Using subtitling to improve military ESP listening comprehension: An experimental study

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Abstract

This article offers new applications on the use of audiovisual translation as a task within the framework of task-based learning and the effect it has on listening comprehension. In addition, it seeks to expand the limited academic information and literature related to the use of subtitling as a language learning tool for students without translation training, specifically within the context of English for the military or English for the security forces. On the other hand, within the area of English for Specific Purposes, and more specifically English for the military, its aim is to provide the basis for future research within that context for the use of subtitled audiovisual material (both interlingual and intralingual) and audiovisual translation, as well as other audiovisual translation modes such as dubbing and audio description. It also offers a critical review of the use of a virtual learning management system in the provision of authentic audiovisual material and the teaching and subsequent execution of subtitling tasks. The study was carried out in an entirely virtual environment, with the aim of creating a positive impact on the teaching and learning of audiovisual translation, especially in traditional translator training programs, providing a model of how audiovisual translation subjects can be taught in an entirely virtual form, taking advantage of available software applications and encouraging a greater use thereof.

Keywords: English for Specific Purposes, listening comprehension, subtitling, audiovisual translation, task-based learning.

Resumen

Mejora de la comprensión oral en el inglés militar para fines específicos mediante la subtitulación: estudio experimental

Este artículo ofrece nuevas aplicaciones sobre el uso de la traducción audiovisual como tarea dentro del marco del aprendizaje basado en tareas y el efecto que esta tiene en la comprensión auditiva. Además, intenta ampliar la limitada información y literatura académica relacionadas con el uso de la subtitulación como herramienta en el aprendizaje de idiomas para los alumnos sin formación en traducción, específicamente dentro del contexto del inglés para militares o del inglés para las fuerzas de seguridad. Por otra parte, dentro del área del inglés para fines específicos, y más concretamente el inglés para lo militar, su objetivo es proporcionar una base para futuras investigaciones dentro de ese contexto para el uso de material audiovisual subtitulado (tanto interlingüístico como intralingüístico) y la traducción audiovisual, así como otros modos de traducción audiovisual como el doblaje y la audiodescripción. También ofrece una revisión crítica del uso de un sistema de gestión de aprendizaje virtual en cuanto a la facilitación de material audiovisual auténtico, así como la enseñanza y la posterior ejecución de las tareas de subtitulado. El estudio se llevó a cabo dentro de un entorno íntegramente virtual, con el objetivo de crear un impacto positivo en la enseñanza y el aprendizaje de la traducción audiovisual, sobre todo en los programas tradicionales de formación de traductores, proporcionando un modelo de cómo se pueden impartir asignaturas de traducción audiovisual de forma íntegramente virtual, aprovechando las aplicaciones de software disponibles y fomentando un mayor uso de las mismas.

Palabras clave: inglés para fines específicos, comprensión oral, subtitulación, traducción audiovisual, aprendizaje basado en tareas.

1. Introduction

English is indisputably the international *lingua franca*. Not only is it used for individual purposes, such as international travel, but also for collective purposes, such as humanitarian aid, peace missions, international law enforcement, and military operations. The use of English for international communication in political and diplomatic dialogue is unquestionable. Globally, however, "the ratio of native to non-native [English speakers] is 1:3" (Crystal, 2003: 69). English has become an international language "for one chief reason: the power of its people – especially their political and military power" (Crystal, 2003: 9). English-language dominance in international communication along with technological breakthroughs now form a unique pair that has paradigm-changing potential for language teaching and learning. Multimedia products, such as television and film, are no longer considered hard-to-get items, but rather readily available for

anyone with an Internet connection. These products, when combined with new technology and the correct methodology, prove to be extremely beneficial for language learning purposes.

This study is a direct result of a need identified by NATO for members of its International Security Assistance Force (ISAF) mission in Afghanistan to improve their English in terms of military specific terminology, radio communications, and unit operational planning. ISAF's training and transition teams, collectively referred to as Security Force Assistance Teams (SFATs), are responsible for training and advising the Afghan National Security Forces (ANSF). Since this is a NATO-led initiative, the ability to communicate in English is paramount for the mission, but unfortunately, in 2009 a need for team members to improve their English language skills prior to deployment was identified (Embree, 2009), as the military-specific English language abilities of the SFATs were not sufficient.

As a result, the "Mission-related English for Operational Mentor and Liaison Teams" were developed:

> The two-week, intensive Mission-Related English (MRE) for Operational Mentor and Liaison Teams (OMLT) workshop is designed for international military personnel preparing to embed with the Afghan National Army. Participants enhance their language skills in English for Specific Purposes through learning, reviewing and practicing time-sensitive radio call formats and reports, and battle drill terminology in context (George C. Marshall European Center for Security Studies, 2010: 1).

