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SUBTITLING FOR THE DEAF AND THE HARD-OF-HEARING: SOME PARAMETERS AND THEIR EVALUATION

TESIS DOCTORAL

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3. Acronym Glossary

- AENOR (*Asociación Española de Normalización y Certificación):* Spanish Association for Standardization and Certification. Non-profit organisation that contributes to improving the quality and competitiveness of companies, products and services through the development of technical standards and certification.

- AICE *(Asociación de Implantados Cocleares de España)*: Spanish Association of Cochlear Implanted People.

- Arans-Bur (*Asociación de Familias de Personas Sordas de Burgos*): Association of Deaf People's Families of Burgos. Association for the hearing re-education of deaf children.

- Character ID: Character identification.

- CESYA (*Centro Español de Subtitulado y Audiodescripción*): Spanish Centre of Subtitling and Audiodescription. Public Reference Institution in Spain under the Royal Board on Disability of the Ministry of Health and Social Affairs. It was created to promote accessibility to the audiovisual media.

- CMT (*Comisión del Mercado de las Telecomunicaciones*): Telecommunications Market Commission. Independent Public Body that regulates national electronic communications and audiovisual services markets in Spain.

- Cps: Characters per second. Also, in Spanish, '*caracteres por segundo*. Average number of characters, spaces and punctuation marks used per second in a subtitle. Alternative measure to calculate the subtitling and reading speeds.

- D: Deaf people. Different definitions can be provided according to the different perspectives related to the condition –medical, cultural, functional, psychological, sociological. For the aim of this study, a combination of both a functional and a cultural deafness were taken into account. Thus, by Deaf participants we refer to people without hearing remains and/or hearing aids that have Sign Language as their first language.

- DTV4All (Digital Television for All): Project funded by the European Commission under the CIP ICT Policy Support Programme, to facilitate the provision of access services on digital television across the European Union.

- ESIST (European Association for Studies in Screen Translation): Non-profit making association of higher education teachers, practitioners, academics and students in the field of audiovisual translation set up to facilitate the exchange of information and to promote professional standards in the training and practice of screen translation.

- H: Hearers/Hearing people. For the aim of this project, control group composed by individuals without hearing problems, in contrast to the two groups with hearing impediments –Deaf, Hard-of-Hearing.

- HoH: Hard-of-Hearing people. In contrast to the Deaf, in the present project the Hard-of-Hearing are individuals with hearing remains that, in most cases, depend on hearing aids to achieve a functional hearing. Functional and cultural conditions were considered to differentiate this group, using oral Spanish as their mother tongue, from those communicating in Spanish Sign Language –Deaf.

- MQD (Mira lo Que te Digo S.L.U.): Services Company aimed at removing barriers to communication.

- Ppm (‘*Palabras por minuto*’): Spanish. Words per minute. See ‘wpm’.

- RPD (*Real Patronato sobre Discapacidad*): Royal Board on Dissability. Public institution of the Spanish Ministry of Health and Social Policy. Its mission is to encourage prevention of impairments, rehabilitation and social integration of persons with disabilities, and to facilitate, in these fields, collaboration among entities, associations and private sector.

- SDH: Subtitles for the Deaf and Hard-of-Hearing.

- SDHH (Subtitling for the Deaf and Hard-of-Hearing): Alternative acronym only used by the author in Annex I. See SDH.

- Sec.: Seconds.
- SL: Sign Language. Visual language used by some Deaf people based on a combination of body language and manual configurations to convey meaning. It is a generic term to refer to the different signed languages used by the Deaf around the world.
- SPS (‘*Subtitulado para sordos/Subtitulado para Personas Sordas’*): Spanish. Subtitling for the Deaf and Hard-of-Hearing. See ‘SDH’.
- SSL: Spanish Sign Language. Sign Language used by the Spanish Deaf. Not a single variant exists.
- SUBSORDIG (*Investigación y desarrollo de criterios para la elaboración de subtítulos para sordos en la televisión digital*): Research and development of the criteria regarding the creation of subtitles for the Deaf and Hard-of-Hearing for digital television. Research project funded by the Spanish Ministry of Work and Social Affairs.
- Wpm: Words per minute. Average number of words included in a subtitle per minute. Measure used to calculate the subtitling and reading speeds.

4. Introduction

This study began with an MA dissertation started in 2006 (Arnaiz-Uzquiza, 2007a) at the Universitat Autònoma de Barcelona. That research project entitled 'Subtitling for the Deaf and Hard-of-Hearing in Spain' aimed at developing a glossary on the sound tags included in the subtitles for the Deaf and Hard-of-Hearing (SDH). This study was the first contact with the SDH discipline in Spain and the lack of a solid corpus for analysis led to a radical change from the initial approach. The study revealed a remarkable variety of sound tagging styles which varied according to: in-house guidelines, broadcasters' requests and media or aesthetic changes resulting from technological change. This panorama, which made impossible the development of the initial target, helped to raise the need to define the actual context where the practice of subtitling (SDH) takes place in Spain.

Subtitling for the Deaf and Hard-of-Hearing is usually hidden from society – beyond the target user– making its research be traditionally conditioned by a user-oriented approach. Descriptive studies on current practices and user preferences have lead research on the field up to date, providing changing data in different national and international contexts. This fact, together with a notable lack of stylistic rigor in the context of professional practice, stimulated the desire for further study of this modality. At the time of doing this research the current SDH Spanish standard was the UNE-153010 (Subtitling for the deaf and hearing impaired. Subtitling through teletext[1]). It was obsolete if we consider the medium to which it is intended: analog TV, Spain having completed the digital switchover in 2010[2]. On the other hand, the formal differences from the Spanish standard and practices in other European countries reinforced the idea that it was necessary to analyze the effect of these national variations in the target audience.

Given the need to update the SDH Spanish standard (AENOR, 2003) and to provide the standardization working group with scientifically contrasted data, it

[1] *Subtitulado para personas sordas y personas con discapacidad auditiva. Subtitulado a través del teletexto.* (AENOR, 2003)

[2] The new UNE 153010 Standard was published in June 2012 and has partly adapted its guidelines with data from this PhD.

seemed necessary to conduct a study looking at the many available subtitling options from a user centric perspective. The hypothesis was that improving readability and legibility would ease user reading efforts, and especially for users with hearing problems. The broadcasting digital switchover was considered by the many international broadcasting standardization agencies (European Broadcasting Union, International Telecommunication Union) as an opportunity to trigger access services to media content across Europe. The need to provide Pan-European guidelines and recommendations triggered the formation of a consortium of partners who joined forces to look into media accessibility in Europe through a EU-funded project under the CIP ICT Policy Support Programme[3]. The project, 'Digital Television for All (DTV4All)', provided the ideal context for conducting SDH user centric research at an international level, and compared Spanish data with other countries which were part of the DTV4ALL project. The development of this research in Spain and the results obtained to date are those covered in this work presented as a compendium of articles. The publications included here, arranged chronologically, start drafting a SDH taxonomy and then move to the user centric reception of subtitles –following perception patterns.

[3] Competitiveness and Innovation Programme (CIP) of the European Union for Information and Communication Technologies (CIT)

4.1 PhD Structure

The PhD is presented through a compendium of publications which follow the many stages and results from the research. Three articles make up the main body of this work, and others are attached here as an annex. This is due to the formal requirements of the UAB PhD School, since the UAB affiliation must be present in the articles endorsed for granting a PhD status. Editorial stylistic decisions regarding name of author and affiliation usually take place away from the process of revision and final galley proof corrections. This meant that some articles –all in the annex– didn't have UAB explicitly, only mentioning the research group TransMedia Catalonia, and couldn't be considered for this PhD. However the PhD was worked within a wider framework of the three articles, and only when looking at the whole compendium the context and research progression is understood. Nevertheless for formal requirements, the articles which form the main body of the PhD are now presented and contextualised.

1. '*Los parámetros que identifican el Subtitulado para Sordos. Análisis y clasificación*' ('The parameters that identify the Subtitling for the Deaf. Analysis and Classification'), *Monti: Monographs in Translation and Interpreting*, 4, (2012). (103-133).

Although many authors have analysed various SDH features, there are not many attempts at drafting taxonomic analysis of the entire discipline. This fact, however common in the area of interlingual subtitling, justified the development of a proposal specifically tailored to the study of SDH. To do this, and based on Bartoll's (2008) study for Subtitling in general, a taxonomy is here developed. The model is dynamic and allows for many variations found specifically when subtitling for the Deaf and Hard-of-Hearing. The new model proposed builds on Bartoll's adding the most representative elements of this type of visual accessibility: sound extralinguistic elements –and their representation. However, the taxonomy presented is not tight and static, due to the constant introduction of technological innovations in the audiovisual market.

2. 'Viewers' Opinion on SDH in Spain', in Romero-Fresco, Pablo (Ed.) *The Reception of Subtitles for the Deaf and Hard-of-Hearing in Europe*, Bern: Peter-Lang. (forthcoming)

Once the taxonomy and the many features were established the next issue was to define the intended user, given the fact that the research follows user centric design. Understanding the participants who would take place in the many tests and experiments was crucial, and was the departure point in the CIP ICT PSP project 'Digital Television for All' (DTV4All). DTV4All raised the need to carry out a study on the SDH user profile, preferences and practices when consuming audiovisual products across Europe. Thus, based on a project conducted by Jim Kyle in the UK in 1992 –'Switched on: Deaf people's views on TV subtitling'– an updated study of a similar nature was drafted. Although for the DTV4All project a pan-European questionnaire was produced, this article presents the consumer profile of SDH in Spain, gathering user views on the current practices of subtitling to which they are exposed.

After defining differential parameters of SDH in the field of Translation Studies, and after establishing a taxonomy, it was considered necessary to carry out a study of the reception of subtitles. Aspects related to sound extra-linguistic information (identification of characters, sound information representation and representation of music information, etc.) are the main elements of analysis in this part of the investigation presented here.

This article was submitted in November 2010, and confirmed its acceptance by the publisher in April 2012. At the time of writing this introduction is in press.

3. 'Viewers' Perception of SDH in Spain: An Eye-Tracking Study', in Romero-Fresco, Pablo (Ed.) *The Reception of Subtitles for the Deaf and Hard-of-Hearing in Europe*, Bern: Peter Lang. (forthcoming)

Still within the framework of the EU project DTV4All this article builds on the data from the previous article. Once established the user profile in Spain through questionnaires, the next step which was needed was to know the reading habits in

order to have empirical information on the reading process, beyond the study of comprehension. To do this a new research methodology and approach in Translation Studies was used. This work is pioneer, and marked the departure for eye-tracking research in the field. While eye-tracking is a tool commonly used in other disciplines –such as psychology or medicine– the article studied eye movements during subtitle reading, providing both numerical and graphical information. These data were supplemented by questionnaires, which helped to understand the data analyzed using the eye-tracker, and the information obtained in the previous process of identifying profiles. The analysis and resulting data provide valuable information not only on reading habits, but also on the self-perception of the reading process by the viewer.

This article was submitted in November 2010, and confirmed its acceptance by the publisher in April 2012. At the time of writing this introduction is in press.

4.2 Annexes

This section includes the articles which are part of the overall research topic, but can't be part of the main body of the PhD for administrative reasons. The PhD should take into consideration these contributions, since they help to contextualize the research background, the hypotheses, the methodology used and outcomes.

Annex I. 'Research on Subtitling for the Deaf and Hard of Hearing: TOP SECRET?', *Translation Watch Quarterly*, 3(2). (2007). (10-25)

This article reports on the results of the initial research and helped to map the practise of SDH in Spain. Gathering data from a corpus of TV media content and films with SDH helped to define –from a bottom up perspective– the landscape of the many practices of SDH in Spain. The outcome brings to light the heterogeneous practices within an existing SDH standard (UNE-153010). This article was a key contribution to revise the existing Spanish UNE standard and request to the standardization body to take into account ad hoc research data, which was taken on board for this PhD.

Annex II. '*La objetividad en el subtitulado: Justificación de los parámetros formales mediante Eye Tracking*' ('Objectivity in Subtitling: Validation of formal parameters through Eye Tracking'), in Pérez-Ugena, Álvaro and Ricardo Vizcaíno-Laorga (Coord) *ULISES y la Comunidad Sorda*, Madrid: Observatorio de las Realidad Sociales y de la Comunicación (2008). (73-82).

This paper examines the heterogeneity of SDH subtitling practices in Spain, based on Arnáiz-Uzquiza (2007) and the ESIST (2000) study 'Comparative Subtitling'. Departing from the many variations, and questioning its implications in the reading process, the article questions the need to further the study of these differences and their consequences using tools such as eye-tracking to obtain scientific data that yield objective results.

Annex III. ‘SUBSORDIG: The need of a deep analysis of data’, in Matamala, Anna and Pilar Orero (Eds) *Listening to Subtitles: Subtitles for the Deaf and Hard of Hearing*, Bern: Peter-Lang. (2010). (163-174)

This article presents the theoretical and methodological background for the research project whose results are contained in Articles 2 and 3 of the main body of the PhD. This is a descriptive study of initial contact with users. The first responses collected reflect the future direction of the research, emphasizing the empirical orientation required by the project. The contrast in the responses of different groups and the presence of behavioral differences, conditioned by exposure to arbitrary practices, justify the initial approach: the need to measure the reading process objectively.

Annex IV and **Annex V**. See 4.4.

4.3 Bibliography

While a broader number of publications and literature from adjacent disciplines were used for the research, the most relevant articles on SDH research can be found in the co-authored published article ‘A comprehensive bibliography on subtitling for the deaf and hard of hearing from a Multidisciplinary approach’ (Pereira and Arnáiz-Uzquiza, 2010). The selected works provide the basic literature on the specific field of SDH offering for the first time a much needed compilation for the study of SDH from a scientific perspective –against a professional or popular science approach. The bibliography is of particular interest because for the first time, a list has been drafted from an academic perspective, where publications have followed scientific research methodology and academic rigor has been applied to its publication. Since some years have passed from this article, the bibliography has been updated with the most significant publications. Both texts are included in the closing chapter ‘Annexes’ (**Annex IV** and **Annex V**)

4.4 Objectives and hypotheses

4.4.1 Objectives

The overall objectives are focused on defining and scientifically study SDH which are:

1. Based on a taxonomy developed for subtitling (Bartoll, 2008), to establish a framework for the study of all elements (parameters) that constitute the practice of SDH. The overall aim is not only standardize the terminology used to refer to the practice, but also to establish the starting point that allows hereafter to conduct a rigorous analysis taking into account the many features of SDH.

2. To put into question previous studies based exclusively on user preferences, where data was gathered exclusively through preference questionnaires.

3. To test, from a multidisciplinary approach, SDH and its different stylistic possibilities. The objective was to show the need for new analysis and information gathering –in this case eye-tracking– which was used previously in the field of psychology.

The specific objectives of the study would focus on those parameters, specific or not to SDH, that were evaluated within the DTV4All project: aesthetic parameters such as typographic features (use of font shadows and borders, and background boxes), subtitle placement or subtitle justification; extralinguistic parameters such as character identification, sound and paralinguistic information; and linguistic or technical parameters such as subtitling speed.

The ultimate goal is to establish if the arbitrary choice of different variables for the parameters has a measurable impact in the reading process. Thus, it is intended to determine which variable is more appropriate to prepare the SDH for each of the groups analyzed (hearing people, Deaf users –whose main language of communication is sign language and deaf users whose first or only language for communication is the spoken language).

4.4.2 Hypotheses

The main assumptions are:

1. Studies on SDH reception to date offer different results in different countries, often linked to the traditions to which users are exposed. If confirmed this fact, experiments based on subjective surveys would not be representative when analyzing the functionality of the parameters used in the development of SDH.

2. There are eye-tracking tools that identify patterns of reading developed by the spectators during the viewing of audiovisual works, and therefore reading of SDH. Given the different traditions of viewing –between deaf and hearing users– it is expected that viewing patterns for SDH will differ for each group.

3. In this regard, and given that the eye-tracking technique only provides a physical representation of reading, comprehension questionnaires to accompany the eye-tracking tests, will provide results that, in principle, should justify the data obtained in viewing tests.

4. The modification of some of the main parameters of subtitling, such as the position of the subtitle, or other specific to SDH, such as the identification of characters, the paralinguistic information representation and representation of information sound effects, could prolong difficult or simply alter the typical reading process for each user group.

4.5 Theoretical framework and methodology

The theoretical framework that has served as the basis of study for this PhD of is Translation Studies, and in particular Audiovisual Translation (AVT). Given the fact that studies on perception have been taken on board, literature from the field of Psychology has also been used within the theoretical framework of this PhD.

The stages in the research were:

1. First, it was decided to draw a map of SDH, using different sources and following a bottom-up methodological approach departing from: guidelines, standards, regulations, subtitling processes, practices and examples of subtitles in different genres (Annex 1). As reflected in Article 1, and from a top-down methodology based on Bartoll's taxonomy, a general framework of the discipline on which to base further study was drawn. Then the possibility of identifying the scan pattern of SDH reading by users through the analysis of eye movement through eye-tracking, and research based on reading patterns conducted in the field of Psychology.

2. Different studies were conducted, in order to gather data that allowed contrasting the subjective assessments without taking into account the influence of the habits that had been exposed, followed by a process that would triangulate results.

   a. Preference assessment (Articles 2 and 3). Preferences before and after the eye-tracking test would serve to gather subjective information of each user.

   b. Evaluation of observation (Article 3). In order to study possible variations in reading patterns motivated by the different styles of SDH, it was necessary to have a tool that would record the eye movements during reading. We used eye-tracking equipment. After recording the data, the analysis is carried out using specific programs that allow to select scenes or subtitles.

   c. Evaluation of understanding (Article 3). The results of eye-tracking tests were accompanied by comprehension tests to verify its validity. After viewing

each stimulus, a questionnaire allowed us to appreciate the understanding of the reading process.

5. Article 1

'*Los parámetros que identifican el Subtitulado para Sordos. Análisis y clasificación*.'

