learning difficulties, people whose reading and cognitive skills are poorer than average; Kyle and Cain 2015; Salthouse, Atkinson and Berish 2003). Fine-tuning some aspects of the subtitles such as presentation rate or lexical choice, might in fact enhance their effectiveness for specific target users.

On the other hand, whether subtitling remains equally effective irrespective of familiarity in more complex viewing situations remains to be researched. It is known that the way audiovisual material is processed may depend on the nature of the audiovisual message (Grimes 1991). For this reason, varying message complexity might pose a limit to the effectiveness of subtitles, especially for those populations who are traditionally less familiar with it and for vulnerable audiences. These might in fact benefit more from other AVT methods or from major adaptations (including structural and lexical simplification) of the subtitles.

Although familiarity did not influence subtitle effectiveness in the lexical aspects of the cognitive performance (content understanding, dialogue recognition, face-name association), in some cases, and contrary to earlier findings showing no tradeoff between text and image processing (Perego et al. 2010, 2015), it seemed to interfere with the full processing of the visual track. This seems to indicate that perhaps the viewers' eyes really spend most of the watching time reading subtitles (as speculated by Marleau 1982) or that subtitle processing may require some effort after all. In the study, the Italians showed the

worst performance in visual scene recognition. We believe that this was caused by their very limited familiarity with subtitles, which suggests a possible interference of the non-routinary activity of reading subtitles in the users' processing activity, and a possible limitation of the *subtitle effectiveness hypothesis*.

On the other hand, the fact that also the Poles showed a poor performance in spite of their familiarity with subtitling might instead be ascribed to methodological limitations: the sample of Polish participants was smaller than the others; Polish subtitles were longer in terms of characters per seconds; the Polish material included a larger number of subtitles (see Table 1). Therefore, the participants may have spent more time looking at the subtitles at the cost of looking at the image – hence they obtained lower scene recognition scores – but also at the cost of enjoying the film experience to the full. Although these results are provisional, they seem to suggest that in some cases subtitles may prevent viewers from fully processing film images (as speculated in Díaz Cintas 1999; Gottlieb 1994). These cases include a scarce familiarity with the subtitle reading task, or the need to cope with subtitles that are structurally more complex. This suggests that the limitations of subtitling should be further investigated varying specific subtitle parameters.

Even if the cognitive performance remains stable across users with different degrees of familiarity with subtitles, things change when we observe their appreciation of the subtitled film viewing experience. Results on the evaluative measures show that generally those who are less familiar with subtitles enjoy the film experience less, they appreciate the dialogues and the original voices of the characters less, and they judge their ability to remember film content, dialogues and images to be poorer than average, thereby underestimating their actual performance. Although those who are less familiar with subtitles do not perceive the task of watching and reading to be more disturbing than the others do, they fail to enjoy the viewing experience to the full.

In spite of a lessened appreciation of the subtitled film viewing experience, we believe that subtitling could be exploited more in countries that still favour dubbing. The more subtitling is used, the better all users will be able to perceive them as non-intrusive, exploit their benefits to the full and appreciate them as well. This seems to be confirmed by two of our findings. First, the fact that Belgians failed to remember the correct alignment of the subtitles, could be explained by the fact that expert users do not perceive the single features (e.g., alignment) of the subtitles but perceive them as a global entity. This is in line with the Gestalt psychology. According to that, our brain is capable to generate whole forms,

particularly with respect to the visual recognition of global figures instead of just collections of simpler and unrelated elements (Koffka 1935).

Behavioural studies in other fields of research have indeed demonstrated that domain-specific knowledge, acquired through prolonged and focused training (Ericsson et al. 1993), enables experts – in contrast to novices – to quickly grasp the essence of complex but highly familiar stimuli (Bilalic et al., 2008). Second, our findings reveal that, when asked what method they would opt for if they were to watch the whole film, the majority of viewers living in non-subtitling countries chose subtitling. This suggests that exposure can partly shape preferences. Indeed, using subtitles more would be advantageous especially for language learning and acquisition (Hassanabadi and Heidari 2014; Talaván and Rodríguez-Arancón 2014) and to fight illiteracy (Kothari and Bandyopadhyay 2014). Demonstrating that subtitling is effective is a good reason to promote it in countries less familiar with it, or to cater for the needs of vulnerable populations including sensorially disabled persons but also migrants and populations using languages of lesser diffusion.