However, there were not enough resources to send all members of the team to the in-person workshop at the Marshall Center.

This study suggests that a possible solution to this problem could lie in the professional task of subtitling used as a didactic tool for language acquisition purposes to increase listening comprehension skills, via military radio when delivered through an online learning management system. Recent academic research (Lertola, 2012; Neves, 2004; Sokoli, 2006; Talaván Zanón, 2006, 2007, 2009, 2010a, 2010b, 2011; Williams & Thorne, 2000) shows positive results with respect to the use of subtitling, an audiovisual translation mode, as a task for non-translator language learners to increase language acquisition, and more specifically, improve their listening comprehension skills (Talaván Zanón, 2006, 2007, 2009, 2010a, 2010b, 2011) and vocabulary acquisition (Lertola, 2012). These studies have only been conducted within

the context of general language learning; there has yet to be a significant project dedicated to examining the use of subtitling as a learner task within the context of English for Specific Purposes (ESP). Furthermore, the studies have all been conducted in traditional classroom settings utilizing computer labs to carry out the experiments as opposed to via online learning.

Even before researchers began to investigate the possibility of audiovisual translation as a didactic tool, since as early as the mid-1970s there has been an interest in the use of commercially subtitled audiovisual material in language learning, and substantial research has been conducted and published relative to its use (Baltova, 1994; Bird & Williams, 2002; Dollerup, 1974; Garza, 1991; Markham, 1989; Neuman & Koskinen, 1990; Price, 1983; Vanderplank, 1988, 1999, 2010; Williams & Thorne, 2000; Winke et al., 2010). However, what remains to be explored in depth is the use of audiovisual translation, in this case subtitling as a learner task, in second language acquisition (Vanderplank, 2010) with respect to listening comprehension when applied to English for Specific Purposes.

Therefore, the purpose of this study is to test the effect of subtitling as a learner task on listening comprehension by comparing (1) a subtitling task and (2) the viewing of subtitled audiovisual material to listening comprehension via military radio, all in an online learning environment. The desired outcome of this study is to provide new insights into the use of audiovisual translation as a learner task and the effect that this task has on listening, vocabulary acquisition, and content knowledge. It is also intended to contribute to the scarce information and scholarly writing on the use of subtitling as a language learning task for non-translators – in particular within the context of ESP.

2. Literature review

Since the mid-1970s, researchers such as Dollerup (1974) have been studying the possible uses and effects of commercially subtitled audiovisual material in language learning. Most studies, however, have focused primarily on the use of existing captioned and subtitled audiovisual material (Bird & Williams, 2002; Danan, 2004; Garza, 1991; Neuman & Koskinen, 1990; Vanderplank, 2010). Although a press release from the European Commission states that "subtitling is a spectacular tool for helping people learn languages easily and enjoyably" (EUROPA Press Releases, 2007: 2), the fact remains that "research on

subtitling as a medium for language learning is almost non-existent" (Williams & Thorne, 2000: 218). Furthermore, Vanderplank (2010: 17) adds that "there have been few reports of the value of captioning or subtitling of programmes as an aid to developing language knowledge and skills". Since that time, several significant studies (Lertola, 2012; Neves, 2004; Sokoli, 2006; Talaván Zanón, 2006, 2007, 2009, 2010a, 2010b, 2011; Williams & Thorne, 2000) have been developed on subtitling as a learner task.

According to the results of the aforementioned studies, it can be concluded that subtitling as a task for language learners may increase language acquisition, be it in the form of listening comprehension, vocabulary acquisition, or language awareness. Williams and Thorne's (2000) groundbreaking study provided anecdotal results opening the field for further research and reigniting the debate about the place of audiovisual translation in foreign language learning. Talaván Zanón's (2006, 2007, 2009, 2010a, 2010b, 2011) conclusions from the studies conducted within the context of listening comprehension in learners of English, provide a solid theoretical and experimental foundation for further research in the form of both replication and extension. Thus, we applied the same techniques to test the effects of subtitling as a learner task on the listening skills of learners of English, but within the unique context of English for military purposes.

Drawing on the statistical results of previous studies confirming that the subtitling condition does improve the listening comprehension of learners of English, Lertola (2012) considered the effect of the subtitling condition on incidental vocabulary acquisition. The present study continues in the same vein, relying on the foundational work provided by Lertola (2012) to determine the effects of subtitling on incidental vocabulary acquisition within the ESP context of English for the military. While the existing studies have been implemented in face-to-face teaching environments, one of the main recommendations is to use the subtitling technique in virtual learning environments owing to its flexibility:

> One of the major advantages of the strategy presented in this proposal is the technological support it offers, that makes it possible to use it in both face-to-face and distance learning environments. In this context, the ideal situation is for the strategy to be integrated in a multimedia software or online courseware (Talaván Zanón, 2006, p. 41).