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Abstract: Subtitling for the Deaf and the Hard-of-Hearing (SDH) was long considered a 'simple' variant of *standard* subtitling. Only recently, uprising social demands together with a growing presence of SDH materials in different international audiovisual environments, have promoted the proliferation of research initiatives on SDH practices. As a result, the systematic application to SDH of some of the parameters originally adopted for standard subtitling has proven to be controversial. This paper presents a proposal for the specific analysis of SDH parameters. Based on a taxonomy developed by Bartoll (2008), the new taxonomy describes the restricted application of *standard* parameters to this accessibility modality. The new proposal focuses on the parameters that are specific to SDH -the representation of extralinguistic information- and sheds light into the tight connection established among all the agents involved. The new taxonomy tries to provide researchers and SDH professionals with a tool to evaluate SDH practices and analyze the implications of potential modifications on parameters.

Resumen: En los últimos años ha aumentado la presión social a favor de la accesibilidad audiovisual, lo que ha venido acompañado de un incremento en el número de productos subtitulados para sordos disponibles en el mercado. El significativo crecimiento en el número de estudios ha cuestionado la aplicación sistemática de los parámetros generales del subtitulado a la práctica del Subtitulado para Sordos (SPS). Partiendo de una propuesta de Bartoll (2008) para el estudio de los parámetros del subtitulado, el presente artículo plantea la adaptación de la taxonomía al estudio del SPS. Analizando los parámetros de naturaleza general aplicables al SPS, incorporando aquellos parámetros exclusivos de esta modalidad (la representación de la información extralingüística), y considerando las interconexiones que se establecen entre todos ellos, la nueva taxonomía busca servir en el estudio integral y detallado de cada uno de los aspectos que configuran la práctica del SPS.

‘A taxonomy on the parameters of subtitles for the Deaf and Hard-of-Hearing. Analysis and classification.’

Palabras clave: Subtitulado para Sordos (SPS), taxonomía, parámetros, análisis, información extralingüística.

Keywords: Subtitling for the Deaf (SDH), taxonomy, parameters, analysis, extralinguistic information.

5.1 Introducción

A lo largo de la última década se ha producido un significativo incremento en la presencia del Subtitulado para Sordos (SPS) en el contexto audiovisual internacional. La creciente presión social, unida a una mayor flexibilidad de medios y soportes, ha incentivado la producción y distribución de esta herramienta de accesibilidad. Es precisamente la mayor visibilidad de la práctica y su creciente profesionalización la que ha dado origen en los últimos años a un cada vez mayor número de estudios sobre la cuestión, surgidos desde los más diversos ámbitos de especialidad, desde la Ingeniería (cf. Martín et al., 2007 y 2008), a la Psicología (cf. Cambra et al., 2008), pasando por los Estudios de la Sordera (cf. Jensema et al., 2000) o el Derecho (cf. Pérez-Ugena et al., 2010). En este sentido, resultan de especial interés los promovidos desde los Estudios de Traducción, por su visión transversal y el carácter interdisciplinar del que suelen estar dotados.

Si bien es cierto que el SPS es, a menudo, considerado una de las muchas disciplinas que integran la práctica del subtitulado ordinario, son precisamente sus características diferenciales las que invitan a una clasificación específica. Como recoge De Linde (1996: 182):

> *Le sous-titrage intralinguistique souligne de fait les interrelations subtiles entre parole, écrit et visuel, en tentant de reproduire l'information sonore par d'autres éléments qu'auditifs tout en cherchant à garder un certain équilibre spatio-temporel avec les images.*

El contenido sonoro adicional de la obra audiovisual que es preciso representar mediante el SPS, como señala De Linde, hace necesario incorporar parámetros de estudio exclusivos o de especial interés dentro de esta modalidad. Centrándose principalmente en elementos lingüísticos, pero abordando también cuestiones formales o técnicas, diversos autores se han adentrado en el estudio del SPS desde el ámbito traductológico (cf. De Linde 1996; De Linde y Kay 1999; Neves 2005; Pereira 2005, entre otros). Sin embargo, el elevado número de elementos que configuran el desarrollo de esta especialidad de subtitulado sigue haciendo

necesaria una clasificación que permita describir cada uno de los aspectos que dan forma al producto final.

5.2 Taxonomía del Subtitulado de Bartoll (2008)

A pesar de que, hasta la fecha, no se ha llevado a cabo en el ámbito del SPS ninguna propuesta de análisis taxonómico, sí que existen iniciativas surgidas para el estudio del subtitulado ordinario. Basándose en estudios previos de Gottlieb (1997), Ivarsson y Carroll (1998) y Karamitroglou (1998), Bartoll (2008) ha elaborado una propuesta con el objeto de establecer un modelo de análisis y clasificación de los parámetros del subtitulado que permita determinar los diferentes tipos de subtitulado que se desarrollan en el mercado. El autor identifica hasta 15 parámetros, organizados en torno a tres perfiles, como aspectos configuradores del producto subtitulado:

- *'Parámetros lingüísticos': entre los que recoge los parámetros 'Lengua' y 'Densidad'.*
- *'Parámetros pragmáticos': con aspectos como 'Destinatarios', 'Intención', Tiempos de Elaboración' y 'Autoría'.*
- *'Parámetros técnicos': recoge elementos como 'Opcionalidad', 'Difusión', 'Color', 'Incorporación', 'Posicionamiento', 'Emplazamiento', 'Archivado', 'Tipografía' y 'Formato'.*

El detallado conjunto de parámetros que el autor logra recopilar, y la relación de interdependencia que refleja entre ellos, resultan pioneros a la hora de representar la compleja estructura que tiene lugar en el proceso de elaboración de subtítulos. Como desvela el autor, la elección de una determinada variable en uno de los parámetros supone la alteración de la variable en otro diferente, produciendo un efecto en cadena que quedará reflejado en el aspecto final del subtítulo.

Si bien en su detallada propuesta estaría incluido el SPS, el mismo autor recoge la posible revisión de su modelo en función de las nuevas aportaciones que

surjan en materia de accesibilidad a los medios (ibíd: 4). Por este motivo, en el intento de aplicación de su modelo al análisis del SPS, se plantea la necesidad de ampliar su propuesta.

El análisis de estudios específicos sobre la práctica del SPS, como el de Neves (2005) y de algunas de las normativas públicas de SPS disponibles (cf. Aenor, 2003; BBC, 2009; BCI, 2005; CAB, 2008; DFA, 2004; DCMP, 2011; ITC, 1999) desvelan la existencia de una serie de elementos específicos del SPS, condicionados fundamentalmente por la representación de la información sonora adicional, que no aparecen representados en el trabajo de Bartoll. Su incorporación, y efecto sobre otros parámetros, dan origen a la nueva propuesta que aquí se recoge.

5.3 Taxonomía del SPS

Prestando especial atención a los elementos específicos del SPS, como es el caso de los elementos sonoros externos al diálogo, y a aquellos elementos que desempeñan una función significativa en el desarrollo de los productos subtitulados para sordos, tales como la velocidad de los subtítulos y la tipografía, con este trabajo proponemos la generación de una nueva taxonomía. El nuevo modelo recoge dos de las categorías ya propuestas por Bartoll ('Parámetros lingüísticos' y 'Parámetros pragmáticos') y modifica la tercera categoría, 'Parámetros técnicos', al considerar que los elementos que la integran pueden agruparse en tres categorías diferenciadas: 'Parámetros estéticos', 'Parámetros técnicos' y 'Parámetros estético-técnicos'[4]. Pero la principal aportación a esta nueva taxonomía es, posiblemente, la incorporación de una sexta categoría, 'Parámetros extralingüísticos sonoros', diseñada para el análisis específico de los elementos sonoros recogidos de forma exclusiva en SPS.

[4] *'Parámetros estético-técnicos' hace referencia a un grupo de parámetros cuyo resultado estético no depende de la elección del subtitulador, sino que viene impuesto por el proceso de producción. Ver 5.3.6.*

A las nuevas aportaciones clasificatorias hay que añadirle la incorporación de nuevos parámetros en algunas de las categorías, como son 'Justificación', 'Método de elaboración' y 'Velocidad', así como la inclusión de nuevas variables en algunos de los parámetros ya existentes. (Ver 5.5)

5.3.1 Parámetros lingüísticos

Los 'Parámetros lingüísticos' planteados por Bartoll, 'Lengua' y 'Densidad', mantienen su vigencia en el estudio del SPS, aunque con un enfoque específico. A pesar de que autores como De Linde (1996) o De Linde y Kay (1999) equiparaban la subtitulación intralingüística al SPS, ya en 2003 Díaz-Cintas recogió otras cuatro modalidades diferentes de subtitulación intralingüística, al margen de esta (ibíd: 38)[5]. Cabe destacar aquí que la consideración lingüística (parámetro 'Lengua') del SPS no depende únicamente de las lenguas origen y meta inherentes a la traducción, sino que viene marcada por la tradición audiovisual del contexto de llegada. Mientras en países dobladores, como España, el SPS representa una actividad de naturaleza mayoritariamente intralingüística, en países de tradición subtituladora la presencia original de subtítulos dificultó en sus comienzos el desarrollo de una modalidad específica para sordos por considerarla innecesaria (cf. De Linde y Kay 1999: 8). Afortunadamente, la eclosión de los nuevos soportes y de la conciencia social ha justificado el desarrollo de esta modalidad, al margen de la lengua y de la tradición audiovisual (cf. Neves 2005: 241; Neves 2009: 152). Por este motivo, fruto de este contexto audiovisual heterogéneo, salvo en contadas excepciones, no resulta habitual encontrar referencia alguna al parámetro 'Lengua' en el estudio del SPS, ni en ninguna de las normativas publicadas que regulan su producción[6].

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[5] *Díaz-Cintas (2003:38) recoge cinco modalidad de subtitulación intralingüística: para personas con déficit auditivo, para el aprendizaje de idiomas, efecto karaoke, variantes del mismo idioma y noticias y publicidad.*

[6] *Arnáiz-Uzquiza (2007) señala que el ejercicio del SPS se basa en una serie de normativas cuya difusión suele estar limitada al contexto privado. Son escasos los ejemplos públicos disponibles, en su mayoría procedentes de instituciones públicas o privadas de países de lengua inglesa. Además de la norma española (cf. AENOR, 2003), única por tratarse del único ejemplo de carácter estatal, en el presente estudio se han consultado los textos normativos publicados por BBC (2009), BCI (2005), CAB (2008), DFA (2004), DCMP (2011) e ITC (1999) para analizar los aspectos del SPS que cada una de ellas tienen en consideración*.

El parámetro 'Densidad', que recoge la relación entre la cantidad de información textual presentada en el subtítulo y la información verbal procedente de la pista sonora, está sujeto a otro tipo de enfoque. Además de estar supeditado a las características del producto audiovisual y a las restricciones espacio-temporales propias del subtitulado, pueden ser varios los condicionantes impuestos que limiten, y se vean limitados por este parámetro, como es el caso del número de caracteres por línea, el número de líneas, o la velocidad de lectura, entre otros. Las restricciones espacio-temporales que se aplican al subtitulado ordinario ya revelan la imposibilidad (actual) de llevar a cabo una transcripción literal del subtítulo y, dependiendo de las lenguas de trabajo, apuntan a unas tasas de reducción que pueden oscilar entre el 22% y el 75% del texto original (cf. Lonheim 1995: 203; Lorenzo 2001: 15; Díaz-Cintas 2003: 202; Gottlieb 2005: 20). No obstante, en lo que al SPS se refiere, resulta habitual la demanda por parte del público con deficiencia auditiva de una transcripción literal de los diálogos (cf. Ofcom 2005: 16; Romero-Fresco, en prensa). Estas exigencias, cuya justificación radicaría no solo en el desconocimiento de la técnica, sino también en el deseo de disponer de toda la información ofrecida en el original, aparecen reflejadas en la apuesta por la literalidad de los textos normativos consultados. A pesar de que la evolución médica y sociocultural en el seno de la comunidad con problemas de audición hace que sea posible hablar de una mejora en los niveles de alfabetización, y con ello, de una mejora en las capacidades lectoras de los usuarios de SPS con respecto a generaciones anteriores, la heterogeneidad de la comunidad sorda revela que las capacidades lectoras de parte de este grupo de usuarios no aconsejan la transcripción literal si lo que se pretende es garantizar la accesibilidad al contenido. Los estudios desarrollados por Cambra et al. (2008), Lorenzo (2010a), Pereira (2010a), Romero-Fresco (en prensa) o Zárate (2010) en fechas recientes muestran los problemas de algunos usuarios con deficiencia auditiva para comprender el SPS actual, especialmente en el caso de aquellos usuarios cuya primera lengua es la Lengua de Señas (LS). Al mismo tiempo hay que tener en cuenta que el SPS se caracteriza, entre otros rasgos, por incorporar información extralingüística al subtitulado ordinario, lo que supone un incremento en el número total de caracteres que el espectador debe leer. Conscientes de esta situación, algunos textos normativos recogen la posibilidad de desarrollar otras modalidades de subtitulado –

editado, o reducido simplificado– para públicos específicos, como el público infantil (cf. BBC 2009: 30), los niños con sordera prelocutiva (cf. ITC 1999: 19; BCI 2005: 10) o el público con problemas de lecto-escritura[7] *(cf. AENOR 2003: 12).*

No obstante, determinados usuarios se muestran reticentes ante la reformulación del subtítulo con el fin de dotarlo de características lingüísticas más idóneas para los espectadores signantes (cf. Lorenzo 2010a: 121; Pereira 2010a: 100). Para ellos, el colectivo de usuarios signantes únicamente tendría sus necesidades comunicativas cubiertas con la ayuda de intérpretes de LS y no mediante el SPS, como recogen De Linde y Kay (1999: 10), siguiendo los estudios de Woll (1991).

5.3.2 Parámetros extralingüísticos sonoros

Siguiendo la clasificación de Neves (2005: 220-258), los parámetros extralingüísticos sonoros constituyen el principal punto identificativo del SPS y suponen la principal incorporación a la propuesta de Bartoll (2008). Aunque este grupo de parámetros supone uno de los aspectos recogidos con más frecuencia por las normativas sobre SPS, su presencia aparece reflejada de forma desigual en la mayoría de los casos.

Esta categoría hace referencia a la representación de toda la información sonora de índole no verbal que forma parte del documento audiovisual. La naturaleza no verbal de esta información hace que, ante la ausencia de un referente visual de acompañamiento, sea preciso representarla por escrito para que el espectador con problemas de audición pueda alcanzar unos niveles de comprensión equiparables a los del público normo-oyente. La diversidad de las fuentes y tipos de información sonora hace que resulte compleja la elección de un único término para la definición de este grupo de parámetros. El DRAE (2011) recoge que el término 'extralingüístico' hace referencia a 'todo elemento externo a la lengua que ayuda a la desambiguación de palabras y frases'. De este modo se podría definir a determinados elementos acústicos que acompañan al componente verbal en la obra audiovisual y que sirven para contextualizarlo, como son los efectos sonoros y la música. Sin embargo, existen otros dos elementos, la información paralingüística y la

[7] *La norma española no determina el perfil del público con problemas de lecto-escritura*.

identificación de personajes, que, sin ser totalmente externos a la lengua, también pueden cumplir funciones de desambiguación basándose de su componente acústico, por lo que se ha considerado pertinente su incorporación dentro de esta categoría de 'Parámetros extralingüísticos sonoros'.

El primero de los parámetros de este grupo, 'Información paralingüística', aporta carga propia en el proceso de lectura y comprensión, ya que su función es la de ampliar y esclarecer los parlamentos de los personajes. Es habitual su consideración en la gran mayoría de las normativas de SPS en conjunto con el parámetro 'Efectos sonoros', como parte de un único parámetro que hace referencia a la representación de la información sonora. Sin embargo, el tipo de información al que ambos parámetros hacen referencia, como sugieren Neves (2005: 220) y Pereira y Lorenzo (2005: 24), aconseja una clasificación independiente de ambos componentes. Esta información paralingüística, que ambas autoras recogen como 'rasgos paralingüísticos' y 'didascalias' respectivamente, se correspondería con la 'Información paralingüística' aquí propuesta y representaría aquellos matices de la interpretación de los personajes que, por no contar con un referente visual, únicamente dependen de su naturaleza acústica, como son los aspectos calificadores o diferenciadores de la voz (cf. Poyatos 1994b). Su representación práctica mediante la descripción suele ser generalizada, si bien es habitual su uso combinado con otras modalidades, como son el empleo de emoticonos para la información de naturaleza emocional (cf. AENOR 2003: 15); la representación cromática de los parlamentos (cf. Bouzinac 2008: 5); o la representación ortotipográfica (cf. AENOR 2003: 14; BBC 2009: 26), siendo esta última la de uso más extendido.

El segundo de los 'Parámetros extralingüísticos sonoros' incorporados en esta categoría, 'Identificación de personajes', es uno de los elementos más representativos del SPS debido a su visibilidad y peso específico en los textos académicos y prácticos sobre SPS. A pesar de que no se suele profundizar en su componente acústico, según Poyatos la identificación de un personaje tiene lugar a través del desciframiento de las cualidades primarias de la voz (ibíd 1994b: 25-80). Recogida por Neves (2005: 236) como una forma de 'localización, descripción y ubicación de la voz humana', el parámetro 'Identificación de personajes' aporta

información que permite al espectador asociar los diálogos escritos a cada uno de los personajes en pantalla, visibles o no. A pesar de que, por su análisis de las cualidades de la voz, este aspecto podría formar parte del paralenguaje, por lo que sería posible encuadrarlo dentro del parámetro anterior, el tipo y relevancia específica de la información que representa invita a su análisis como un parámetro independiente, dejando el parámetro 'Información paralingüística' para la descripción de reacciones fisiológicas y emocionales.