5. Conclusions

To our knowledge, this is the first cross-national study in the field of AVT and subtitle reception (but cf. *The Pear Tree Project*, Mazur and Kruger 2012). As such, it contributes to providing a fuller theoretical picture of interlingual subtitle reception and it offers a preliminary methodological contribution to future AVT research. From the theoretical point of view, the results of this study contribute to making the theoretical framework of subtitle reception research more solid, because they corroborate some of the previous findings on subtitle processing and appreciation conducted in mono-national studies (e.g., d'Ydewaklle and De Bruycker 2007 in Belgium; Wissmath et al. 2009 in Switzerland; Hinkin et al. 2014 in the US; Perego et al. 2010, 2015 in Italy). These findings mainly concern the effectiveness of subtitle processing in moderately complex viewing situations, and the possibility to enjoy a subtitled product irrespective of the viewer's familiarity with subtitles. The cross-national dimension of this research therefore contributes to an ever more thorough understanding of the general mechanisms of subtitle reception, and it enables the researcher to overcome the limitations of mono-national studies that examine the reaction of small samples of a single population in isolation. In cross-national research, the results obtained from a small sample group can be extended to make predictions about larger sections of the population.

Despite the potentials of cross-national research, we are aware of its problems and limitations (Harberger 1987; Gauthier 2000; Hoffmeyer-Zlotnik and Harkness 2005a, 2005b), which partly apply to the present investigation as well. In general, cross-national research poses problems regarding collaboration, sampling, homogenization of results, comparison of the same phenomenon across different (social, political, economic, educational, etc.) backgrounds, cultural differences, etc. In particular, we found it difficult to recruit numerous and completely homogeneous samples of participants, to compare subtitles that partly differed in their linguistic and structural features, and to homogenize completely the procedural phases (e.g., even if we tried to keep the viewing conditions as similar as possible across countries, there were some differences related to practical limitations).

We expect future research to overcome these limitations and to replicate this investigation minimizing individual differences across countries and procedural differences. Part of these problems could be easily overcome in the context of a larger scale project, which would also allow the use of different material (e.g., a more complex film) and homogenized subtitle features in all the languages involved in the study (e.g., same display time, same number of subtitles, etc.).

Although cross-national research is still in its infancy in the field of AVT, we believe it can offer knowledge that would otherwise be unavailable, and it could yield important results thus opening the way for future extensions and novel ways of approaching AVT reception research.

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Table 1. Main features of the DVD subtitles used in the study

	Italian	Spanish	Dutch	Polish
Linguistic parameters				
Total no. of characters with spaces	7796	5258	7700	7829
Total no. of words	1537	947	1531	1355
Total no. of subtitles	198	217	247	264
No. of 1 line subtitles	50	69	148	140
No. of 2 line subtitles	148	148	99	124
Input speed				
Total subtitle display time	14"	9"	10"	10"
Characters per second	9	10	13	13
Words per minute	110	104	149	140
Subtitles per minute	15	24	24	27

Note: Characters per second, words per minute and subtitles per minute values are calculated dividing the number of characters, words, and subtitles by the total subtitle display time.

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TABLE 2. Descriptive statistics for the Cognitive tests as a function of country group.

	Italians	Spaniards	Poles	Belgians
	M (SD)	M (SD)	M (SD)	M (SD)
Cognitive tests				
Vocabulary	81.03 (12.69)	85.23 (5.66)	51.81 (20.43)	79.33 (7.98)
Raven's Coloured Progressive Matrices	87.78 (3.94)	94.66 (5.21)	92.67 (4.20)	91.67 (3.11)
Processing speed	95.66 (3.78)	94.71 (3.70)	93.94 (5.63)	96.88 (3.15)

NOTE: Scores are expressed as percentages of correctness. Processing speed has been obtained by the means of the Letter and Pattern Comparison Tasks

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Table 3. Response rates for the Subtitle reading-check as a function of country group.

	Italians	Spaniards	Poles	Belgians
Subtitle reading-check				
Correct colour of subtitles	77	60	73	70
Correct alignment	100	92	91	75
How often subtitles have been used				
Always	74	58	27	70
Frequently	14	31	46	24
Very frequently	6	8	18	3
Neither rarely nor frequently	6	4	0	3
Very rarely	0	0	9	3
Difficulty of reading subtitles				
Very easy	14	19	5	34
Easy	40	50	20	46
Quite easy	26	12	15	12
Neither easy nor difficult	11	19	10	6
Quite difficult	3	0	5	3
Difficult	6	0	0	0
Subtitles on the screen				
Long time	23	19	10	18
Fair amount of time	69	73	40	73
Little time	9	8	5	9

Note: Values are expressed in percentages. The table reports only those responses with at least one occurrence across the three country groups.