This study embraces this suggestion, has been designed for a wholly virtual environment using an online learning management system, and is

fundamentally based on Krashen's (1982, 1985) input and affective filter hypotheses. Audiovisual resources allow the teacher to choose material that, due to its authenticity (it was originally created for speakers of the target language), not only provides the necessary context for language acquisition to take place, but also incorporates material that students may be interested in, which may result in a lower affective filter and increased motivation. With respect to comprehensible input, audiovisual media allow the audience the opportunity to "view the message as much as listen to it" (Baltova, 1994, as cited in Danan, 2004: 67). In accordance with the affective filter hypothesis, "language learning must take place in an environment where learners are 'off the defensive' and the affective filter (anxiety) is low in order for the input to be noticed and gain access to the learners' thinking" (Krashen, 1982: 127). The use of audiovisual materials in the classroom contributes to lowering the affective filter, given the fundamental entertainment value of audiovisual material in and of itself.

For Borras and Lafayette (1994), the use of captioned audiovisual material can be a means of lowering this affective filter. They claim that the students who work with captioned media tend to have a more positive attitude than those not presented with this resource. This positive attitude is reinforced by the instantaneous feedback and check on understanding that captions provide to the learner. Positive attitude and increased motivation, according to Krashen, yield a low affective filter and allow for more comprehensible input to make it through to the language acquisition device.

Using subtitling as a task not only provides the student with an opportunity to interact with contextually-rich whole language, but also adds the benefit of increased motivation, as students are likely to see the task as an entertaining activity with content that is of their interest and with the outlook that the task could be used outside of the formal classroom environment. With respect to increased motivation and entertainment, Neves (2004) observed:

> Experience has shown that, while learning how to subtitle, students gain a greater command of language usage, in the broadest of senses, and above all, and pleasure in manipulating text to achieve the best possible results (Neves, 2004: 138).

As Williams and Thorne (2000: 217) make clear, "even for students who have no desire to work in the media, the combination of aural, visual and

written elements required in order to subtitle competently makes it unique as a language-learning tool". Also informing this study, Communicative Language Teaching (CLT), or the Communicative Approach, is based primarily on the theory that the purpose of language is communication (Brandl, 2007) and thus, the learners' goal is to achieve "communicative competence" (Hymes, 1972), which involves linguistic, sociolinguistic, discourse, and strategic competences, refers to a language user's knowledge with respect to grammar (syntax and morphology) and phonology, as well as social knowledge about how and when to use the language appropriately (Canale & Swain, 1980). Savignon (2002) sums up that the essence of CLT is "the engagement of learners in communication to allow them to develop their communicative competence" (Savignon, 2002: 22). CLT is based on and includes multiple theories from various fields and "derives from a multidisciplinary perspective that includes, at the least, Linguistics, Psychology, Philosophy, Sociology, and Educational Research" (Byram & Hu, 2013: 136) and "Cognitive Science, Educational Psychology, and Second Language Acquisition (SLA)" (Brandl, 2007: 6).

Task-based language teaching, a method consistent with the Communicative Approach, is an integral part of the framework of the present study.

3. Methodology

According to Nunan (1992), action research in language learning "is initiated by the practitioner and is derived from a real problem in the classroom which needs to be confronted" (18). In practice, action research allows for a language teacher to carry out research themselves, in their own environment based on a desired improvement or a known problem, and involves stating the improvement or problem, conducting an initial inquiry, formulating a hypothesis, testing different ways to 'treat' the problem, analyzing the results, sharing the findings, and implementing the change.

Based on Anthony's (1963) hierarchy for language teaching, in which he distinguishes between approach, method, and technique, the pedagogical knowledge claims for this study were based on CLT and ESP as approaches, and Task-Based Language Teaching (TBLT) is the method employed. Central to the core of this study in terms of research design is the experimental treatment. The treatment that the experimental group was exposed to, known as the experimental treatment or the independent variable, is a task as defined within the context of TBLT: the subtitling task.