Son varias las técnicas que se pueden emplear para la 'Identificación de personajes' (cf. De Linde y Kay 1999: 15), y que, a menudo, condicionan la elección de variables entre los parámetros estéticos del subtítulo. Una de las técnicas más extendidas, al ser una de las que menos condiciona la configuración estética, pues añade únicamente rasgos cromáticos al texto, es la asignación de colores a cada uno de los personajes. A pesar de ser una de las técnicas que menor esfuerzo cognitivo requiere por parte del espectador (cf. King et al. 1994: 332), cabe destacar los conflictos que pueden plantearse en la representación de un elevado número de personajes (cf. Pereira y Lorenzo 2005: 11) y la limitada oferta cromática, marcada por las restricciones tecnológicas de los sistemas de emisión (cf. King et al. 1994: 333; AENOR 2003: 5)[8]. La segunda técnica de identificación de uso más extendido es el desplazamiento lateral y/o vertical del texto para situarlo cerca del personaje, empleada principalmente en Estados Unidos y Canadá (cf. DCMP, 2001: 19; CAB, 2008: 18). Aunque en la mayoría de los países se opta por aplicar la identificación cromática o el desplazamiento de forma exclusiva, en algunas ocasiones se plantea el uso de estas opciones de forma simultánea (cf. Neves 2005: 242).

Otras técnicas de identificación de uso generalizado son el empleo de etiquetas, a modo de acotaciones, precediendo al subtítulo cuando no es posible identificar la intervención del personaje en pantalla (cf. AENOR, 2003: 16; CAB, 2008: 18; DCMP, 2011: 19) o el uso de puntuación distintiva, como guiones o comillas latinas (cf. BBC, 2009: 15-16). Las nuevas posibilidades tecnológicas en el

[8] *A pesar de que el teletexto analógico ha sido reemplazado, o se encuentra en el proceso de reemplazamiento, por su versión digital en la mayoría de los países europeos, los aspectos cromáticos se siguen manteniendo debido a cuestiones de legibilidad (cf. BBC 2009: 38; AENOR, en prensa).*

mercado y los perfiles de los usuarios finales (cf. Romero-Fresco, en prensa) hacen que en los últimos años se estén planteando nuevas alternativas, como la incorporación de avatares para la identificación de personajes (cf. Quoc y Fels 2009) o el uso combinado de color y etiquetas como acompañamiento al texto monocromo (cf. Quoc y Fels 2010). Sin embargo, se sigue analizando la aceptación por parte del usuario final de cada una de estas opciones.

El tercero de los 'Parámetros extralingüísticos sonoros', 'Efectos sonoros', recoge toda la información kinésica sonora (cf. Poyatos 1994a) de naturaleza no paralingüística ni musical que tiene lugar dentro de la obra audiovisual y que afecta al desarrollo de la misma. Este tipo de información, que habitualmente no se representa en el subtitulado ordinario, debe recogerse en el SPS para que el espectador con problemas de audición alcance la máxima comprensión del producto audiovisual. De todos los 'Parámetros extralingüísticos sonoros', son precisamente 'Efectos sonoros' e 'Identificación de personajes' los parámetros más demandados por parte del público con discapacidad auditiva (cf. Romero-Fresco, en prensa), de modo que no sólo aparecen recogidos en todos los estudios surgidos desde el ámbito académico (cf. Neves 2005: 243; Lorenzo 2010a: 126; Lorenzo 2010b: 137; Civera y Orero 2010: 152; Pereira 2010a: 89), sino también en las guías de estilo y en las normativas surgidas desde el entorno profesional (cf. BCI 2005: 6; BBC 2009: 17) o los entes asesores y reguladores (cf. ITC 1999: 13; AENOR 2003: 6; DFA 2004: 5; CAB 2008: 18; DCMP 2011: 17). Aunque la representación de la información recogida por 'Efectos sonoros' suele producirse en la práctica totalidad de los casos por medio de una descripción, los parámetros estéticos aplicados en su representación (posicionamiento y, especialmente, tipografía) difieren sensiblemente de unos países a otros (cf. Neves 2005: 243; Romero-Fresco, en prensa). Del mismo modo, las pautas de redacción del componente lingüístico de esta información no suelen tener reflejo en las diferentes normativas, por lo que es frecuente la falta de consistencia en este sentido (cf. Arnáiz-Uzquiza 2007). Siguiendo la estela de la representación icónica de la información paralingüística, en los últimos tiempos han surgido iniciativas que plantearían la representación icónica de los efectos sonoros (cf. Civera y Orero 2010: 152). No obstante, la desigual acogida por parte de los usuarios arroja resultados contradictorios en función de su edad y grado de

exposición a otros medios audiovisuales, por lo que, tal y como sucede con la identificación de personajes, esta, y otras opciones, continúan siendo objeto de estudio (cf. Romero-Fresco, en prensa).

El último de los parámetros que configuran este grupo es 'Música'. Aunque también en este caso suele ser habitual su catalogación dentro del parámetro 'Efectos sonoros', el papel que desempeña en la obra audiovisual va mucho más allá. A pesar de que son pocos los autores que han abordado su estudio (cf. Neves, 2005: 252; Pereira, 2005: 24; Weber 2010: 31), su compleja naturaleza, diegética, como parte visual integrante de la obra musical, o extradiegética, que sin estar presente en la trama sirve para configurar la realidad audiovisual, hace que resulte determinante su análisis como un parámetro independiente. Muchas normativas, como es el caso de la UNE-153010, abordan este parámetro de forma meramente tangencial (ibíd: 14)[9] *ya sea desde el punto de vista estético, lingüístico o extralingüístico. Sin embargo, en las guías de estilo más recientes se le presta una atención especial, llegando a indicar determinados aspectos lingüísticos (cf. CAB 2008: 7), o incluso pautas detalladas sobre la forma de subtitular estos elementos atendiendo a su relevancia en la escena, carácter, etc. (cf. BBC 2009: 31).*

5.3.3 Parámetros pragmáticos

Los 'Parámetros pragmáticos' definidos por Bartoll son una de las categorías que experimentan menos modificaciones en la adaptación de la taxonomía al análisis del SPS, al no contar con ninguna nueva incorporación. Desde el punto de vista práctico, son escasas las referencias a este grupo de parámetros en estudios y textos normativos, sin embargo, la presencia de los 'Parámetros extralingüísticos sonoros' condicionaría, y se vería condicionada, por las variables pragmáticas aplicables al margen de los rasgos específicos del SPS.

Mientras aspectos como 'Autoría' siguen haciendo referencia al 'agente', humano o no, que desarrolla el SPS, el 'Momento de elaboración', que también en SPS se limita a las variables 'Anteriores' y 'Simultáneos', condiciona la posibilidad de

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[9] *La norma UNE-153010 únicamente recoge en su texto: 'Se debe subtitular las canciones, en cuyo caso debe realizarse sobre fondo amarillo con carácter azul' (ibíd: 14).*

incluir información extralingüística dada la dificultad para recoger esta información de forma sincronizada (cf. Romero-Fresco 2011: 38). Por este motivo en los últimos cinco años, con la necesidad de proveer accesibilidad audiovisual a eventos en directo, se ha incluido en la redacción de algunas normativas breves referencias a este parámetro (cf. BCI 2005: 11; CAB 2008: 22; DCMP 2011: 4; DFA 2004: 4).

Algo similar sucedería con el parámetro 'Intención', que aborda el objetivo que se persigue con los subtítulos. Una vez más, y sin ser exclusivo del SPS, resulta importante la incorporación de una nueva variable en este parámetro, como son los 'Subtítulos Terapéuticos', desarrollados para abordar problemas específicos de aprendizaje, y que, dependen, en gran medida, de uno de los parámetros esenciales en esta categoría: 'Destinatarios'.

El último de los parámetros de esta clasificación, 'Destinatarios', aparece recogido por Bartoll para abordar la diferente naturaleza de dos grandes grupos de usuarios, sordos y oyentes. Sin embargo, son otros muchos los aspectos que es preciso tener en consideración a la hora de definir el perfil del usuario. Aspectos como la edad, relevantes para el desarrollo de todo tipo de subtítulos, interactúan con cuestiones específicas de los usuarios de SPS, como son el perfil lingüístico (signante/oralista), el tipo, grado y momento de aparición de la sordera, o las necesidades terapéuticas de los usuarios (cf. Llombart 2007). Todas estas diferencias marcarían, por ejemplo, la capacidad del espectador para acceder a la información del componente sonoro, una mayor o menor velocidad de lectura o la familiaridad con el lenguaje escrito. No obstante, a pesar de que todas las normativas escritas consultadas se elaboran para personas con problemas de audición, teniendo en cuenta la diferente etiología de los grupos de usuarios, cabe destacar que en contadas ocasiones se hace referencia en los textos al perfil específico del usuario final. Sin embargo, las variables adoptadas en todos los casos van encaminadas a un perfil de usuario determinado: usuarios oralistas con índices de alfabetización medios-altos y destrezas lectoras elevadas.

5.3.4 Parámetros estéticos

Bartoll (2008: 260) define un único grupo de parámetros, 'Parámetros técnicos', para hacer referencia a todos los aspectos relacionados con la parte visual y técnica del

proceso de elaboración del subtítulo. Dada la variedad de los aspectos incorporados en esta categoría, sería posible identificar hasta tres grupos diferentes de parámetros en esta categoría: 'Parámetros estéticos', 'Parámetros estético-técnicos' y 'Parámetros técnicos'.

El primero de todos, 'Parámetros estéticos', agruparía a todos los elementos planteados por Bartoll que marcarían el aspecto más visual del subtítulo, y cuya elección puede variar por elección del subtitulador tales como 'Emplazamiento', 'Color', 'Tipografía' y 'Posición'. Cabe destacar la incorporación de un nuevo parámetro, 'Justificación', que, al margen del parámetro 'Posición', recoge la disposición de subtítulo con respecto a un margen establecido.

La alternancia en los métodos de elaboración de SPS, desde los primeros teclados de máquinas de escribir, hasta los modernos sistemas de reconocimiento de habla que han modificado los parámetros estéticos del subtitulado, son, en la mayoría de los casos, producto de la tradición práctica adoptada del subtitulado ordinario (cf. Ivarsson y Carroll 1998: 49).

Estrechamente vinculados entre sí[10], los parámetros 'Tipografía' y 'Color' han sido fuente recurrente de numerosos estudios en el seno del SPS, desde la traducción (cf. Neves 2005; Martínez-Tejerina 2008) a la comunicación audiovisual (cf. Carrero y Souto 2008; Utray et al. 2010) pasando por la ingeniería (cf. Kirkland 1999; Martín et al. 2007; Martín et al. 2008). La focalización temática, unida a la desactualización de algunas de las normativas que todavía continúan fundamentándose en la tecnología del teletexto analógico en vías de extinción (cf. AENOR 2003: 3; BCI 2005: 2; ITC 1999: 6), hace que muchos de los parámetros estéticos no se lleguen a abordar de forma explícita en los textos normativos. De este modo, por ejemplo, el sistema analógico europeo justificaba la imposición de un tipo de fuente (teletexto), de unos colores determinados, la utilización de una caja sobre la que se representaban los subtítulos, el espaciado e interlineado de los mismos, etc. (cf. AENOR 2033: 5; BCI 2005: 2); mientras, en los Estados Unidos el sistema Línea 21 forzaba el uso de mayúsculas y la imposibilidad de emplear

[10] *Cuando la aplicación cromática no afecta al conjunto del subtítulo, el empleo del color forma parte del parámetro 'Tipografía'.*

combinaciones cromáticas para el SPS (cf. King et al. 1994). No obstante, al margen de la evolución y/o limitaciones técnicas y tecnológicas que han perfilado las diferencias estéticas, también es posible encontrar usos diferenciados en otros países, como es el caso de Francia, en el que las combinaciones cromáticas de cajas y subtítulos adoptan una interpretación única a la hora de representar la información extralingüística (cf. Bouzinac 2008: 5).

Para poder entender la gran complejidad que entraña el parámetro 'Tipografía' y su relevancia en el SPS, en la tabla que se recoge a continuación se representa la interdependencia que se establece entre los sub-parámetros que la integran. Las 'X' muestran aquellos sub-parámetros que se verían modificados por otros en función de las variables seleccionadas para cada caso. Así, por ejemplo, la elección de un determinado tipo de fuente podría limitar las opciones de estilo, borde y/o sombra que se le podrían aplicar a la misma, su tamaño final, el espaciado entre caracteres, la idoneidad de los rasgos ortotipográficos implícitos en ella y el número de caracteres que sería posible representar con la fuente seleccionada en un subtítulo determinado y así sucesivamente.

	Fuente	*Estilo*	*Tamaño*	*Color*	*Borde*	*Sombra*	*Espaciado*	*Interlineado*	*Caja*	*Ortotipografía*	*(Nº Carac.)*	*(Nº Líneas)*
Fuente		X	X		X	X	X			X	X	
Estilo	X		X		X	X	X	X		X	X	
Tamaño	X	X			X	X	X	X			X	X
Color					X	X			X			
Borde	X	X	X	X		X			X			
Sombra	X	X	X	X	X		X		X			
Espaciado	X	X	X			X				X	X	
Interlineado		X	X									
Caja				X	X	X						
Ortotipografía	X	X					X				X	
(Nº carac.)	X	X	X				X			X	X	X
(Nº líneas)			X								X	X

Fig. 1 Conexión entre sub-parámetros tipográficos.

Pese a todo, de todos los Parámetros estéticos, es posible que el parámetro 'Tipografía' resulte el menos específico del SPS. Sin embargo, dada la importancia que tiene la visibilidad y legibilidad del subtítulo para los usuarios con deficiencias auditivas, dado que un alto porcentaje de este grupo de usuarios presenta problemas de discriminación cromática (cf. BBC 2009: 18; Romero-Fresco 2010: 183), resulta de especial importancia su estudio detallado.

Otro de los parámetros no específicos del SPS es el parámetro 'Posición', al que, como ya se ha avanzado, se le ha añadido una nueva categoría técnica, la 'Justificación', integrada como una variable de posicionamiento (cf. Bartoll 2008: 264). Teniendo en cuenta el tratamiento que se le da en las diferentes normativas, y la práctica generalizada, se ha creído necesario analizar la posición en base a dos desplazamientos del subtítulo en pantalla: vertical (posición) y horizontal (justificación). Como ya se ha planteado al abordar los parámetros extralingüísticos, la modificación del parámetro 'Posición' es uno de los elementos más extendidos en SPS. Pese a que la práctica generalizada recoge la representación del subtítulo en una posición inferior centrada (cf. Neves 2005: 201), es habitual que esta práctica se modifique en el caso del SPS para dar cabida a la información extralingüística, debido a la necesidad de identificar a los personajes o de representar efectos sonoros o música (cf. Bartoll y Martínez-Tejerina 2010: 69).

El último de los parámetros de este grupo, el 'Emplazamiento', que hace referencia a la ubicación del subtítulo sobre la pantalla de la obra audiovisual, o fuera de ella, no suele ser mencionado en las diferentes normativas disponibles. Estas, que tratan de armonizar el ejercicio del SPS se centran, de manera casi exclusiva, en la televisión, por lo que únicamente abordan la elaboración de subtítulos internos. Su desarrollo dependerá, sin embargo, del tipo de obra audiovisual a la que se vaya a aplicar al SPS. La subtitulación de eventos en directo, en la que se suele emplear el subtitulado en emplazamiento externo, es, a menudo, considerada una modalidad de SPS. No obstante, criterios pragmáticos (momento de elaboración), técnicos (elaboración) y estético-técnicos (incorporación), limitarían la presencia de parámetros extralingüísticos y estéticos (tipografía y posición) específicos de esta modalidad.

5.3.5 Parámetros técnicos

Los 'Parámetros técnicos' planteados en la presente propuesta taxonómica, a diferencia de los recogidos por Bartoll, harían referencia de manera exclusiva a aquellos aspectos de la producción de SPS menos visibles para el espectador. Como sucede con los pragmáticos, los parámetros técnicos apenas plantean diferencias específicas en el caso del SPS. La restringida visibilidad de este grupo de parámetros hace que no resulte extraño que la naturaleza técnica del SPS no suela estar representada de manera explícita en las normativas escritas, ni en los estudios académicos.

Tres son los parámetros definidos en la propuesta original: 'Difusión', 'Archivado' y 'Formato'. De todos ellos el 'Archivado', que hace referencia a la vinculación física de subtítulo e imagen, y el 'Sistema de difusión', que representa la forma de proyección de los subtítulos desde un punto de vista técnico, no plantean diferencias significativas entre las distintas modalidades de subtitulado. Sin embargo, no sucede lo mismo con el 'Formato', o código de almacenamiento de los subtítulos, dependiente en gran medida de las características estéticas del SPS. Mientras muchos de los formatos empleados almacenan exclusivamente aspectos lingüísticos y temporales del subtítulo, el SPS precisa en igual medida del almacenamiento de rasgos cromáticos y posicionales esenciales en esta modalidad, algo que solo se consigue con determinados formatos, entre los que actualmente destacan Substation Alpha, Advanced Substation Alpha o Viplay Subtitle File (cf. Bartoll 2008: 268). Dentro de los parámetros técnicos, este es uno de los aspectos de mayor estudio y crecimiento, impulsados por las innovaciones tecnológicas y el surgimiento de nuevos medios.

Pero es posible añadir dos nuevos parámetros a esta categoría: 'Método de elaboración' y 'Medio', que hacen referencia al sistema de transcripción de los subtítulos y al soporte al que se incorporan los subtítulos respectivamente. Ambas aportaciones, igualmente aplicables al subtitulado general, condicionan en gran medida las características de cualquier tipo de subtítulo.

De todos los parámetros técnicos, el 'Medio' es el más relevante para cualquier modalidad de subtitulado, y en el caso del SPS, requiere una especial

consideración si se tiene en cuenta las diferencias estéticas y técnicas que lleva implícitas (cf. Arnáiz-Uzquiza 2007: 37; Romero-Fresco 2011: 38). Las diferentes características y posibilidades de cada uno de los soportes audiovisuales (televisión, DVD, Internet, videojuegos, eventos en directo, etc.), que apenas han llegado a ser objeto de estudio por parte de los académicos, obligan al subtitulador a valorar este parámetro antes de abordar cualquier otro aspecto, ya sea lingüístico, extralingüístico, pragmático, estético, técnico o estético-técnico.