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TABLE 4. Descriptive statistics for the Questionnaire on viewing habits as a function of country group.

	Italians	Spaniards	Poles	Belgians
	M (SD)	M (SD)	M (SD)	M (SD)
Questionnaire on viewing habits				
Frequency of subtitle viewing	3.85 (1.91)	4.77 (1.42)	5.67 (0.65)	5.82 (1.79)
Frequency of dubbed viewing	5.56 (1.52)	4.50 (1.56)	2.25 (1.13)	1.39 (0.70)
Subtitles helped film understanding	6.29 (1.14)	6.62 (0.50)	6.42 (1.17)	6.58 (0.90)
Subtitles helped scene recognition	4.82 (1.40)	5.04 (1.56)	3.58 (0.90)	5.42 (1.39)
Pleasure in watching film in foreign language	4.47 (1.26)	5.65 (1.20)	6.00 (1.13)	5.00 (1.12)

NOTE: Scores for the Questionnaire on viewing habits ranged from 1 to 7. Lower scores indicate lower level of the attribute.

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TABLE 5. Descriptive statistics for the Cognitive measures as a function of country group.

	Italians	Spaniards	Poles	Belgians
	M (SD)	M (SD)	M (SD)	M (SD)
Cognitive measures				
General comprehension	76.86 (8.84)	72.88 (6.66)	81.25 (20.06)	77.12 (9.19)
Dialogue recognition	78.00 (12.50)	80.58 (10.52)	77.25 (14.82)	74.39 (12.27)
Face-name association	54.29 (18.43)	46.63 (29.27)	53.12 (31.38)	53.03 (22.76)
Visual scene recognition	75.05 (7.58)	81.03 (4.47)	76.83 (9.19)	83.89 (7.25)

NOTE: Ranges of scores for Cognitive measures were expressed in percentages of correctness.

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TABLE 6. Descriptive statistics for the Evaluative measures as a function of country group.

	Italians	Spaniards	Poles	Belgians
	M (SD)	M (SD)	M (SD)	M (SD)
Evaluative measures				
Film enjoyment	12.54 (5.12)	17.96 (4.84)	15.20 (5.05)	17.59 (4.48)
Dialogue and voice appreciation	19.36 (3.11)	18.96 (2.77)	22.60 (2.28)	20.70 (2.17)
Self-reported effort	12.74 (2.70)	13.62 (1.58)	11.80 (2.04)	13.73 (1.70)
Judgements of memory	9.97 (2.62)	10.31 (1.67)	11.80 (2.48)	11.00 (1.92)

NOTE: Ranges of scores for Evaluative measures were: 0-30 for Film enjoyment, 0-42 for Dialogue and voice appreciation, and 0-18 for Self-reported effort and Judgements of memory.

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TABLE 7. Correlations among cognitive and evaluative measures for the whole sample

	1	2	3	4	5	6	7	8	9	10.
1. Subtitle use during experiment	-	-.26**	.002	.11	.06	-.18	-.20*	-.16	-.15	-.10
2. Reported frequency of subtitled film use in general	-.26**	-	.08	-.07	.04	.23*	.18	.10	.17	.13
3. General comprehension	.002	.08	-	.24**	.08	.20*	.10	.16	.12	.19*
4. Dialogue recognition	.11	-.07	.24**	-	.20*	.31**	.21*	-.13	.24*	.18
5. Face-name association	.06	.04	.08	.20*		.14	.08	-.04	.09	.09
6. Visual scene recognition	-.18	.23*	.20*	.31**	.14	-	.32**	-.16	.32**	.21*
7. Film enjoyment	-.20*	.18	.10	.21*	.08	.32**	-	.04	.38**	.32**
8.Dialogue and voice appreciation	-.16	.10	.16	-.13	-.04	-.16	.04	-	.16	.35**
9. Self-reported effort	-.15	.17	.12	.24*	.09	.32**	.38**	.16	-	.51**
10. Judgements of memory	-.10	.13	.19*	.18	.09	.21*	.32**	.35**	.51**	-

**. Correlation is significant at the .01 level (2-tailed). *. Correlation is significant at the .05 level (2-tailed).

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