TBLT is essentially a method (a procedural plan for presenting and teaching of language) that focuses on authentic language in which learners utilize the language to complete meaningful tasks. TBLT as a method of language instruction incorporates tasks as the central focus of the language instruction, as opposed to a focus on form such as grammar and vocabulary. Instead of focusing learners' attention on the use of a specific linguistic construct, the task is the focal point, and the learners are therefore encouraged to utilize the whole of their linguistic knowledge in combination in order to complete the task. In the case of the present study, the task is the creation of interlingual subtitles from videos released by NATO's ISAF mission in Afghanistan from 2001 to 2014. Listening comprehension, the dependent variable, influenced the conception, design, and procedural aspects of the present study. While listening comprehension, as a core skill, can be found within the three modes of communication (interpersonal, presentational, and interpretive), this study focuses on listening comprehension within the context of the interpretive mode. That is, "interpretation of meaning in oral and printed texts [that] may also require a deeper knowledge of culture in order to gain a cultural interpretation of a text" (Shrum & Glisan, 2009: 155).

In her 2013 publication entitled *"La subtitulación en el aprendizaje de lenguas extranjeras"* ['Subtitling in Foreign Language Learning], Talaván Zanón provides extensive information on the use of subtitles and subtitling as a learner task. In addition to the theoretical foundations provided, she proposes a model for language teachers to incorporate the subtitling task aimed at increasing listening comprehension skills, which includes pre-viewing activities, the central subtitling task, and post-viewing activities. While this model constitutes the didactic framework for the present study, it does not include details regarding specific subtitling processes, and thus we have combined it with a specific framework for subtitling processes, as proposed by Neves (2004), that is based on general and audiovisual translation theories.

The population of our experiment included commissioned and non-commissioned professional career members of the Spanish Navy enrolled in intermediate level English courses taught through the Spanish Navy Language School (*Escuela Militar de Idiomas,* EMID), at the Naval Station of Rota (Cádiz, Spain) and also members of the Spanish Army enrolled in the intermediate level English course taught at the Spanish Military Engineers' academy in Hoyo de Manzanares (Madrid, Spain). The sample for this study

consisted of 46 students, with convenience-based selection used to identify participants from the specified population that met the following criteria: be a member of the military of one of the NATO or Partnership for Peace (PfP) countries, and possess an intermediate English level as demonstrated with a minimum 2-2-2 Standardized Language Profile (SLP) for listening, speaking, and reading in accordance with NATO Standardization Agreement (STANAG) 6001, valid within the past three years.

Based on the research purpose and questions, a true experiment was conducted to test the proposed hypotheses and a simple two-group design was used: the *pre-test post-test randomized controlled trial*. Participants were randomly assigned to either the experimental or the control group based on matched pairs, which involves "establishing pairs of participants with similar scores on a variable known to be related to the dependent variable (DV) [with] random allocation of members of pairs to different experimental groups or to an experimental and control group" (Robson, 2002: 105). Participants were divided into matched pairs using the Test of English for International Communication, or TOEIC ®, Sample Test for blocking. The overall assignment of the participants to the groups and the blocking on pre-test TOEIC ® scores is graphically displayed in Figure 1.
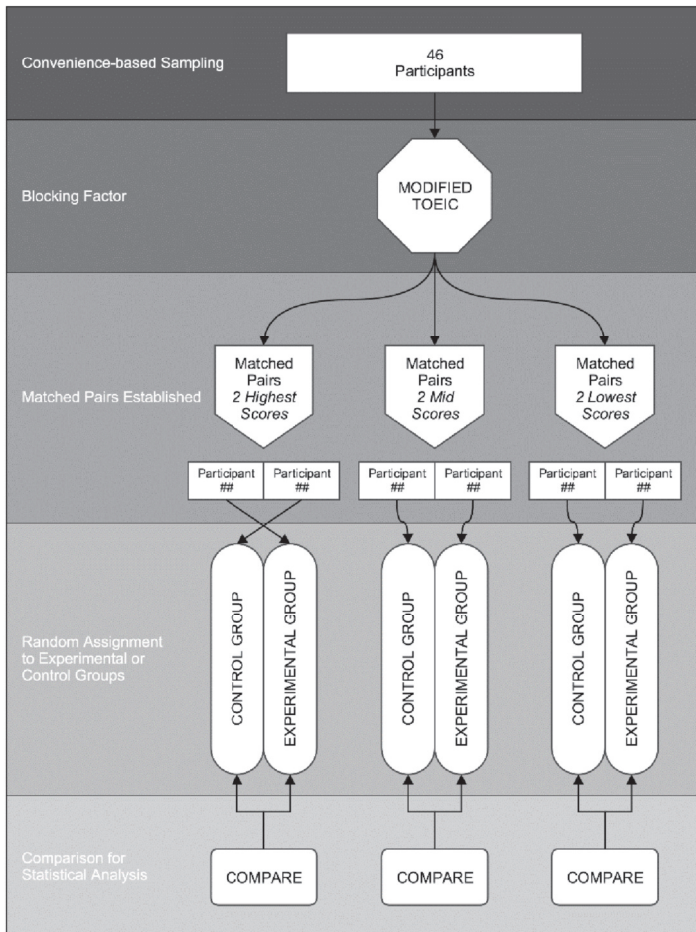
Figure 1: Blocking on the TOEIC ® to form matched pairs.