Por lo que respecta al 'Método de elaboración', si bien en la mayoría de los casos estos subtítulos se elaboran utilizando el método de teclado ordinario, para la producción de subtítulos en directo (simultáneos) suele utilizarse otro tipo de teclados (máquinas de estenotipia, velotipia, palantipia) y sistemas que permiten una transcripción más rápida, como es el caso del reconocimiento de habla (cf. Romero-Fresco 2011: 35). Como ya se ha apuntado para el parámetro 'Emplazamiento', el tipo de productos audiovisuales para los que se emplean estos métodos no permite hablar de una forma de subtitulación exclusiva para sordos, pues suelen ser materiales en los que no es habitual la presencia de información extralingüística (cf. Vela 2007: 7). Por lo tanto, todavía a día de hoy su demanda funcional suele estar cubierta por modalidades de subtitulado ordinario.

5.3.6 Parámetros estético-técnicos

El último de los grupos de parámetros que se incorporarían a la propuesta de Bartoll estaría a medio camino entre los 'Parámetros estéticos' y los 'Parámetros técnicos', ya que, aunque el espectador percibe el resultado visual de la manipulación de las variables, no se trata de una elección estética del subtitulador, sino de una consecuencia del proceso de producción y de configuración del material final.

Mientras el parámetro 'Incorporación', que hace referencia a la forma en la que el texto escrito aparece en pantalla, está estrechamente ligado al 'Método de elaboración' técnico o la 'Intención' pragmática, el parámetro 'Opcionalidad' (visibilidad obligatoria, o no, de los subtítulos) suele estar marcado por los parámetros 'Destinatarios' y 'Medio de difusión' (Figura 2). Esta focalización en el grupo de usuarios hace que, sin resultar ninguno de los dos aspectos estético-técnicos exclusivos del SPS, sea posible decir que el parámetro 'Opcionalidad' está

más estrechamente vinculado a esta disciplina audiovisual. Desde que en 1972 aparecieran los primeros ejemplos no opcionales de SPS (cf. DCMP, 2010: 7) y urgiese la necesidad de diseñar sistemas para su difusión reduciendo su visibilidad, la opcionalidad ha sido la elección habitual del SPS. Reducida su presencia de forma casi exclusiva a las páginas del teletexto o a los menús de idiomas del DVD, únicamente el desarrollo de nuevas tecnologías de distribución como es el caso de Internet y sus múltiples plataformas, está permitiendo facilitar el acceso a esta herramienta de accesibilidad audiovisual.

Pero al margen de estos dos parámetros, ya identificados en la taxonomía anterior, la incorporación del parámetro 'Velocidad' supone la principal aportación dentro de esta categoría a la propuesta de Bartoll. Suele analizarse de manera conjunta con otro parámetro lingüístico importante en esta modalidad, la 'Densidad' (a menor densidad, mayor velocidad) y es uno de los elementos de principal importancia en el seno del SPS. Sin embargo, mientras que con el parámetro lingüístico los usuarios reclaman la transcripción literal del texto (cf. OFCOM 2005: 16; Romero-Fresco, en prensa) no son habituales las referencias al parámetro 'Velocidad'. No obstante, su modificación supondría, por ejemplo, elevar el número de caracteres por segundo y línea y una reducción en los tiempos de exposición, lo que alteraría considerablemente el patrón de lectura (Figura 2). Sin resultar exclusivo del SPS, pero esencial para su óptimo desarrollo, es uno de los parámetros que ha concentrado un mayor número de estudios en el seno de esta disciplina en los últimos años (cf. Cambra et al. 2008; Romero-Fresco 2010; Romero-Fresco, en prensa). Las velocidades del SPS propuestas por algunas normativas recogen cifras que suelen ser similares entre sí y se establecen en torno a las 180 palabras por minuto (ppm) como máximo: 140-180 ppm (cf. BBC 2009: 7); 160-180 ppm (cf. BCI 2005: 5); 180ppm (cf. DFA 2004: 6); 200 ppm (cf. CAB 2008: 21). En España, por ejemplo, donde la UNE-153010 actual (2003) plantea una cifra de 19 caracteres por segundo, ó 150 ppm, la velocidad es considerablemente superior a los 12 caracteres por segundo propuestos para el subtitulado ordinario en español (cf. Díaz-Cintas 2003: 118). De igual manera no es posible equiparar totalmente las velocidades de lectura en inglés y español, expresadas en 'palabras por minuto', si no se tiene en cuenta que la longitud media de una palabra inglesa es

de 4'5 caracteres, mientras en español es de 4'9 (cf. Pierce 1980: 75; Morelli 2010). Ambos planteamientos, unidos a la necesidad de ajustar las velocidades en función de los públicos y sistemas de incorporación de subtítulos (cf. Romero-Fresco, en prensa), hacen que en la actualidad se esté revisando este parámetro en la redacción de la nueva normativa que regule el ejercicio del SPS.

5.4 Conexiones entre parámetros

Como se ha podido comprobar al analizar la tipografía de los subtítulos (Figura 1), son muchos los parámetros y sub-parámetros que entran en juego en el desarrollo del SPS y la estrecha relación que se establece entre ellos hace que sea preciso tener en cuenta cualquier mínima variación (Figura 2). Los 23 parámetros que dan forma a la taxonomía y sirven para describir el SPS establecen una compleja serie de relaciones que hablan de la dependencia que se establece entre ellos. De este modo, por ejemplo, la elección de una determinada opción de identificación de personajes tendría implicaciones desde el punto de vista lingüístico (en la densidad, si se adopta la identificación mediante etiquetas), pragmático (en la autoría, en cualquier caso), estético (si se opta por el desplazamiento) o técnico (por restricciones de formato).

La siguiente tabla representa las relaciones de interdependencia que se establecen entre todos los parámetros identificados. Las 'X' marcan aquellos parámetros en los cuales la elección de una determinada variable condicionaría la elección de variables en otros parámetros.

	Lengua	Densidad	Identiifica.	Rasgos Paralingüís.	Efectos Sonoros	Música	Destinatario	Intención	Autoría	Momento de	Emplaza.	Color	Tipografía	Posición.	Justificación	Método de	Difusión	Archivado	Formato	Medio	Velocidad	Incorpora.	Opcional.
Lengua		X					X	X	X											X	X		
Densidad	X		X	X	X	X	X	X	X	X	X		X	X						X	X		
Identificación		X					X		X			X	X	X		X	X		X	X	X	X	
Rasgos paralingüísticos		X					X		X	X	X	X	X	X		X	X		X	X	X	X	
Efectos sonoros		X				X	X		X	X	X	X	X	X	X	X	X		X	X	X	X	
Música		X			X		X		X	X	X	X	X	X	X	X	X		X	X		X	
Destinatarios	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Intención	X	X					X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Autoría	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X		X	X	X	X	X	X
Momento de elaboración		X		X	X	X	X	X	X		X		X	X	X	X	X	X	X	X	X	X	X
Emplazamiento		X		X	X		X	X	X	X		X	X	X		X	X	X	X	X			X
Color			X	X	X	X	X	X	X		X		X			X	X		X	X			
Tipografía		X	X	X	X	X	X	X	X	X	X	X		X		X	X	X	X	X			X
Posición.		X	X	X	X	X	X	X	X	X	X		X		X		X		X	X		X	
Justificación					X	X	X	X	X	X				X		X			X	X		X	
Método de elaboración			X	X	X	X	X	X	X	X	X	X	X		X		X	X	X	X	X	X	
Difusión			X	X	X	X	X	X		X	X	X	X	X		X		X	X	X	X	X	X
Archivado							X	X	X	X	X		X			X	X			X		X	X
Formato			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	
Medio	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Velocidad	X	X	X	X	X		X	X	X	X						X	X		X	X		X	
Incorporación			X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X		X
Opcionalidad	X						X	X	X	X	X		X				X	X		X		X	

Fig. 2. Tabla de interdependencia entre parámetros

Como se puede comprobar, los 'Parámetros pragmáticos', y en especial el parámetro 'Destinatarios', son los que más peso tienen en su conjunto por ser los que justifican el objetivo final del subtítulo. Este será el punto de partida para determinar, en el caso concreto del SPS, que un subtítulo se desarrolla específicamente para públicos con deficiencia auditiva. Pero no es el único parámetro determinante en este sentido. También desde el punto de vista técnico es posible marcar la dependencia. Al igual que en el parámetro 'Destinatarios', el parámetro 'Medio' condiciona la totalidad de las variables que se aplican al SPS, e incluso aspectos en apariencia no vinculados, como la elección lingüística, resultarían relevantes en determinados contextos (ver apartado 1.1).

Pero al margen de estos, cabría analizar la especial relevancia de otros grupos de parámetros, como es el caso de los 'Parámetros extralingüísticos sonoros'. Si se analiza la tabla en detalle es posible comprobar que aquellos parámetros con mayor peso en el desarrollo del SPS, por el efecto que puede tener su modificación en otros (como sucede con los parámetros pragmáticos y técnicos) no son aquellos exclusivamente representativos de esta modalidad. Sin embargo, la presencia de los parámetros específicos del SPS adquiere especial relevancia al condicionar a todos los demás grupos de parámetros. La incorporación de información extralingüística altera los componentes lingüísticos ('Densidad'), estéticos ('Color', 'Tipografía' y 'Posición'), técnicos ('Formato') y estético-técnicos ('Velocidad', 'Opcionalidad'), dotando al subtítulo de características muy marcadas. No obstante, su representación también se ve modificada por aspectos pragmáticos ('Momento de elaboración') y técnicos ('Método de elaboración' y 'Medio').

5.5 Conclusiones

Dada la escasa disponibilidad de otras modalidades de accesibilidad audiovisual para las personas con discapacidad auditiva, y la gran heterogeneidad que caracteriza a este colectivo de usuarios, es preciso conocer todos los factores que

condicionan el ejercicio del SPS en cada una de sus etapas y su resultado final. Partiendo de la taxonomía desarrollada por Bartoll para el subtitulado ordinario se plantea el desarrollo de una clasificación específica para el estudio del proceso de elaboración del SPS en su totalidad. La necesidad de incorporar elementos específicos de esta modalidad, así como otros elementos y parámetros no exclusivos de la misma, pero de especial relevancia para su desarrollo, justificarían la iniciativa. De esta forma, la nueva taxonomía estaría integrada por los grupos de parámetros: 'Lingüísticos', 'Extralingüísticos', 'Pragmáticos', 'Estéticos', 'Técnicos' y 'Estético-técnicos'.

Desde el punto de vista lingüístico, al margen de la dualidad marcada por la tradición audiovisual de países dobladores y subtituladores, es el parámetro 'Densidad' el más relevante. Son muchos los estudios que ya se han llevado a cabo y que han dejado constancia de las diferentes capacidades lectoras de los grupos de usuarios, así como sus demandas en lo que a literalidad se refiere. Teniendo en cuenta que, en la actualidad, los espectadores con problemas de audición únicamente disponen de una modalidad de SPS, las necesidades del colectivo quedan cubiertas de forma dispar en lo que a aspectos lingüísticos se refiere.

La información extralingüística, exclusiva de esta modalidad de subtitulado, es la principal incorporación a la taxonomía original. Los aspectos extralingüísticos representan toda la información no verbal que resulta preciso recoger para ofrecer toda la información que compone la obra audiovisual al público sordo. Dada la naturaleza variada de este tipo de información, es posible definir hasta cuatro parámetros en este grupo ('Identificación de personajes', 'Información paralingüística', 'Efectos sonoros' y 'Música') cuya representación altera la composición del subtítulo tradicional. Las variables adoptadas para la representación de cada uno de los parámetros suelen tener su origen en la tradición, por lo que varían de unos países a otros. Esta variabilidad suele ir acompañada de una modificación de otros grupos de parámetros, como son los lingüísticos y los estéticos, dando origen a una sucesión de variaciones en otra serie de parámetros.

A pesar de haber acaparado el menor número de estudios académicos dentro del SPS, y estar apenas representados en las normativas publicadas, los parámetros

pragmáticos son el conjunto con mayor peso específico en la taxonomía, al tener la capacidad de modificar la gran mayoría de los parámetros de la misma. Estos parámetros marcan la intencionalidad y funcionalidad de los subtítulos, por lo que gran parte de la efectividad de los mismos radicaría aquí. La aplicación efectiva de los parámetros pragmáticos ha de servir para desarrollar materiales totalmente adaptados a las necesidades de cada grupo de usuarios, y entre ellos, los usuarios con problemas de audición.

Los 'Parámetros estéticos' representan los aspectos visuales del subtítulo, y constituyen el grupo de parámetros de mayor relevancia en términos de legibilidad, directamente relacionado con la percepción y la comprensión. Son muchos los parámetros integrados en este grupo. A pesar de no resultar exclusivos para el SPS, la representación de la información extralingüística hace que determinados aspectos ('Color', 'Tipografía' o 'Posición') se vean modificados de forma más o menos directa.

Los 'Parámetros técnicos' por el contrario, se centran en la elaboración y diseminación del SPS. En lugar de verse condicionados, este grupo de parámetros suele condicionar la inclusión de información extralingüística. El 'Método de elaboración' empleado o el 'Formato', permitirán o no la inclusión de esta información exclusiva del SPS, siendo el 'Medio' el parámetro más trascendental en este sentido.

A medio camino entre los dos grupos de parámetros anteriores, los 'Parámetros estético-técnicos' recogen los aspectos cuya producción tiene un reflejo visual. El más representativo de este grupo, el parámetro 'Velocidad', se ha convertido en el aspecto más analizado en los últimos tiempos desde esta disciplina, por la aparición de nuevos 'Métodos de elaboración' que ayudarían a incrementar la literalidad demandada por los espectadores.

La suma de las 6 categorías que agrupan los 23 parámetros de la nueva taxonomía dibuja un panorama detallado del proceso de producción del SPS. La identificación de un grupo de parámetros específico de esta modalidad de subtitulado ('Parámetros extralingüísticos sonoros'), y las consecuencias que su incorporación conlleva, no logran imponerse, sin embargo, al peso de otros parámetros considerados generales ('Parámetros pragmáticos' y 'Parámetros

técnicos'). Los estudios que en los últimos años han surgido impulsados por el creciente avance del SPS en el mercado han tratado de abordar el análisis de aspectos especialmente representativos para su desarrollo, como es el caso de la densidad, la posición o la tipografía entre otros. Sin embargo, el hecho de tratarse de iniciativas centradas en parámetros aislados hace que, en la mayoría de las ocasiones, no se tenga en cuenta la interdependencia entre parámetros y las consecuencias que cualquier cambio implicaría para otras variables.

Esta taxonomía pretende ser no solo una herramienta para el análisis integral del proceso de subtitulado para sordos, sino también un instrumento de reflexión sobre las consecuencias del estudio aislado de cada uno de los parámetros que configuran la práctica del SPS.

5.6 Bibliografía

5.6.1 Bibliografía

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5.7 Anexo

<table>
<tr>
<td>[LINGÜÍSTICO]

LENGUAJE

• Interlingüísticos
• Intralingüísticos</td>
<td>[LINGÜÍSTICO]

DENSIDAD [*]

• Íntegros (literales)
• Reducidos
- Sub. ordinarios
- Sub. simplificados</td>
<td>[EXTRALINGÜÍSTICO] *

IDENTIFICACIÓN DE PERSONAJES

• Posición
• Etiquetas
• Colores
• Puntuación
• Combinados
- Posición y colores
- Posición y puntuación
- Colores y puntuación
• Sin representación
• Nuevas propuestas +</td>
</tr>
<tr>
<td>[EXTRALINGÜÍSTICO] *

RASGOS PARALINGÜÍSTICOS

• Descripción
• Onomatopeyas
• Emoticonos
• Sin representación
• Nuevas propuestas +</td>
<td>[EXTRALINGÜÍSTICO] *

EFECTOS SONOROS

• Descripción
• Onomatopeyas
• Iconos
• Sin representación
• Nuevas propuestas +</td>
<td>[EXTRALINGÜÍSTICO] *

MÚSICA

• Diegética
- Título
- Letra
- Descripción
- Combinados
- Título y letra
- Descripción y letra
- Sin representación
- Nuevas propuestas +
• Extradiegética
- Título
- Letra
- Descripción
- Combinados
- Título y letra
- Descripción y letra
- Sin representación
- Nuevas propuestas +</td>
</tr>
<tr>
<td>[PRAGMÁTICO]

DESTINATARIOS [*]
• Por audición
• Por edad
• Por necesidades lingüísticas
• Por necesidades terapéuticas</td>
<td>[PRAGMÁTICO]

INTENCIÓN [*]
• Instrumentales
-Didácticos
-Terapéuticos
-Karaoke
• Documentales</td>
<td>[PRAGMÁTICO]

AUTORÍA
• Subtítulos humanos
- Profesionales
- Aficionados (fansubs)
• Subtítulos mecánicos</td>
</tr>
</table>

[PRAGMÁTICO] MOMENTO DE ELABORACIÓN • Anteriores • Simultáneos	[ESTÉTICO] EMPLAZAMIENTO • Subtítulos internos • Subtítulos externos	[ESTÉTICO] COLOR • Subtítulos monocromos • Subtítulos policromos
[ESTÉTICO] TIPOGRAFÍA [*] • Fuente • Estilo • Tamaño • Color • Borde • Sombra • Espaciado • Interlineado • Caja • Ortotipografía • (Nº de caracteres / línea) • (Nº de líneas / sub.) • Nuevos aspectos +	[ESTÉTICO] POSICIÓN [*] • Uniforme -Subtítulos -Sobretítulos -Laterotítulos • No uniforme -(Desplazados) -Posición combinada	[ESTÉTICO] * JUSTIFICACIÓN • Izquierda • Centro • Derecho
[TÉCNICO] * MÉTODO DE ELABORACIÓN • Teclado - Expandido - Abreviado - Estenotipia - Velotipia - Palantype • Reconocimiento	[TÉCNICO] DIFUSIÓN • Sub. proyectados • Sub. emitidos • Sub. automáticos • Sub. manuales	[TÉCNICO] ARCHIVADO • Disociables • No disociables
[TÉCNICO] FORMATO • *.txt • *.ssa • *.sub • *.vsf • *.srt • *.stl • Nuevos formatos +	[TÉCNICO] * MEDIO • Cine • DVD • Televisión - Abiertos - Teletexto - DVB • Internet • Videojuegos • Teléfono • Eventos • Nuevos soportes +	[ESTÉTICO / TÉCNICO] VELOCIDAD * • Nº caracteres / línea • Nº caracteres / segundo • Tiempo de exposición

[ESTÉTICO / TÉCNICO] INCORPORACIÓN [*]	[ESTÉTICO / TÉCNICO] OPCIONALIDAD
• Sub. dinámicos -Letra a letra -Palabra a palabra -Línea a línea -Frase a frase -Desplazamiento lateral -Rodillo - Ascendente - Descendente -Tipos mixtos • Sub. Estáticos	• Opcionales • No opcionales

* *Parámetros nuevos incorporados a la taxonomía de Bartoll.*

[*] *Parámetros modificados con respecto a la taxonomía de Bartoll: nuevas variables incorporadas.*

\+ *Categoría abierta a la incorporación de nuevas variables surgidas de la evolución tecnológica: avatares ('Identificación de personajes'); dinamismo ('Música'); profundidad ('Tipografía'); etc.*

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6. Article 2:

'Viewers' Opinion of SDH in Spain'

Author: Verónica Arnáiz-Uzquiza

This chapter presents the results of the long questionaire devised as part of the DTV4All project in Spain. By way of introduction, a general overview is provided on the situation of the Deaf and Hard-of-Hearing community in Spain along with a brief description of the audiovisual landscape in the country, particularly with regard to SDH.