Because the TOEIC ® was used as the blocking factor to increase randomization, it was important to also examine whether or not any relationship between the results on this blocking factor and any external variables existed. Any relationship between these external variables and this blocking factor could potentially skew the results of the randomization used to form the matched pairs. In order to answer this question, the coefficient of correlation was calculated to compare participant age and NATO rank to the results on the TOEIC ®. Pearson's product-moment correlation coefficient (Pearson's r) is used to determine the existence, or not, of a linear relationship between variables, represented by a *p-value*, and the strength of

that relationship, represented by the *r-value*. Statistically speaking, when a correlation coefficient is $R = 1.0$ this signifies a perfect positive linear correlation, whereas when $R = -1.0$, the correlation is said to be a perfect negative correlation. According to Cohen (1988), the strength of the relationship between variables using the *r-value* can be interpreted as either weak when $|r|$=0.1 to 0.29, moderate when $|r|$=0.3 to 0.49, or strong when $|r|$=0.5 to 1.0. Pearson's *r* was calculated for the relationship between each variable, resulting in *r*-values between -1.0 and 1.0, indicating that there was no linear relationship between any of the variables. This is an important finding as it applies to the randomization of assignment to either the Control or Experimental Group, and supports the creation of homogenous groups for study. All relationships were investigated using Pearson's *r* and analyses were performed to ensure no violation of the assumptions of normality. There was a weak negative correlation between the TOEIC ® and Age, a moderate positive relationship between TOEIC ® and NATO Rank, and a weak negative relationship between NATO Rank and Age, as displayed in Table 1.

Variable	TOEIC ® %	AGE	NATO Rank)
TOEIC ® %	1.0000	-0.2047	0.4064
AGE	-0.2047	1.0000	-0.0870
NATO Rank	0.4064	-0.0870	1.0000

Table 1: External Variable and TOEIC ® Correlation Coefficient R-Values.

There was one experimental group, which was given the experimental treatment, and one control group, which carried out a parallel activity similar to the independent variable. Figure 2 illustrates the design, whereas R represents random assignment, O represents a measurement, and X represents experimental treatment.

Experimental Group O_P ----- R ----- O_1 ----- X1 ----- O_2

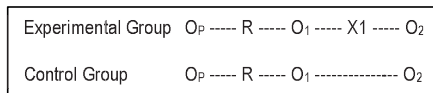Control Group O_P ----- R ----- O_1 -------------- O_2

Figure 2: Experimental Design.

Next, utilizing the online course management software, Canvas, participants were divided into two online course sections corresponding to their group of assignment. Participants then began to work through the 5 modules. Modules 1 and 5 were the same for all participants, regardless of their Group

of assignment, and consisted of the pre- and post-listening comprehension tests. The gap-filling tests employed for measuring the dependent variable were pre-existing cloze assessments already in use at the Tactical Communications English Workshop. The first pre-treatment listening assessment was created from a NATO-released video of the 82nd Combat Aviation Brigade helicopters and the radio traffic between the pilots and their dispatch base. Each group then worked through 3 unique additional modules, wherein the subtitling treatment was applied to the Experimental Group and a parallel activity was given to the Control Group. The modules were asynchronous, self-paced and participants were given a window of 6 weeks to complete the modules.

In order to avoid the need to download and install complicated software, this study made use of an online subtitling platform called Amara. Amara "is home to an award winning subtitle editor that makes it easy to caption and translate video […and] also hosts volunteer localization & accessibility communities, and offers professional tools and services for subtitles" (*Amara.org*, n.d.). After working through Module 3, participants in the Experimental Group moved on to Module 4, the subtitling task, which consisted of basic preparatory information regarding the requirements of the task and provided the video as well as the spotting in .srt format. Because the subtitling intervention was for language learning purposes, and not for the explicit training of subtitlers, the .srt file was provided in an effort to save time when working in the subtitling platform. The clip that was subtitled consisted of B-roll footage that was again taken from helicopters belonging to the US Army's 82nd Combat Aviation Brigade. The pilots are "observing insurgents in the act of emplacing an Improvised Explosive Device in southern Afghanistan" (*Self Destructing IED*, 2009). The clip's length is approximately 2 minutes and 55 seconds and includes a total of 59 subtitles. For the Control Group, the parallel treatment that was applied consisted of viewing subtitled audiovisual material. The Control Group was shown the same video that was used as the subtitling task in the experimental treatment, but in this case, the video included the English-language captions, subtitles that "are composed in the same language as the source text speech" (Pérez-González, 2009: 15).