6.1 Hearing Loss in Spain

Exact and official data about hearing loss in Spain is hard to come by. According to the *Instituto Nacional de Estadística* (National Statistics Institute –INE)[11], in 2008 2.33% of the Spanish population from 6 to over 80 years old (approximately 1.064.000 people in a country of over 46 million people) were affected by some degree of hearing loss. These data, currently used by national institutions and user associations, are a far cry from the figures reported by international organisations such as 'Hear it' (Shield 2006), which points to 5.5 million people affected by hearing loss in Spain. This would represent 12% of the total population, a figure that is more in line with the information available in the rest of the European countries taking part in the DTV4ALL project.

[11]Data extracted from the website of the National Statistics Institute (INE): http://www.ine.es. The information published was collected in 2008. No updated information has been released up to date.

This significant discrepancy regarding data on hearing loss in Spain may be explained by different factors. Firstly, the largest group among the hearing impaired is constituted by older users affected by presbycusis. Normally defined as the cumulative effect of age on hearing, this condition often lacks a proper diagnosis, which means that this group of people is usually not included in offical statistics. As is the case in other countries involved in this project, another group which often goes unaccounted for is made up by people with mild hearing loss, who tend to lead normal lifestyles and be unaware of their impairment. Finally, and perhaps most importantly, the absence of a national organisation gathering all users with hearing loss in Spain may go a long way towards explaining why there is no precise data on this issue. Users are grouped in different associations depending on their hearing profiles: cochlear implant users, signing Deaf, children with hearing loss, etc. This heterogeneous landscape provides a wide number of statistics that, in most cases, do not match the official recordings.

6.2 The Audiovisual Landscape in Spain: SDH

6.2.1 Evolution

Although Spain belongs to an old dubbing tradition where subtitling was scarcely used for decades, SDH has already been part of the audiovisual landscape for over two decades now (Arnáiz, 2007: 10). First used in 1990 by the Catalan broadcaster TV3 and soon afterwards by the State broadcaster Television Española (TVE), its practice has been gradually increasing over the years.

	Broadcaster						
	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
RTVE (Public)	5028	6869	8492	8201	9478	16196	20822
Antena 3	2380	2868	3103	2804	8546	8209	7729
Telecinco	2370	2367	2423	2382	6787	8819	11498
Sogecable	1354	1373	1225	942	2576	2890	4236
La Sexta	-	-	-	4725	6380	3566	5194

Table 3. Evolution of the number of SDH hours per broadcaster[12].

Another important element in the significant growth experienced in the provision of SDH in Spain was the digital switchover, which led all analogue broadcasters to become digital in 2010. As well as increasing the number of TV channels and subtitled products, this switchover also involved the replacement of the traditional SDH signal for television –analogue teletext– by newer and less restrictive technologies. Taking into account the changing audiovisual landscape in Spain, the *Ley de Comunicación Audiovisual* 7/2010 (General Law on Audiovisual Communication), passed in March 2010[13], set an agenda for the provision of access services (SDH, Audiodescription and Sign Language) on television.

	2010	2011	2012	2013
SDH	25%	50%	70%	90%
AD	1%	3%	7%	10%
SL	1%	3%	7%	10%

Table 4. SDH rate per broadcast hours: public broadcasters

	2010	2011	2012	2013
SDH	25%	45%	65%	75%
AD	0.5%	1%	1.5%	2%
SL	0.5%	1%	1.5%	2%

Table 5. SDH rate per broadcast hour: private broadcasters

[12] Data from 2011 had not been made public in July 2012.

[13] This law follows a draft bill from 2005 that established SDH quotas of 60% by 2010 and 100% by 2015.

As well as on TV, SDH is also present in Spain in other audiovisual formats. Some private initiatives led by user associations (Arnáiz-Uzquiza, 2007) have made films available to deaf audiences via VHS first and now DVD for over 15 years, almost as long as the presence of SDH on TV. At the same time, since 2000 and due to the advances of video technology, the film industry has been slightly more accessible to viewers with hearing loss thanks to the DVD format. Although the total number of film titles with SDH released in Spain barely represents 1% of the market, this percentage is growing steadily. Besides, more and more new areas are now accessible –music, videogames, live events, etc.– which calls for new research on practices, preferences and reception of SDH.

6.2.2 Standards

The growing need and demand for SDH in Spain led the Spanish Association for Standarization and Certification (AENOR) to issue the UNE-153010 standard 'Subtitling for the Deaf and the Hard of Hearing. Subtitling through (analogue) teletext' in 2003. These are the only open-access national stylistic guidelines in use, and were exclussively issued to control SDH practices on TV. Aspects such as character identification, subtitle placement, paralinguistic information, colour combinations, etc., are taken into consideration in the text, revised in 2012[14]. However, technical restrictions on its application in different formats/settings (such as DVD subtitling or live subtitling) and economic constraints imposed by different companies have given rise to a varied landscape of coexisting, heterogeneous styles. As a result of this, users are often faced with diverse formats which do not always manage to transfer the audiovisual contents successfully.

[14] Data from 2011 had not been made publich in July 2012. A revision of the UNE-153010 standard was released in May 2012. The new version updates some aspects of the former text. Some modifications are based on the results obtained from the DTV4All project.

6.3 Questionnaire results

Along with the introductory information on hearing loss and the current audiovisual landscape in Spain, the background to the DTV4All project is set by previous studies that have analysed the performance of the most representative SDH parameters in use in Spain (Bartoll & Martínez-Tejerina, 2010; Lorenzo, 2010; Pereira, 2010; Cambra, Silvestre & Leal, 2008). All these examples, together with similar initiatives carried out in other countries (Kyle 1992, Kirkland 1999, Neves 2005), may be regarded as subjective data derived from preference surveys and comprehension questionnaires. The analysis of the long questionnaire included here is a further and more comprehensive contribution to this area, which, in the second part of this book, will be completed with objective information obtained through eye-tracking tests.

6.3.1 Dissemination and difficulties

One of the main difficulties faced in this study was the dissemination of the questionnaire. In the absence of a general national organisation, and in an attempt to have as representative a group of respondents as possible, different associations for the D/deaf and Hard-of-Hearing were approached. Thanks are due to MQD, Arabako Gorrak, Fiapas and the *Centro Cultural de Personas Sordas de Palencia*[15] for their kind collaboration, having provided not only infrastructures, but also professionals for the dissemination of the questionnaire. Teachers and trainers participated to ensure that Deaf users would be able to fill the questionnaire individually, and, in many cases, sign language interpreters were also used.

6.3.2 Participants

The questionnaire was filled in by 81 participants from 29 to 46 years old: 35 hearing (H), 25 Hard-of-Hearing (HoH) and 21 Deaf (D) volunteers. Most Hearers (70%) had completed higher studies, whereas only 40% of the Hard-of-Hearing and 20% of the

[15] The Spanish associations that kindfully contributed with this study were '*Mira lo que te Digo-Aransbur*' (*Asociación de Familias de Personas Sordas de Burgos*) from Burgos, *Arabako-Gorrak* fromVitoria-Gasteiz, *Confederación Española de Familias de Personas Sordas* (Fiapas) from Madrid, and *Centro Cultural de Personas Sordas de Palencia* from Palencia.

Deaf had university diplomas. The remaining 80% of Deaf participants only had Primary/Secondary studies and attended special schools.

Which is your natural language?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
Oral Spanish	100	35	100	25	0	0
Spanish Sign Language	0	0	0	0	24	5
Bilingual (oral / SSL)	0	0	0	0	76	16
Other	0	0	0	0	0	0

Table 6. Everyday communication

Interestingly, although when asked about their mother tongue, 76% of the Deaf participants described themselves as 'bilingual', the responses to open questions in the questionnaire revealed the use of Spanish Sign Language (SSL) syntax in written Spanish. Further questions on sight and reading abilities showed that 86% of the Deaf has difficulties reading subtitles, which goes to show how difficult it is to categorize the Deaf community and how self-perception often makes subjective responses less reliable.

Do you have difficulties reading the subtitles?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
Yes	0	0	0	0	24	5
No	100	35	100	25	14	3
Sometimes	0	0	0	0	62	13

Table 7. Difficulties reading subtitles

6.3.3 General information and preferences

All volunteers have access to TV and all the hearing and hard-of-hearing respondents have regular Internet access. Taking into account the above-mentioned reading difficulties experienced by many of the Deaf respondents, their answers in this question (76% own a computer and 62% have Internet access) may be seen considered positive: a higher exposure to reading may improve their skills and enhance reading comprehension.

Which of the following do you have at home?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
TV	100	35	100	25	100	21
DVD player	100	35	100	25	62	13
PC / Laptop	100	35	100	25	76	16
Mobile phone	86	30	100	25	100	21
Internet	100	35	100	25	62	13
Other	11	4	0	0	19	4

Table 8. Electronic equipment at home

In accordance to these results, as far as reading habits are concerned, and due to their communicative difficulties, the Deaf are the group with the highest number of hours of reading a day, from two to more than six, whereas hearing viewers spend from one to four and the Hard-of-Hearing range from one to five.

How many hours a day do you spend reading?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
None	0	0	0	0	0	0
Less than 1 hour	0	0	0	0	0	0
1-2 hours	20	7	20	5	0	0
2-3 hours	42	15	60	15	53	11
3-4 hours	38	13	12	3	12	3
4-5 hours	0	0	9	2	18	4
6 hours or more	0	0	0	0	12	3

Table 9. Hours of daily reading

Whereas the Hard-of-Hearing spend an average of one to four hours a day watching subtitled TV, the Deaf spend between two and four hours a day, or even more. The hearing participants are significantly more exposed to sound or aural information, and do not usually watch subtitles on TV. In the examples they do, it is for less than an hour a day and it mostly applies to interlingual subtitling.

How many hours a day do you watch subtitled TV?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
None	94	33	0	0	0	0
Less than 1 hour	6	2	0	0	0	0
1-2 hours	0	0	64	16	0	0
2-3 hours	0	0	16	4	81	17
3-4 hours	0	0	20	5	0	0
4 hours or more	0	0	0	0	19	4

Table 10. Hours a day watching subtitled programmes

But participants were not only asked about the number of hours, but also about their company during the viewing sessions. In the case of hearing participants, these hours are normally shared with hearing friends. However, hard-of-hearing participants indicated they use to spend this time either on their own, and/or with Deaf or hearing friends and relatives. In the case of the Deaf, a 100% indicated that they use to be accompanied by hearing people, although they also mark that they use to share their viewing time with other Deaf colleagues.

How do you usually watch TV with?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
On my own	20	7	40	10	37	8
Deaf friends / family	0	0	16	4	58	12
Hearing friends / family	80	28	64	16	100	21

Table 11. Who do they watch TV with? [16]

News, films and TV series are the main examples of programmes selected by the three groups of viewers. In the case of sports, nevertheless, these programmes are mainly watched by hearing users, whereas documentaries are only watched by viewers with hearing loss. This distinction may be influenced by the educational profile of the documentary genre.

[16]Participants could select several options in some of the questions. Multiple responses were frequent among the hearing impaired participants. In some questions participants in all groups didn't know how to respond and gave no answer.

Programme type	H		HoH		D	
	%	Nº	%	Nº	%	Nº
News	80	28	100	25	100	21
Talk shows	77	27	40	10	84	18
Films and TV series	77	27	100	25	100	21
Documentaries	0	0	88	22	84	18
Sports	86	30	40	10	37	8

Table 12. Types of programmes watched on TV

Further questions revealed that 100% of the respondents with hearing loss watch news programmes and films for between one and two hours a day in the late afternoon (17:00-21:00), whereas hearers spend an average of three hours a day on later grids (21:00-01:00).

Significantly, all the Deaf respondents choose the programmes they watch on the basis of whether they include SDH, which is only the case for 20% of the hard-of-hearing participants. Although the scarce presence of sign language on TV means that SDH is often the only access tool at hand, 75% of the Deaf chooses the former over the latter. As will be seen in further chapters, Spain is the only country in which the Deaf favour sign language over SDH as a means to access contents on TV.

Surprisingly enough, and following the distorted perception of the self reception process commented in previous lines, most Deaf respondents (67%) declare that they use SDH to help them understand the dialogue rather than as their only way to access it. Nevertheless, multiple options were also marked, showing the dubious consistency of the responses provided by the users. The Hard-of-Hearing, however less limited by their hearing restrictions, do admit more openly their dependence on SDH (64%).

What do you use subtitles for?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
They help me understand	46	16	64	16	67	14
They are my only way to have access to the dialogue	0	0	64	16	44	9
I use them for language learning	40	14	0	0	23	5
Other	0	0	0	0	0	0

Table 13. Reasons for watching subtitles

When subtitles are not available, respondents with hearing loss tend to switch channels and look for other programmes with SDH.

When a programme doesn't offer subtitles, I...	H		HoH		D	
	%	Nº	%	Nº	%	Nº
Switch off the TV	0	0	0	0	0	0
Flick the channels and look for a subtitled programme	0	0	80	20	81	17
Lip-read	0	0	16	4	0	0
Someone translates for me	0	0	0	0	0	0
Put the volume up	0	0	24	6	0	0
Guess by the context	0	0	0	0	0	0

Table 14. What if there are no subtitles?

6.3.4 Subtitling

Most of the hearing impaired participants (80%) are aware of the existence of a National Standard for Subtitling for the Deaf and Hard-of-Hearing in Spain but only 1 (2.2%) is familiar with its contents. Among the hearing, 7 have heard about the standards but none of them knows its title or contents.

When it comes to the general opinion about current subtitling practices, results differ significantly among the three groups of users. Hearers, not traditionally used to SDH either on TV or DVD, do not have a strong opinion on their quality, and could not provide an answer to some of the questions on subtitling. Deaf and hard-of-hearing users, on their side, reveal an interesting contrast. Whereas most Deaf users (62%) consider 'correct' the quality of the subtitles provided by TV stations, 63% among the HoH disagree, regretting the lack of programs and contents (37% of them consider current SDH as 'better than nothing at all').

What do you think about current SDH services on TV?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
They are OK	17	6	37	9	62	13
They are not OK	0	0	26	7	0	0
They are better than nothing at all	0	0	37	9	24	5
Other	6	2	0	0	0	0

Table 15. Opinion on current subtitling practices

More than 60% of the users in all groups showed their preference for the SDH provided by RTVE, the public national station. Although 40% among the hearers choose Antena 3 as their preferred station, only one out of the 46 Deaf and hard-of-hearing participants marked this station as a second choice (after RTVE). Among the commercial stations, Telecinco is the best considered one by hearing impaired audiences. It is important to point out that these public (RTVE) and commercial (Telecinco) stations are providing the highest number of subtitled contents, what may influence the opinion of target users on SDH. Similarly, a high percentage of hard-of-hearing users –only in Catalonia– show their preference for the services provided by the Catalan TV station TV3.

Programme type	H		HoH		D	
	%	Nº	%	Nº	%	Nº
RTVE	60	21	60	15	62	13
Antena 3	40	14	0	0	0	0
Telecinco	0	0	14	3	11	4
La Sexta	0	0	0	0	0	0
Autonomous TV stations (TV3)	0	0	26	7	0	0

Table 16. SDH practices preferred per TV stations

But beyond their demand for more subtitled contents, participants were asked about their opinion on possible improvements to current SDH practices. At this stage opinions do differ between both groups of hearing impaired. Deaf users focus mainly on the possibility of introducing Sign Language Interpreters (14%), edited contents (22%) and more subtitled programs (22%). Hard-of-hearing users, on the contrary, focus on the legibility of subtitles. Together with the need for more subtitled programs (26%), this group of users highlights the relevance of aesthetic aspects: placement (to avoid obscuring important information) (14%), font type and size (14%), etc.

Although most users –both hearers and hearing-impaired– consider the average subtitle speed to be correct on live and pre-recorded TV and DVD programs, the percentage of Deaf users that consider this speed to be too high is significant: more than 50% of the Deaf consider DVD subtitles too fast for a correct comprehension. Contrary to these results, hard-of-hearing users do not complain about subtitle speeds either on TV or DVD formats.

What do you think about the speed of TV subtitles?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
They are OK	40	14	37	9	47	10
They are too fast	0	0	0	0	47	10
They are too slow	0	0	0	0	6	1

Table 17. Opinion on the speed of TV subtitles

What do you think about the speed of DVD subtitles?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
They are OK	40	14	37	9	44	9
They are too fast	0	0	0	0	56	12
They are too slow	0	0	0	0	0	0

Table 18. Opinion on the speed of DVD subtitles

Surprisingly, the speed of live subtitles, often considered to be inadequate due to the technical limitations that restrict the stylistic and linguistic edition of contents, only draws negative results in 36% among the Deaf, with a 21% even considering subtitles to be too slow.

What do you think about the speed of live subtitles?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
They are OK	20	7	26	7	44	9
They are too fast	0	0	0	0	36	7
They are too slow	20	7	13	1	21	4

Table 19. Opinion on the speed of live subtitles

Interestingly, when asked about the improvements to be made on SDH, 75% of the Deaf would like subtitling speeds to be reduced. This aspect is not mentioned by any of the hard-of-hearing respondents, who instead ask for an increase on the number of programmes providing SDH.

6.3.5 Subtitling styles

The majority of the respondents consider character identification as the most necessary element in SDH, with the exception of dialogue. Following the tradition marked by the Spanish SDH standards, there is consensus among the hearing impaired about the use of colours for this purpose, while the hearing seem to favour name tags and a combination of colours and speaker-dependent placement. The latter are rarely used in the Spanish audiovisual context, which may indicate that these viewers may have a higher exposure to foreign subtitled products and videogame subtitling.

When characters need to be identified, what system do you prefer?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
Only colours	0	0	76	19	67	14
Only positioning subtitles next to characters	0	0	24	6	24	5
Combining colours and positioning	40	14	0	0	0	0
Only name tags	40	14	0	0	0	0

Table 20. Character identification

Regarding the traditional use of colours in Spanish SDH, there is less agreement. For many hearing impaired users this practice sometimes gives away information of the plot that has not yet been revealed by the soundtrack. Nevertheless, most users still defend this use to identify characters. Nevertheless, due to the fact that the Spanish standards only accepts 4 colours, asked about the need to add extra colours, 60% of the hard-of-hearing users considered the existing ones to be sufficient, whereas most Deaf participants (62%) would rather have a wider choice.

The number of colours used is...	H		HoH		D	
	%	Nº	%	Nº	%	Nº
Sufficient	40	14	60	15	0	0
We could do with a wider range	40	14	40	10	62	13
Too many	0	0	0	0	0	0

Table 21. Number of colours in SDH

Responses on placement showed significant agreement among the groups in preliminary questionnaires. Although 100% of the Deaf preferred all the subtitles (dialogues+sound information) to be displayed at the bottom of the screen (as it is currently done in DVD and cinema subtitling), 60% of the HoH would want this information to be displayed in the top right corner of the screen, in a mixed positioning, following UNE-153010 standards.

Placement showed significant agreement among the groups in preliminary questionnaires. All the Deaf preferred the subtitles (dialogues+sound information) to be displayed at the bottom of the screen (as it is currently done in DVD and cinema subtitling). In contrast to this, 60% among the Hard-of-Hearing would also choose this position, whereas 20% would go for a mixed one, following TV standards.

Where do you prefer subtitles to be shown?	H	HoH	D
At the bottom of the screen	60%	60%	100%
Both at the top and bottom of the screen	18%	20%	0%
At the top of the screen	0%	0%	0%
Next to the character who speaks	0%	20%	0%

Table 22. Subtitle placement

However, when confronted to SDH practices after the eye-tracking session, Deaf users, who were 100% for bottom placement according to pre-test questionnaires, were now 50% for mixed positioning, with sound information displayed at the top right corner. Also in this case, this could be conditioned by tradition and habit, as mixed placement is the standard adopted for TV subtitling, following the UNE-153010 standards.

It is representative the fact that in preliminary questionnaires some hearing users also preferred a mixed position (18%). The participants that marked this option had relatives with different degrees of hearing impairment and were aware of the current subtitling practices. No other hearing participant marked this answer, as most hearers would go for the common bottom subtitling. The help of the soundtrack would give response to this fact, as most hearers do not read sound information displayed in mixed positioning (See Chapter X)

Top positioning, currently provided in specific audiovisual products –sports, documentaries and conferences– was not marked by any of the respondents either in preliminary questionnaires or after the test.

As with speaker identification, 75% of the Deaf taking part in the test would prefer subtitles to adopt a similar placement in all audiovisual products. However, only 25 % of the HoH defend this standardised use, and 50% would be against it.

Partly related to SDH placement, participants were also asked about justification or text alignment. It is important to note that current subtitling practices such as live subtitling by respeaking or stenotype are normally left justified in Spain, which means that both styles may be combined in the same program. Subtitling alignment in Spanish SDH has always been centred, so all the hearing impaired and 80% of the hearing respondents support this practice.

Another aesthetic feature of SDH the questionnaire focused on was background boxes. The use of background boxes has been a long imposition on Spanish TV due to the technical restrictions derived from the use of analogue teletext. DVD subtitling, on the contrary, is not limited by this technology. Preferences in this regard differ among the three groups. Hearing respondents, used to standard (not teletext) subtitling on TV and DVD, prefer subtitles without boxes (80%). Among the hearing impaired, hard-of-hearing viewers show a balanced preference for both methods while the Deaf support the use of boxes in 60% of their responses. It must be said, however, that new digital subtitles allow users to enable/disable boxes and modify the subtitle layout. Although many participants couldn't show their stylistic preference, they admitted being used to modifying these elements with their remote controls.

But it may be the analysis of sound representation in SDH one of the most enlightening parts of the DTV4All project. The representation of context and paralinguistic information in SDH reveals important differences between the three groups. The aim of the present study was not only to test the current options available in the market but also innovative solutions, such as the use of icons, which is now a possibility in digital TV (Civera & Orero, 2010). Once again, habit or exposure to subtitles played a significant role, making a clear distinction between 'trained' (Hard-of-hearing and Deaf) and 'non-trained' (hearing) users. Sound location ('explaining where the sound comes from') is the favourite option for 60% of the Hard-of-Hearing and 40% of the Deaf participants, while the hearing respondents prefer a description of what the sound is like or, even better, words reproducing the sound. The latter option, namely onomatopoeic representations, is included in the Spanish Standard but it is hardly ever used, mainly limited to younger audiences. These younger viewers are also the only ones that support the use of icons (24%). Their familiarity to new audiovisual products such as videogames could explain their preference for these innovative alternatives.

How do you prefer sounds to be reflected on the subtitles?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
Explaining where the sound comes from	0	0	60	15	41	9
Using words reproduding the sound	46	16	16	4	35	7
Describing what the sound is like	37	13	24	6	0	0
Pictograms / Icons	0	0	0	0	24	5

Table 23. Description of sounds

It is worth noting here that, although all respondents selected one of the options, 40% of the Deaf and hard-of-hearing participants indicated that sound information was not an essential element and that it does not need to be included in SDH. Some hearing respondents also considered this information redundant, which in their case is less surprising, as they have full access to the soundtrack.

Another interesting piece of data obtained in this section about sound description is that while many users could remember the sound information reproduced in the subtitles, they were usually not able to remember the words that represented the sounds. This may mean that aural and visual perception follow

different paths as far as memory is concerned, and points to an interesting area for future research.

Concerning the placement of sound information in the subtitles, most hearing impaired participants favour the top right corner, in line with the Spanish practice (and unlike any other country). Both the hearing group and a significant number of hard-of-hearing respondents would also like to have the sound displaced to its source, a technique that is hardly ever used on Spanish TV.

Where do you prefer sound information to be displayed?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
Top-right side of the screen	17	6	68	17	81	17
Bottom of the screen	26	9	0	0	19	4
Next to the source of the sound	57	20	32	8	0	0

Table 24. Placement of sound information

The results obtained from the questions about the description of paralinguistic information reveal a heterogeneous picture. While the majority of Deaf respondents prefer not to have any description at all, most Hearers and Hard-of-Hearing would rather have this paralinguistic information conveyed in the subtitles, be it through an explanation in brackets (Hearers and Hard-of-Hearing) or through the use of emoticons/smileys (Hard-of-Hearing, to a lesser extent).

How do you prefer to mood information to be conveyed?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
Smileys	0	0	26	7	0	0
Explanatios in brackets	62	22	37	9	24	5
Nothing	17	6	37	9	76	16

Table 25. Describing emotions

It is surprising to see how the Deaf group, which theoretically needs paralinguistic information the most, does not consider it essential for the understanding of a programme. Deaf users explain that this information can easily be inferred from the images: context, faces, body language, etc. In any case, the second part of the DTV4All study in Spain, which includes both an eye-tracking test and a further questionnaire (see Chapter X), will show how the respondents' preferences

regarding this and other questions shift significantly once they have been exposed to specific subtitled scenes.

Finally, the issue of subtitling speed and its ramification on the choice between edited and verbatim subtitles is as controversial in Spain as it is in the other countries taking part in the DTV4All project. In the questionnaire, all the hard-of-hearing respondents opted for the verbatim option, thus demanding more information in the subtitles. Some of them proved to be aware of the technical implications involved in this choice (faster subtitling speeds) and the risk of not being able to process all the information. Even so, they stated that all the information should be present in the subtitles. As will be seen in Chapter X, when exposed to verbatim subtitles, many of the hard-of-hearing respondents changed their minds regarding this point. The Deaf users, with reading skills traditionally lower than those of hearing and hard-of-hearing individuals, were largely in favour of edited subtitles, although their views also changed after watching actual examples of these subtitles in the second part of the study.

Like the Deaf respondents, the hearers were also in favour of edited subtitles (80%). This may seem counterintuitive at first, as hearing viewers should be expected to cope with high reading speeds. Yet, their lack of practice reading subtitles may pose difficulties when splitting their attention between the text and the images on screen. In this sense, the idea of obtaining a 'summary' through the subtitles may sound appealing, as it provides extra-time to devote to the visual elements on the screen.

You prefer subtitles to be...?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
Verbatim	20	7	100	25	19	4
Adapted	80	28	0	0	62	13
Standard	0	0	0	0	19	4

Table 26. Subtitle Speed

6.4 Conclusions

It seems evident that Spanish viewers, influenced by the current practices they are exposed to, seem reluctant to accept any innovative alternative in subtitling –i.e. use

of icons. However habit-induced, many elements currently applied to SDH practices are questioned by the target users, although responses lack of consistency when confronting results from preliminary questionnaires to the ones passed after the eye-tracking sessions.

The oscillatory opinions collected in the present study depict an interesting profile of the Deaf. Their perception of the self communicative skills proves to be sometimes distorted. 76% among the Deaf consider themselves bilingual (SSL –oral Spanish), however most Deaf users would prefer an interpreter to access information, as they consider SDH no more than a secondary form of information. Surprisingly, only a 50% admits being dependent on SDH to understand dialogues and audiovisual contents, although an 86% has difficulties in reading subtitles. The Hard-of-Hearing, though, admit in many cases needing SDH to obtain a satisfactory comprehension. These oscillatory opinions are most significant among Deaf participants: whereas pre-test questionnaires do show preferences often confronted to current practices, after the exposure to different variables in the eye-tracking sessions participants generally select the predominant styles on TV, mainly in the most representative parameters –speaker identification, descriptions of paralinguistic information and background boxes– of obligatory use with the former teletext subtitling. This coincidence with the current subtitling practices is especially significant among the Hearing Impaired, showing all users similar responses, in contrast to hearing participants, being these less exposed to SDH styles.

The loose character of the UNE-153010 standards –still prevailing on its 2012 version– that accept a number of quite different styles for a single parameter, should still be revisited according to user preferences. Some lesser used practices –i.e. tag identification or bottom placement– should be more present, or even dominant styles. At this stage it was surprising to find out that up to 50% of HoH users would reject the introduction of sound descriptions in subtitles. The reading skills of the HoH, higher than those of the Deaf, together with their varying hearing remains, could somehow explain this point.

Finally, one of the most controversial aspects in SDH, subtitling speed, summarises the great differences encountered among the three groups. Questioned

on the improvements to be made on SDH, 75% among the Deaf would ask for reducing subtitling speeds, whereas none of the Hard-of-Hearing would question this aspect, but would ask for an increase on the number of programmes providing SDH. However, although all the HoH participants were massively for verbatim subtitling, when it came to reading practices, standard subtitles seemed to be a good option in terms of comprehension, dropping verbatim to a merely 50%, whereas Deaf users, however, would reject their use and prefer edited subtitles in 75% of the cases.

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7. Article 3:

'Viewers' perception of SDH in Spain: An Eye-tracking Study'

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This chapter will present the main results from the second part of the DTV4All project in Spain, based on the analysis of perception processes undergoing SDH reading and obtained using eye-tracking technologies. Together with the information extracted in the first part of the project, also presented in this volume, this study tries to shed light on the effect different subtitling styles have on reading patterns and their related comprehension.

7.1 Eyetracking tests in Spain

The complicated multi-phase structure of the DTV4All project made it necessary to carry out a series of pilot tests in order to check the adequacy not only of the materials used, but also of the structure and procedure of the experiment. Based on the common work of the research team, a series of two pilot tests were run in Spain. Their results enriched the common arrangements for the eye-tracking part of the study.

7.1.1 Pilot tests

No previous literature on eye-tracking research on SDH (De Linde & Kay, 1999; Jensema, 2000, 2000b, 2003; Gulliver & Guinea, 2003; Chapdelaine et al., 2007;

Lee, Fels & Udo, 2007; Chapdelaine et al. 2008) gave an insight into basic issues such as how to build up correct stimuli or the number of users to take part in eye-tracking experiments on SDH. For this reason different pilot tests were carried out in order to identify weak areas in the research.

The first pilot test enrolled a total number of 37 users –19 hearing, 9 Hard-of-Hearing and 9 Deaf users– with ages ranging from 19 to 49 years old. One of the premises for the development of the video stimuli for the project was the use of identical excerpts dubbed into each of the mother tongues included in the project[17]. The hypothesis was that Deaf participants may be tempted to lip-read, thus altering the nature of the experiment. Taking into account that only films aimed at children audiences are dubbed into all languages, the film *Stuart Little 2* (Minkoff, 1999) was selected for such a test. Then, a series of four clips of different lengths –1:30 to 4:30 minutes– were selected.

As a result of this first pilot test, it was agreed to use 1:30-minute clips, for the longer clips showed a drop in attention patterns among all the participants, and poor quality data on the eye-tracking session. At the same time, the degree of familiarity with the stimuli to which users were exposed proved to be an unexpected variable, as some users would have a further background knowledge on the material used, which could influence comprehension processes.

Considering the results obtained from the first pilot test, a new test was outlined, adjusting differences in video length and on the nature of the material. In this case the American sitcom, *Friends* (Kauffman & Crane, 1994-2004) was selected. Although materials dubbed into all languages should be used for the final test, taking into account the lack of footage for stimuli extraction, the second pilot was run only in Spain. This second test helped us analyse the length of the questionnaires, users' profiles and users' reactions. In contrast to the four videos used in the first pilot experience, 9 different videos built up the body of the second test, trying to reproduce the necessary conditions for the final experiment. This new pilot counted on eight hearing, seven Hard-of-Hearing and five Deaf volunteers. As a

[17] The languages taking part in the DTV4All project were Danish, English, German, Italian, Polish, French and Spanish.

result of this new test it was possible to determine that the original questionnaires outlined, which included 10 questions per clip –three on visual information, three on subtitled information, three on general content and an alternating final question– were too long. Shorter versions would be used in the final experiment. As expected, some Deaf users, when faced with the dubbed stimuli tried to lip-read, bringing abnormal results into the eye-tracking data. Taking this into account, which confirmed the original idea of using audiovisual material dubbed into all languages, it was agreed to work with animation (See Introduction). Although lip-synch is highly achieved in this genre, most Deaf users are not yet aware of this element and do not try to obtain information in such a form.

7.1.2 Final test

Once the characteristics of the final materials were determined, it was time to undertake the final test. Two research approaches were considered. On the one hand, a quantitative study would require a high number of participants that would be exposed to part of the experiment in order to obtain data for an inter-individual analysis. On the other hand, a qualitative approach would engage a more limited number of participants and would enable both an intra-individual and an inter-individual analysis. Considering the heterogeneity of the Deaf community in Spain (See Chapter X) and taking into account the study of Caffrey (2009: 138), who points the vast amount of data to be analysed in eye-tracking research, a qualitative approach was finally adopted.

The selection of parameters and variables for the study was based on the results obtained from a preliminary survey on the SDH practices in use, not only in the countries included in the DTV4All project, but also in other European countries, together with the results derived from the 'Comparative Subtitling Project' carried out by ESIST[18] in the year 2000.

[18] The European Association for Studies in Screen Translation (ESIST), collected data on standard subtitling practices throughout the world in the year 2000.

	UK	Denmark	Belgium	France	Germany	Italy	Spain	Poland
General								
Is there SDH?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Are there standards?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Do they apply?	Yes	Yes	Yes	Yes	Yes	Partly	Partly	Yes
Extralinguistic info.								
Character ID								
Is there ID?	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
How?	Col. Tags Plac.		Col.	Col. Box	Col. Tags Plac.	Col.	Col.	Col. Place.
Sound info.								
Is it marked?	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
How?	Up. case Col. Plac.	( )	Up. case	Col.	Box ( )	( ) Plac.	Up. case	Up. case
Pragmatics								
Different users?	Yes	No	No	No	Yes	No	Yes	No
Different styles?	Yes	No	No	No		No	No	No
Aesthetics								
Typography								
Font?	Arial	Ttx.		Ttx.	Ttx.			Ttx.
Size?								
Upper /lower case?	Low.	Low.	Low.	Low.	Low.	Low.	Low.	Low.
Lines?	2 (3/4)	2	2 (3)	2	2	2 (3)	2 (3)	2 (3)
Spacing?	1	1	1	1	1	1		1
Box?	Yes	Yes	No	Yes	Yes	Yes	N / Y	Yes
Carac. / line?	42	37	37	36	36	35-40		
Placement								
Where?	Bot.	Bot.	Bot.	Bot.	Bot.	Bot.	Bot.	Bot.
Sound info.?	Plac.	Bot.	Bot.	Bot.	Bot.	Bot.	Top/ Bot.	Bot.
Justification								
How?	Cen	Cent	Cent	Plac	Cent	Left.	Cent	Left.
Speed								
Cpm.?	140-180	10	10-12		12-13		19 (15)	12

Table 27. Results derived from the preliminary survey carried out within the DTV4All project.

The triangulation of these data drew a series of elements –parameters and sub-parameters– where the most significant differences could be identified. Differences were not only restricted to SDH-specific aspects –extralinguistic parameters (Arnaiz-Uzquiza, 2012) but also to aesthetic and aesthetic-technical parameters. Consequently, the categories that constituted the basis for the eye-tracking part of the study were: typography, boxes, borders, shadows, placement, justification, character identification, sound information, mood –paralinguistic information– and subtitle speed.