Lastly, the military radio listening comprehension post-treatment assessment was administered as Module 5. This post-test provided the data used to analyze the subtitling task intervention. Upon completion of the course content, all participants were given the end-of-course survey, which provided

an opportunity for participants to express their feelings on the use of the online learning management system. Depending upon their group of assignment, participants were also asked questions regarding the use of audiovisual material and subtitling as a task.

4. Presentation of Data, Analysis, and Discussion

In order to best understand how the data supports the overall results, they are presented here concurrently with the discussion of the results and will be revisited in the conclusions section. Keeping in mind that the purpose of this study was to test the effect of subtitling on listening comprehension, the study's hypotheses were: 1. The Experimental Group's scores on military radio-based listening comprehension assessments will be higher than those of the Control Group as a result of the subtitling task; 2. The Control Group's scores on military radio-based listening comprehension assessments may increase as a result of viewing subtitled audiovisual material; and 3. The Experimental Group will state that the learning management system supports subtitling as a task for learners of English for the military.
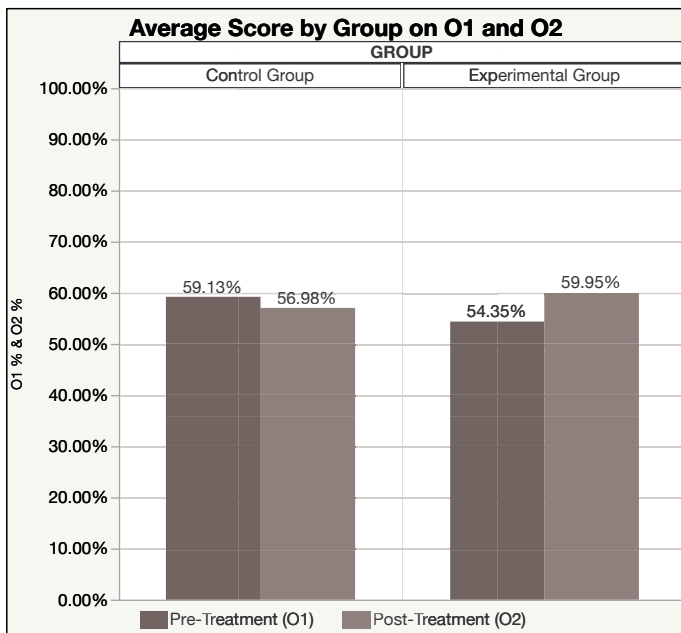

Figure 3: Average Score by Group on O_1 and O_2.

Overall, we can see that the Control Group's average score decreased from 59.13% to 56.98%, a difference of 2.15 percentage points, while the Experimental Group's average score increased from 54.35% to 59.95%, a difference of 5.6 percentage points. The analysis indicated that this was a statistically significant difference in score improvement between the groups (p = 0.0316). Analysis of the model residuals indicated that no assumptions were violated (constant variance, normality of residuals). Figure 3 highlights the increase in average scores obtained from pre to post-test observation, O_1 and O_2, by group. Upon calculation of the percent increase, this comes to a 10.3% increase in average score by the Experimental Group and a 3.64% decrease in average score of the Control Group.

Given two groups, homogenized on the dependent variable, this information shows that the Experimental Group, which received the intervention, performed better than the Control Group on the post-test. The data supports Hypothesis 1, "The Experimental Group's scores on military radio-based listening comprehension assessments will be higher than those of the Control Group as a result of the subtitling task". The experimental design, to include the random assignment of participants to the groups based on the blocking factor, and the controls in place, ensures that this 10.3% increase in scores can be attributed to the intervention – the subtitling task. For both the sample and the population under study, the score increase on listening comprehension assessments can be attributed to the experimental treatment.

With respect to Hypothesis 2, the data shows that the Control Group's scores decreased as a result of viewing subtitled audiovisual material by 2.15 percentage points, a 3.64% decrease. In order to determine how this may relate to the larger population, a one-sample *t-test* was performed to test the null hypothesis that the Control Group's scores did not change as a result of viewing subtitled audiovisual material. The analysis indicated that there was not a statistically significant difference in score improvement between the groups (p = 0.8916). Therefore, we cannot say that the population would necessarily increase their scores on military radio-based listening comprehension assessments as a result of viewing the subtitled audiovisual material.