On the side of the final stimuli, it was agreed to work with animation. Due to fact that 23 different variables were to be analysed, and one video clip was to be designed for each example, it was necessary to use lengthy footage to extract the excerpts for the experiment. In order to follow the patterns identified during the pilot tests –length, questionnaires, etc.–, the final titles selected were the series *Shrek* from Dreamworks: *Shrek* (Andrew Adamson & Vicky Jenson, 2001), *Shrek 2* (Andrew Adamson, Kelly Asbury & Conrad Vernon, 2004) and *Shrek The Third* (Chris Miller & Raman Hui, 2007). The 276 minutes provided by the films altogether, were suitable material for the extraction of the final stimuli, a set of 23 videos[19].

[19] A selection of clips was made and the final selection of 23 excerpts was made by a group of judges. A similar practice was adopted for the ellaboration of comprehension questionnaires.

PARÁMETER	VARIABLE	FILM	MINUTE	LENGTH
Background Boxes	No Box	Shrek	54:34	00:58
	Box	Shrek	48:04	00:58
Borders	No Border	Shrek 3	37:00	01:05
	Border	Shrek 3	22:25	01:03
Shadows	No Shadow	Shrek 2	04:53	00:55
Placement	Top	Shrek	32:30	01:02
	Bottom	Shrek 2	47:04	01:00
	Mixed	Shrek 3	17:15	01:22
Identification	Colour	Shrek 2	01:05:35	00:59
	Tags	Shrek 2	20:24	01:00
	Placement	Shrek 2	13:02	01:02
Mood	None	Shrek	58:35	01:27
	Description	Shrek 3	26:23	01:04
	Emoticons	Shrek 2	01:13:50	01:13
Sound Information	None	Shrek	33:32	01:12
	Description	Shrek 2	32:13	01:01
	Icons	Shrek 2	21:25	01:05
Justification	Left	Shrek	43:15	00:55
	Centred	Shrek	41:50	01:03
	Shadow	Shrek	01:01:10	00:58
Subtitle Speed	Adapted	Shrek 3	57:40	01:32
	Standard	Shrek 3	07:52	01:20
	Verbatim	Shrek 2	30:25	02:05

Table 28. List of video-clips with their origin and length.

In order to control any non-desired variables, all the clips selected included information of similar characteristics: 25-35 subtitles per clip, similar dialogue loads, similar visual contents, etc.

Given that eye-tracking does only provide information on eye-movements, but does not get a deeper insight into the mental processes behind, a series of comprehension questionnaires were disseminated after each variable tested. Each questionnaire included three different questions: one on visual information, another question on subtitle information, and a third question on the general content of the clip. As in the case of clip selection, comprehension questions were selected by judges in order to validate the test.

At the same time, a brief questionnaire was handed out in order to collect further information on preferences after the eye-tracking sessions. This second questionnaire on preferences was used to determine whether users' responses could be stable and reliable from a scientific point of view.

Once the final experiment was designed, in order to control secondary variables on user's profile, a set number of users of a controlled age group (25-45 years old), education (higher education), and geographical background (members of the association MQD-Aransbur, in Burgos) were chosen. The classification of the Hearing Impaired was based on their communication skills rather than on their hearing capacities. Whereas the Hard-of-Hearing were deaf participants with some hearing remains –in most cases– using any sort of hearing aid, and who would communicate in oral language, the Deaf were a group of users with/without hearing remains who would mainly communicate in Spanish Sign Language (SSL). Most participants in this Deaf group, also using for the most part different hearing aids, would consider themselves 'bilingual'. However, their responses in preliminary tests would reveal grammar and syntactic structures common to SSL users, rather than oral forms.

Taking all these data into account, it was possible to count on a group of eight Hearers, seven Hard-of-Hearing and seven Deaf. It is necessary to point out that any subtle variation during the eye-tracking process results in a loss of information. This is the reason why, even though the intended figure for the test was five users per group[20], it was recommended to record some additional tests in order to ensure the minimum number of complete recordings per group for the analysis.

7.2 Eyetracking results per parameter

As some aspects that would later be studied –i.e. the number of fixations and/or the time spent on subtitles and images– needed a contrast basis for their analysis,

[20] Some participants taking part in the eye-tracking pilot tests did not finish the session. Some were tired and left before the end, others were not concentrated and their data showed non-valid recordings. In other cases the colour of their eyes –light eyes– did not draw valid data, etc.

previous studies on rough subtitled programs were used to extract this information[21]. One of the most important elements of this previous study was the number of characters included in a fixation in the case of Spanish users.

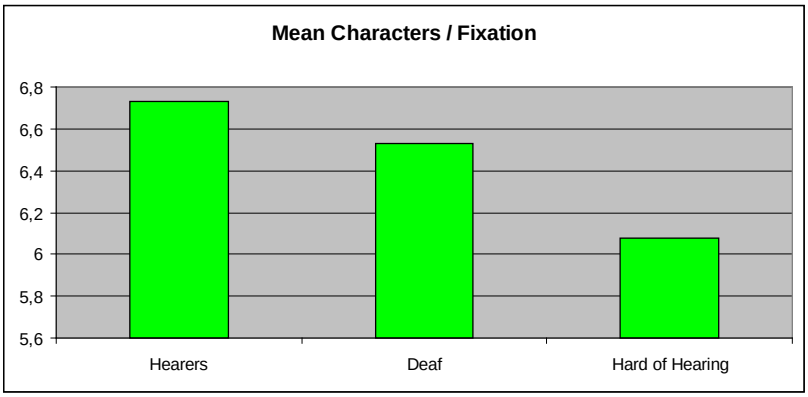

Fig. 29. Average number of characters per fixation and group.

It was surprising to find that Deaf users go throw more characters per fixation than Hard-of-Hearing users. The reason for this is that in most cases Deaf viewers scan the scene without reading the subtitle –see results in comprehension tests. Hard-of-Hearing viewers, on the contrary, do make bigger reading efforts, with higher number of fixations and lower number of characters per fixation, but achieving better results in comprehension tests.

This same contrastive pattern was adopted for the extraction of further 'standard information' –average number of fixations, fixation length, scanpaths, etc.– that would later be adopted as contrastive data for the study of the parameters identified.

[21] 'Rough subtitled programmes' refer to the subtitled clips used for the pilot tests, where no parameters were tested and a 'standard' reading pattern was identified.

7.2.1 Typography

Due to its aesthetic nature, 'Typography' is one of the most visible parameters, and the one that gathers the biggest number of sub-parameters (Arnaiz-Uzquiza, 2012). According to the 'Comparative Subtitling Project' the main differences that could be identified among subtitling practices derive from the font type and font size, the use of borders and shadows and the use of background boxes.

Fig. 30. Examples of different subtitling styles extracted from the 'Comparative Subtitling Project' (ESIST, 2000)

Although font type and size were also identified during the first steps of the DTV4All project, previous research indicated the lack of consistency of its incorporation into the study (Arnaiz-Uzquiza, 2010). The new possibilities provided by digital TV enable users to modify this typographic features regardless the original configuration of the subtitle. Thus, these elements were removed from the main study.

7.2.1.1 Boxes

The use of boxes has been left aside when it comes to establishing subtitling styles for many years. Imposed by analogue teletext technologies, its use was forced for analogue TV –and so was considered in the original UNE-153010 standards– , but was never included on DVD subtitling. Considering its optional use nowadays, and its alternate presence in the Spanish audiovisual landscape (with some TV broadcasters

using opaque boxes, whereas others do not use background boxes at all), both variables were tested.

Checking the reaction time, Hearers showed slower times to first fixation than the other groups, but all three groups showed faster reactions when 'Boxes' were used, the Deaf being the group with the fastest reaction: 0.1800 sec. Significantly enough, these times rose by 33% when 'No boxes' were used, whereas Hearers and Hard-of-Hearing users showed times that only rose by 12-15%.

The faster reaction by Deaf users when reading subtitles in boxes was also accompanied by a longer first fixation length. This implies that Deaf users stop for a longer time once the eye has reached the final position after a saccadic movement. The 'Mean Reading Time' of this same group showed that it took users longer to read subtitles in 'Boxes'.

This reaction, however, was not similar in the other two groups –Hearers and Hard-of-Hearing– as 'No boxes' forced longer first fixations, with longer 'Reading Times' especially among the latter. However, the reading time invested by Hearers in subtitles with 'Boxes' was longer, as it happens with Deaf viewers.

Nevertheless, the 'Mean Reading Time' does not explain the underlying comprehension process. Although the fixation length and the longer time spent in reading the subtitle could lead to a better understanding, results showed that subtitles with 'No Box' achieve a better textual comprehension –77%– than 'Box' subtitles –60%–, together with similar or shorter fixation times.

It could then be considered that 'No Box' reading results in a more efficient reading process. However, conflict arises when user preferences come into scene. Although users did not really defend the use of boxes before the test, when it came to practice, their responses varied: the Hard-of-Hearing, who were only 40% for the use of boxes, moved to a 75%, and so did the Deaf. Hearers, in turn, less exposed to SDH practices, did not show a preference for this option, but a 60% defended the consistent use of either option in all audiovisual products. The Hearing Impaired, on the contrary, influenced by the changing scenario where SDH is currently broadcast, consider unimportant such a consistent representation.

7.2.1.2 Borders

This sub-parameter, traditionally ignored in most subtitling standards, has long been subject to the technological restrictions of analogue teletext. The innovative optional use of boxes has led to a choice of further typographical elements, as font configuration. This is the reason why the use of font borders and shadows was tested.

Asked about the preference on both aspects, users could not make a deliberate choice on their use, and that was the reason why eyetracking tests could shed some light on the best stylistic option in terms of reading.

Surprisingly, both Hearers and hard-of-hearing viewers had longer reaction times in subtitles with borders than in subtitles without them, although differences vanish among Deaf users. However, when it comes to the reading time all users invest longer time in reading subtitles with no borders –especially Deaf viewers, 4% longer. Comprehension patterns linked to these viewing processes showed that users with some hearing capacities (H, HoH) do have a better text comprehension reading texts with borders, in contrast to Deaf users, who showed the opposite tendency. In this respect, due to the short number of participants in the text, further research would be necessary for this specific variable.

7.2.1.3 Shadows

Similarly to the use of 'Borders', and also limited by analogue teletext, 'Shadows' is not included in the Spanish standards and viewers are hardly ever aware of its use. As on the typographical features included in the project, the variables tested considered the use or absence of the given element.

Given the slight perceptual difference between both styles, it is remarkable the fact that users could not tell the difference between both variables, which prompted random answers in the questions on preferences. However, as in the previous example, minor –but unexpected– differences could be identified in the analysis with the eye-tracker. It was possible to find, for example, that subtitles with 'No Shadows' caused longer reaction times in users with hearing impairments –specially among

hard-of-hearing viewers, although the mean reading time pattern was inverted for this group, having longer reading times for texts with 'Shadows'.

7.2.2 Identification

This extralinguistic parameter was one of the most representative aspects due to the differences that could be found in the contrastive analysis of SDH styles.

The three different variables selected for identification tests –colours, tags, displacement– were present in the Spanish UNE-153010 subtitling standards[22]. Although colour identification is the most extended method both on TV and DVD subtitling, the use of tags and displaced subtitles is also accepted, although scarcely used.

Differences in subtitle positioning on screen –displacement versus colours or tags– were expected to be found in the analysis of reaction times –times to first fixation– among the three groups. However, results obtained revealed that 'displaced subtitles' draw shorter times among all the groups, being the Deaf and the Hard-of-Hearing the ones with faster reaction times. In contrast to these data, it was possible to find that the reading patterns of all groups when tag identification is used differ with regard to the ordinary reading scheme for subtitling: users skip the information in tags and only come back to it once the subtitle has been read, or as regressions during the reading process.

[22] At the time of submitting this article the standards still in use were the UNE-153010 standards issued in 2003. This included three different alternatives for character identification, being colour identification the only one traditionally applied. The 2012 version of the standards, released in May 2012, also includes three eliminatory alternatives –colour, tags, and hyphens. Displacement is no longer considered an acceptable variable.

	Colours	Tags	Displacement
Deaf	63.6%	70.8%	74.6%
Hard-of-Hearing	54.7%	66%	70.3%
Hearing	44%	57.2%	70.4%

Table 31. Mean Reading Time: Identification

Similarly, longer reading times were also thought to be relevant, considering that the increased number of characters of tag identification could entail longer reading times. However, it was 'Displaced' subtitles the ones that made users invest longer times (70-74% of the viewing time), before 'Tags' (57-70%) or 'Colours' (44-63%). Furthermore, this prolonged reading did not guarantee an enhanced comprehension, as this variable showed the poorest comprehension results, hardly reaching a 30% of the total text comprehension.

Colour identification, on the contrary, obtained the shortest reading processes (44-63%) and best comprehension results, both among Hearers and hard-of-hearing users. It is to be remarked that Deaf users compensate 'Comprehension Instances', and so although textual meaning obtained is poor –non-existent– for all variables, visual –image– and general meaning obtain better data, still with very poor scores.

7.2.3 Placement

Although the placement of subtitles has rarely been questioned, the analysis of the different possibilities existing in Europe brought this aspect into the project. The predominance of 'Bottom' subtitling for all DVD versions providing SDH in Spain coexists with a combined option –'Mixed'– where sound –context– information is displayed at the top right corner of the screen[23]. This display mode, which seems specific to the Spanish audiovisual market within Europe, can also be found in different versions in various audiovisual contexts – i.e. sound information displayed in a top centred position in the United States (DCMP, 2009). The Spanish use is recommended by the UNE-153010 standards –former and current versions– and thus, widely present on TV subtitling. The third stylistic option tested, 'Top' subtitling,

[23] The lack of consistency in the representation of extralinguistic information in Spanish SDH make it possible to find paralinguistic information represented in the top right corner of the scene.

is only present in some live events and some internet products, although it is hardly ever present on TV broadcasts and DVD releases.

'Top' subtitles obtain faster reaction times than 'Mixed' and 'Bottom' subtitles for all groups. Just in the case of Hearers differences are barely remarkable –2% slower than 'Bottom'. 'Mixed' subtitles –the most extended style in Spain– are the slowest variable in terms of 'Reaction Time' –Time to first fixation. However, when it comes to analysing 'Mean Reading Times', viewers invest less time in 'Mixed' subtitles than in the other two styles, with the extra value of higher comprehension results among hard-of-hearing users. Nevertheless, Deaf users, who spend 25% less time reading 'Mixed' subtitles, do achieve better comprehension results with bottom subtitling, whereas 'Bottom' subtitles –of extended use in the Spanish DVD market– force reading times ranging from 53% to 61% longer.

The use of 'Top' subtitles, although the quickest style in terms of reaction times, does show poor results among Deaf users in terms of text comprehension, although Hearers and the Hard-of-Hearing perform better. Taking into account the three comprehension instances –text, visuals, sense–, and the viewing performance during the reading process, the general average would suggest the use of 'Bottom' subtitles as the most adequate format for all viewers.

In this case, user preferences do match the results derived from the eye-tracking analysis, with 100% of the Hard-of-Hearing supporting subtitles in a 'Bottom' displacement. However, also in this case, only go 25% of the users would go for a generalised bottom placement, following current practices where TV stations are the only ones providing a mixed placement of SDH.

7.2.4 Justification

In close relation with placement, and also within the group of aesthetic parameters, 'Justification' is one of the parameters that also changes among the different countries. Sometimes conditioned by historical traditions in certain countries, in Spain centred positioning is widely used for any pre-recorded material, whether on TV, DVD or cinema exhibitions. Nevertheless, first limited by technological restrictions, and then habit-induced, most live subtitles, in any format, are left-justified.

Test results reveal that all groups have faster reaction times with centred subtitles than with left justified texts, being differences specially relevant among Deaf (0.2655 sec. for centred and 0.3519 for left-aligned subtitles) and hard-of-hearing users (0.2989 sec. for centred and 0.4198 sec. for left-aligned). Although reading may be slightly delayed, the average time invested in the reading process is less with left-aligned subtitles, especially in the case of hearing impaired users, who spend 8% longer with centred texts.

However, although the longer time spent could be interpreted as a positive sign in terms of comprehension, results do not support this idea. Comprehension instances demonstrate that centred subtitles are better read –in terms of comprehension– by Hearers and Deaf users, whereas only the Hard-of-Hearing get better results with left aligned texts, though the time invested in subtitle reading is also higher than for centred subtitles.

7.2.5 Mood

Together with speaker identification, the representation of paralinguistic information for mood content and sound information are the most specific elements of SDH. Following the open guidelines in use in Spain, the three variables tested –'Description', 'Emoticons' and 'None'– would be accepted according the national standards[1]. Although descriptions are the most extended practice, the use of emoticons can also be found for some broadcasters. The third variable, which implies a lack of representation, is also of extended use, as many DVDs in the market provide SDH that only differ from ordinary subtitles in the use of colours for speaker identification. It is extremely representative that 50% of the Deaf users questioned would reject any representation of mood information at all, regardless of the information conveyed by these subtitles.

	Description	Emoticons	None
Deaf	0.3978 sc.	0.3942 sc.	0,1433 sc.
Hard-of-Hearing	0.4456 sc.	0.8610 sc.	0.1533 sc.
Hearing	0.4682 sc.	0.6639 sc.	0.2041 sc.

Table 32. Time to First Fixation: Mood

Even though both in 'Description' and 'Emoticons' further information is provided, 'Emoticons' seem to be the most time-consuming option. This is conditioned by the fact that the information of both options –'Description and Emoticons'– as it happened with 'Identification: Tags' is only processed as part of regressions, or once the subtitle has been read.

It is also necessary to remark that the information provided through 'Emoticons' is only 'seen' in 39 / 30 / 25 % of the occasions for the three groups –Hearers/Deaf/Hard-of-Hearing–, making it difficult to examine comprehension results in this part. In most cases the presence of an underlying reading process was never achieved, as the target object was not even perceived. On the other hand, 'Descriptions' were 'seen' in 88% (H) to 94 % (HoH, D) of the occasions. These figures cannot justify the existence of an underlying reading process on their own, but the conditions are set to enable a reading process.

Taking into account the 'Mean Reading Time', but not ignoring previous data, results reveal that most hearing impaired users spend longer time -from 67% to 75% of - reading subtitles with no context information -'None'-. In contrast to this, 'Emoticons-emoticons' is the variable that takes users -mainly the Deaf- the shortest time to read (48% of the observation time).