The study also aimed at providing information related to the Independent Variable, the use of the online learning management system. With regard to this, we presented a hypothesis that "the Experimental Group will state that the learning management system supports subtitling as a task for learners of English for the military". The data were obtained via the completion of a

participant survey by the Experimental Group at the end of the experimental procedure, with Likert-style questions and level of agreement with the statements. The analysis of data showed that the Experimental Group provided positive feedback related to the use of both the Canvas online learning management system and the Amara subtitling platform for the subtitling intervention.

This study is the first of its kind to take advantage of an online platform for an experiment involving subtitling as a learner task for the improvement of listening comprehension. These positive results are quite encouraging given the novelty of this investigation and the military context. Implementing a subtitling task for learners of General English, English for Specific Purposes and the learning of other languages deserves further study as to its feasibility and viability. Taking advantage of advances in technology, paired with the constant presence of digital devices in our society, implementing this technique online is a way to further engage learners on their terms, utilizing a medium with which they are already familiar, feel comfortable, and in which they are, in many cases, proficient. With respect to Krashen's (1982) affective filter hypothesis, the use of familiar platforms for delivering content and implementing techniques may be a way of lowering the affective filter and increasing language acquisition, for example. The findings confirm that the use of a learning management system indeed supports subtitling as a task for learners of English for the military, as reported on the end-of-course surveys by research participants. Given the qualitative nature of these findings, the statistical analysis of these responses cannot be applied in the same manner as those from the primary research questions. However, the positive feedback obtained serves as foundational for further study, providing a solid base for designing and carrying out more experiments within the realm of action research to learn more about the use of online learning management systems and subtitling as a learner task.

As a whole, the results of the study are thus positive. Given the unique features of the context, without a face-to-face interaction, the self-guided and autonomous nature of the course yielded data that may be analyzed within the design of the experiment to show that the use of this intervention increased listening comprehension skills via military radio. Furthermore, the positive results are encouraging with respect to the ESP context under study. This novel approach to the use of the subtitling task is altogether affirming for further study in this area, and the optimistic feedback given by participants regarding the use of the online systems provides a solid

foundation for follow-up research within this area and the application of learning via subtitling for non-translators in the future. The study took advantage of authentic material in the form of NATO-released videos from Afghanistan and U.S.-released videos from Iraq to implement the subtitling task via an online learning management system. This model provides a low-cost alternative to face-to-face classes, and uses open-source materials, including the online management system, as well as the videos and the subtitling platform. It shows that the intervention under study is not only viable as a tool for increasing listening comprehension and communication by military radio, but also that the online mode of delivery is equally viable from both a cost and a management perspective. The positive findings indicate that the technique of subtitling as a learner task increases radio-based listening comprehension skills in learners of English for the military.

While the study's primary foundation was based on the use of subtitling as a learner task, the secondary hypothesis attempted to answer the question "To what extent do scores on military radio-based listening comprehension assessments increase as a result of viewing subtitled audiovisual material by learners of English for the military". Because the Control Group received a secondary, parallel treatment which consisted of viewing subtitled audiovisual material, the hypothesis that their scores might also increase as a result was based primarily on existing research (such as that by Koolstra & Beentjes, 1999; Markham, 1989; Neuman & Koskinen, 1990; Price, 1983; Vanderplank, 1988, 1990, 1999). Our data, however, did not support the rejection of the null hypothesis and therefore the answer to the research question is that the scores on military radio-based listening comprehension assessments did not increase as a result of viewing subtitled audiovisual materials assigned to the Control Group. The scores decreased by 2.15 percentage points, a 3.64% decrease from pre-treatment to post-treatment assessment.

While there may be several explanations for this decrease, one of the most logical may be related to the concept of 'cognitive load' (Sweller, 1988, 1994) with respect to the Dual-Coding Theory (Paivio, 1990) and the Cognitive Theory of Multimedia Learning (Mayer, 2005). Cognitive load deals with the capacity of the working memory and the mental exertion required to process information stored there. Dual-coding theory holds that input comes via two separate channels, one for verbal input and another for non-verbal, and that each type is then processed by separate brain systems. In language-teaching this could be exemplified by teaching new vocabulary words either with

pictures and the written words together versus either the word or the picture alone. The dual-coding theory supports the use of subtitled audiovisual material in language learning, but Mayer's Cognitive Theory of Multimedia Learning challenges this idea under certain circumstances. The basic Cognitive Theory of Multimedia Learning posits that there are two main channels for processing information (aural and visual) and that we have a limited capacity for processing this information. According to Mayer's theory, "in the process of trying to build connections between words and pictures, learners are able to create a deeper understanding than from words or pictures alone" (Mayer, 2005: 5).

While the use of subtitles may be supported by the Cognitive Theory of Multimedia Learning and the multimedia principle, this violates the so-called redundancy principle as reported by Clark and Mayer (2016): "when the instructional message includes graphics, explain the graphics with narration alone […] do not add redundant on-screen text" (2016: 68). However, although it may violate this principle, adding subtitles may prove to be helpful for students who are not native speakers of the language as "helping students learn in a second language may be a special case" (Clark & Mayer, 2016: 68). This point of view supports the efficacy of viewing subtitled audiovisual material for improving comprehension. Why, then, may this not have been the case for the present study, if so many other researchers have reported positive results? According to a 2014 study conducted by Lee, Mayer, and Peebles, "adding subtitles to fast-paced video narrated in English did not help non-native English speakers" (Clark & Mayer, 2016: 68). Due to the use of authentic audiovisual material in this study, the videos were very fast-paced. The specific video chosen for the Control Group's parallel activity had a speech rate of approximately 190 words per minute. Given this, according to Clark and Mayer (2016), an explanation may be that the pace of the video paired with the written and spoken text may have caused some level of cognitive overload. This fast-paced video used by the Control Group may provide an explanation for the results with respect to Hypothesis 2. If a different video with a slower speech rate had been utilized, the results might have been more aligned with those obtained in the studies carried out by other researchers.

Although the null hypothesis could not be rejected for the second hypothesis, the use of subtitled audiovisual material to increase listening comprehension skills does have merit and further research is necessary. Moreover, this technique should continue to be investigated in terms of

online delivery via a learning management system. Implementing this technique while incorporating the principles proposed by Clark and Mayer (2016) regarding e-learning and multimedia learning theory is of particular interest. This technique not only continues to be used for general language learning, but further research into the utility of subtitled audiovisual material in the languages for specific purposes context is also in order.

With respect to the principal hypothesis, after data analysis the subtitling intervention given to the experimental group did have a positive effect on the participants' scores on the radio listening comprehension tests. However, according to the analysis evaluating the second hypothesis, the scores on the radio listening comprehension assessments did not improve after viewing subtitled audiovisual material, and therefore the analysis does not allow for rejection of the null hypothesis. It must be kept in mind that the information from the survey data is not generalizable to the population, and that the results are generally positive regarding the use of the Canvas learning management system and the Amara subtitling platform. Overall, participants either chose to "agree" or "strongly agree" with the positive statements concerning the use of these online systems.

5. Final conclusions and further research

The results of this study fully support the subtitling task as an intervention for language learners along with its implementation via online learning management systems. While further research is necessary, these findings can be used to support practitioners in the field of Language Education to incorporate these techniques into their instructional practices and curricula. Furthermore, practitioners are called upon to continue undertaking action research within their own educational contexts and thus contribute to the state of the art, shaping language-teaching methodology in their own environment and in the larger language education community.

This study lays the foundation for further research on the use of subtitling as a task for learners of English, especially for those fields of English for Specific Purposes (ESP) that involve communication by radio and telephone, to include audiovisual communication such as videoconferencing and videocalls. Furthermore, this study opens the door to much-needed additional research on the use of online learning management systems to implement the language teaching technique of subtitling as a task.

This intervention should be studied for use with pilots and air traffic controllers, maritime professionals, and emergency services such as police, fire brigades, and emergency medical teams. These occupations require the use of communication via radio and/or telephone, and often in English. Similarly, the use of subtitling as a learner task has also been applied to language learning for languages other than English (Lertola 2012).

One of the most important outcomes of this study is the information obtained regarding the ease of use of the online learning management system, paired with the challenges that arose in designing the subtitling task. As education and training are increasingly moving to an online format, there is an urgent need for a platform to be designed specifically for subtitling as a learner task that will integrate seamlessly into modern learning management systems, such as Blackboard, Moodle, and ConnectEDU. Of utmost importance is that this platform be entirely web-based, requiring no software download, and with mobile capability.

This study has shown great promise for subtitling as a learner task in increasing listening comprehension of learners of military English. Given the use of the English language in international military, peacekeeping, security, public health, and safety contexts, the importance of innovative and effective language instruction techniques cannot be denied. Further research is necessary in order to find out more on the intersection of audiovisual translation and language learning. In addition, we should also continue to inquire and learn about the use of subtitling within other categories of language learning, different linguistic combinations, and different delivery methods.

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