However, when it comes to comprehension, results highlight the need to take all previous data into consideration: results drawn by comprehension tests show that Hearers achieve a perfect comprehension when subtitles do not provide further information -'None'-. This could be explained by the additional information provided by the soundtrack, also available for them. In contrast to this, Deaf and Hard-of-Hearing users reach a very poor -non-existent- text comprehension (0% for both).

Given that little information could be retrieved with the eyetracker in the 'Emoticon-emoticon' video due to specific reading habits - less than 30% of the information was perceived, which should trigger further research in this area-, it is necessary to handle the following data with care. While hard-of-hearing users would obtain very high comprehension results -close to 100%-, Deaf users would process information in a similar way to 'Description'. Nevertheless, it would be necessary to analyse why Hearers' comprehension is far poorer (40%) than in the other two examples.

In the post-test questionnaires, 'Description' was chosen as the preferred option for all three groups (85% H, 75% HoH, 75% D). This technique is traditionally used in Spanish SDH to convey paralinguistic information, although it is only a secondary choice in pre-test questionnaires. Albeit it already was for Hearers, it was not for the hearing impaired participants. What is more, post-test questionnaires reveal that both Deaf and hard-of-hearing participants would prefer this technique to be used in 75% of situations.

These move in preferences is especially representative, because they show, once again, how preferences are affected by habit: although emoticons are accepted and included in the UNE-153010[24], users are not as familiar with them, as many users cannot identify the meaning of the iconic representations used. Furthermore, Deaf users cannot always infer the emotional meaning of a given subtitle without a description, no matter how much information can be obtained from scene.

In any case, taking into account the real data obtained in the present test, subtitles with description would be the most adequate option in terms of perception and related comprehension.

7.2.6 Sound

Along with the opinion on paralinguistic information for mood, sound information is one of the key elements of SDH for Deaf and hard-of-hearing users as it provides data on sound information otherwise missing for these groups of viewers (only 20%

[24] The new version of the UNE-153010 does no longer include the representation of emoticons for paralinguistic information. Nevertheless, they are still being used by TV broadcasters.

of the Deaf reject its use). In contrast to all the other parameters and variables in the project, innovation was introduced to test the potential acceptance of its use, already suggested by some authors (Chapdelaine *et al.,* 2007, 2008; Civera & Orero, 2010) and already in use even for identification purposes.

To the current descriptive representation of sound, in use on TV, DVD and officially included in the national standards, the lack of sound representation was also added as the other practice existing in SDH subtitling in Spain. Many SDH examples only include speaker ID as part of the requirements to this subtitling modality. Finally, the third option adopted takes a glimpse on some new proposals in the field of innovative techniques for SDH, including iconic representations -bitmap based- of sound information.

Fig. 33. Example of iconic representation for character ID (‘*Caiga quien Caiga’*, La Sexta)

Having a look at ‘Time to first fixation’, the time elapsed is always shorter when no additional information is provided, whereas when ‘Descriptions’ or ‘Icons’ are used, reaction times may be delayed 62 to 86% against the ‘None’ option- especially in the case of ‘Icons’. In contrast with previous tendencies, Deaf viewers have longer reaction times than the other two groups in the special case of ‘Icons’. Interestingly enough, only 50% of the icons presented were satisfactorily ‘seen’ by these users, whereas 53% among the Hearers and 68% among the Hard-of-Hearing went through this information.

	Description	Icons	Nothing
Deaf	0.4291 sec.	0.8025 sec.	0.1053 sec.
Hard-of-Hearing	0.4760 sec.	0.6092 sec.	0.2263 sec.
Hearing	0.4669 sec.	0.6916 sec.	0.2272 sec.

Table 34.Time to First Fixation: Sound

In the case of 'Descriptions' all the groups went through the sound information in 80-100% of the cases, although the first fixation length is much longer for all groups, being the Deaf participants' results almost 50% longer. This could be explained by the fact that the information provided in this format comes in the form of text -subtitle-, nevertheless, as in the example of 'Mood: emoticons', further research should be carried out on this issue.

Although the comprehension instances analysed for previous parameters did not draw significant results for visual comprehension and overall meaning, all comprehension instances -text, image and sense- reveal important data in this case.

Considering Overall Comprehension, although not accepted in pre-preference questionnaires, subtitles including 'Icons' achieve a better comprehension in all groups, and mainly among hearing impaired users. Surprisingly, even subtitles with no context/sound information -'None'- provide better comprehension results in all groups than subtitles with 'Description'.

As it happens with 'Mood-None', Hearers achieve better comprehension levels reading subtitles with no additional information than reading subtitles with description or iconic representation. The answer to this could come in the fact that context / sound information not provided by the subtitle / icon is conveyed through the soundtrack.

If we analyse the three comprehension instances separately, the data obtained highlight the differences existing among groups in data extraction from the three sources of information tested. In the case of text information, 'Description' obtains the best comprehension results, being Hearers the group with higher scores (80%). It is also representative the fact that only the groups with hearing remains -

Hearers/Hard-of-Hearing- achieve comprehension at some extent, whereas Deaf viewers got a 0% comprehension.

When it comes to visual information -Image- results vary more significantly. As it happened with paralinguistic information, Hearers achieve their better understanding with iconic representation or no representation at all (80%), whereas the Hard-of-Hearing would prefer 'Description' (70%), and Deaf users, however, seem to obtain a better visual understanding when no context information is provided (80%).

Finally, for the third source of information analysed -'Sense'-, co-occurring results show that 'Icons-None' provide better comprehension data among users with some hearing –Hearers (100%) and HoH (100%)-. Maybe the possibility of relying partially on sound provides the extra information required. However, further research should be carried out at this stage to confirm this hypothesis.

All in all, the best average comprehension for all groups is achieved with the 'Icon-icon' format (80%), possibly relying on the 'Comprehension balance' already mentioned. However, it is important to highlight that only 50 to 68% of the iconic information represented through 'Icons' was perceived by the final users.

7.2.7 Speed

As already described in Chapter X, 100% of the HoH would choose 'Verbatim' subtitling as their preferred speed, even if this style may not be technically viable.

The linguistic component of SDH has been present in the UNE standards since its origins, and has also been studied by various authors in Spain (See Chapter X). The UNE-153010 standards in use depict national practices limited by the spatiotemporal restrictions in subtitling: 37 characters per line, a subtitling speed of 19 characters per second and a maximum display time of 6 seconds per subtitle[25]. These standards, that support verbatim subtitling when the previous conditions can

[25] The UNE-153010 standard issued in 2003 marked a SDH speed of 19 characters per second. The new version issued in 2012 has reduced this speed to 15 characters per second. However, as the new version was still under revision when the project was carried out, the parameters of the former edition were used

be respected, do also mention a specific category -'Subtitling for people with reading/writing disabilities'. This secondary form of subtitling respects almost the same patterns of the SDH standards, but drops reading speed to 12 characters per second. Nevertheless, this subtitling style is not present either on TV or on any other audiovisual format.

With 'Verbatim' subtitles the time to first fixation is considerably shorter for Deaf and hard-of-hearing users (0.208 sec.), especially when compared to 'Edited' (0.247 sec.) or even 'Standard' subtitles (0.241 sec.). The reason could lie in the reading process developed for every modality: the speed at which subtitles are passed forces readers to adopt faster eye movements and reading times (D'Ydewalle, 1991). However, it is also significant that 'Standard' subtitles show similar reaction times both among Deaf (0.243 sec.) and hard-of-hearing participants (0.240 sec.), whereas 'Edited' subtitles reveal longer reaction times among hearing (0.387 sec.) and deaf (0.316 sec.) participants. The results among this specific group are particularly surprising, and, as in previous examples, would require further research.

But the mean reading time is the part of the study that draws more important data to support the nature of every modality: 'Verbatim' subtitles require 55 – 70% of the reading time, leaving a 45-30% of the viewing time to the rest of the scene -visuals. 'Edited' subtitles are the modality that requires less reading time -38-49% of the viewing time- by users with hearing remains. On the contrary, the Deaf invest the longest reading times in processing this modality of subtitles. However, comprehension rates are extraordinary low for all the groups: a 40% (H), 50% (D) and 25% (HoH). Although the levels reached by Deaf viewers are the highest ones for this subtitling format among the three groups, the mean text comprehension rate is the lowest one from the three subtitling speeds -38'3%.

	Standard	Edited	Verbatim
Deaf	47.9%	55.4%	70.95%
Hard-of-Hearing	48.5%	38.08%	60%
Hearers	51.3%	49.1%	55.8%

Table 35. Mean Reading Time: Speed

On the other hand, although 'Verbatim' requires longer fixation and reading times than 'Edited' and 'Standard' subtitles, comprehension does not improve, not even in those cases in which the reading time rises, with comprehension rates than only reach a 60% in the case of Hearers.

Confronting users with speed preferences after the test, only 50% among the Hearers insisted on their preference for 'Verbatim', whereas the other 50% would prefer 'Standard' subtitles. As for the Hard-of-Hearing, 50% would support 'Standard' -against the 60% who would support 'Edited' subtitles before the test. Further research is still necessary in order to modify visual contents and word-rates to confront these results.

7.3 Comprehension

Although the analysis of comprehension has been present at every different step of the study, the final results are worth including a specific analysis. As expected, Hearers were the group with the best comprehension scores (1.57 out of 2), with a better comprehension in general content (1.66), then textual information (1.53) and, finally, visual information (1.51).

Both hearing impaired groups -Deaf and Hard-of-Hearing showed similar comprehension deviations, with their best comprehension performance in visual contents -1.39 among the HoH and 1.48 among the Deaf- and their worst comprehension results obtained in subtitle processing -1.18 for the HoH and 0.94 for the Deaf.

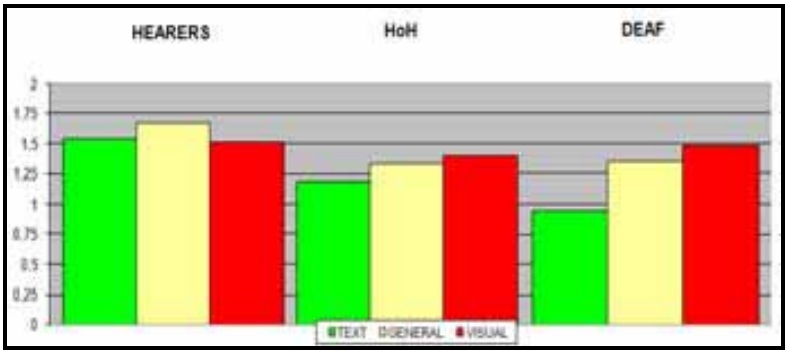

Figure 36. General results for comprehension per groups and instances.

As can be seen the average comprehension among the Deaf are still very poor, hardly obtaining 1.25 out of 2. The Hard-of-Hearing, although more skilled in reading tasks due to their familiarity with spoken Spanish and with some hearing remains, do not obtain significantly better results (1.30). Although differences among comprehension instances are not as significant as in the case of the Deaf, textual comprehension remains very poor.

These data provide an accurate overview of the benefits viewers are obtaining from SDH nowadays. Future research should concentrate both on the aesthetic and technical aspects of the subtitles, as well as on their linguistic component in order to increase comprehension results.

7.4 Conclusions

The present study has shed some light into some of the current SDH practices in Spain as well as on the comprehension processes viewers undergo. As it has been shown, many of the subtitling standards currently in use are really meeting the needs of the final audiences, whereas some could be improved by adopting more accurate practices.

Considering all the parameters individually, and taking into account the different variables studied for every parameter, the best subtitling styles could be a combination of these:

From a typographical perspective, the options 'Border' and 'Shadow' seem to get better results than the 'No Border'/'No Shadow' variables among Hearers and

hard-of-hearing participants. In contrast to this, the Deaf invest longer time reading subtitles without borders and shadows, but their comprehension results are better.

The use of 'No Box**'** -generalised practise in DVD subtitling in Spain- has proved to be the most beneficial option for comprehension purposes for all groups. However, even if it may entail longer reading processes among hard-of-hearing participants, image comprehension seems to be improved by not using background boxes.

Results derived from the analysis of the aesthetic parameter 'Placement' reveal that although 'Mixed' subtitles have good comprehension results for hard-of-hearing viewers, deaf and hearing participants showed poorer comprehension data. Thus, 'Bottom**'** subtitling, currently in use only in DVD subtitling, is the most performing style in terms of viewing time and related comprehension.

Very much related to placement, **'**Justification**'** points into two different directions: 'Centred' subtitles -as recommended by the UNE-153010- do obtain better viewing and comprehension results among hearers and deaf participant, whereas the Hard-of-Hearing have better comprehension results with 'Left**'**-aligned texts.

'Colour' has proved to be the best identification technique in terms of comprehension for all groups, as both 'Tags' and 'Displacement' require longer reading times and do not show better comprehension. User preferences, influenced by the Spanish SDH tradition, are in line with this result.

In the analysis of the representation of the extralinguistic representation, here called 'Mood**'** -paralinguistic information- and 'Sound' -sound/context information-, the results obtained reveal that the use of 'Emoticons' and 'Icons' could improve reading comprehension and reduce the mean reading time among hearing impaired viewers. However, given that only 30% to 50% of the info was perceived among these groups, 'Description' is the option that best meets comprehension levels for both parameters in current practices.

All in all, among the nine parameters tested in the DTV4All project, the most striking results came from the analysis of 'Subtitle Speeds**' -'**Standard', 'Edited',

'Verbatim'. Whereas hearing impaired users -mainly the Hard-of-Hearing- claim for a verbatim reproduction of dialogues, the results drawn from the study reveal that this speed does not benefit comprehension in any case. Adapted subtitles, often recommended by scholars, do not obtain the most successful results in terms of comprehension, not even among Deaf participants. These results support the use of 'Standard Subtitles' as the option that best meets the needs of all three groups in terms of comprehension.

According to the results drawn by the global analysis, the 'Perfect' subtitling standards would include the following parameters:

	ID	Place.	Justi.	Box	Border	Shad.	Mood	Sound	Speed
H	Colour	Top	Centre	N	Border	Shad.	Descr.	Descr.	Stand.
D	Colour	Bottom	Centre	N	N	N	Descr./ (Emot.)	Descr.	Stand.
HoH	Colour	Mixed	Left	N	Border	Shad.	(Emot.)	Descr.	Stand.

Figure 37. Comparative results of the DTV4All project in Spain per groups.

As can be seen in the above table, there does not seem to be a single format that meets the need of all subtitle users. Further research would need to focus on whether the combination of these parameters would really improve the current subtitling practices.

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8. Summary

8.1 Summary

The series of publications included in the present PhD thesis –three articles in the main body, and four additional articles as part of the annexes–, provide a progressive perspective of the research conducted by the author throughout these years in the field of Subtitling for the Deaf and the Hard-of-Hearing (SDH) and Audiovisual Accessibility.

Subtitling for the Deaf and Hard-of-Hearing (SDH) has traditionally been conditioned by a user-oriented approach, providing uneven data in different national and international contexts. This fact, together with a notable lack of stylistic rigor in the professional practice, stimulated the desire for further study of this modality. Given the need to confront practice to scientifically contrasted data, it seemed necessary to conduct a broader study of SDH. This study would help provide a research framework to SDH at the time it would focus on some of the most representative elements –parameters– of this subtitling discipline.

Considering the taxonomy defined by Bartoll (2008) for the study of subtitling, and bearing in mind all the elements specific to SDH, an updated model was proposed for the analysis of this subtitling technique. To the parameters described by the original taxonomy for the study of subtitling –text, pragmatic and technical parameters– the new model incorporates new categories: extralinguistic, aesthetic and aesthetic-technical parameters. From the new categories incorporated, only extralinguistic parameters are specific to SDH. This new addition describes the different sources of sound information present in audiovisual materials that need to be transcribed to provide full access to Deaf audiences: character identification, paralinguistic information, sound effects and music. (See Chapter 5)

Once the updated taxonomy outlined, and considering how different SDH practices were across Europe –and even within the same country– research focused on SDH practices in Spain, and on the opinion of Spanish Deaf users.

The project ‘Digital Television for All (DTV4All)’ provided the ideal context for the other two articles included in the main body of this work, conducting SDH user centric research at an international level, and comparing Spanish data with other countries’ which were part of the DTV4ALL project.

Deaf, hard-of-hearing and hearing people took part in the two phases of this part of the study. First, participants filled in opinion questionnaires that aimed at identifying viewing patterns, opinion on SDH practices and differences among groups of users with hearing impairments. Questions on stylistic features –different options adopted for character identification, subtitling speeds, subtitle placement, etc.– showed how viewers are strongly influenced by the practices they are exposed to, being reluctant to innovations. However, results also revealed how responses are not stable, and users can provide different answers to a same question at different moments. This lack of uniformity proves this research method to be non-sufficient for the aim of this research. (See Chapter 6)

At this stage, and considering that the hypothesis of the study was that improving readability and legibility would ease users’ reading efforts, new research tools needed to be adopted. Thus, for the second part of the study, both users’ perception and comprehension were tested adopting eyetracking technologies combined with comprehension questionnaires.

Results derived from the first phase of the DTV4All project on users’ opinions showed how different SDH practices were in Europe, and how opinions varied from one country to another. The new results discovered, first of all, poor comprehension results were among hearing impaired audiences, and how different information –text, visuals and content– were processed differently by the three groups of users.

On the other hand, analyzing how the eyes moved during the viewing process, perception results revealed how different viewing patterns can be identified among deaf, hard-of-hearing and hearing users. This implies that a same SDH style does not match the needs of all users, and how the standard currently in use in the Spanish audiovisual scenario –UNE-153010– does not meet the needs of the final audience, either Deaf or Hard-of-Hearing. (See Chapter 7)

Therefore, considering the many parameters that condition SDH (Chapter 5), the lack of consistency of responses based on users' opinions (Chapter 6) and the differences identified among groups, both in terms of comprehension and perception (Chapter 7), further research is still necessary. In the meantime, SDH should be considered 'a temporary tool', as research has proven that current SDH practices do not meet the needs of deaf and hard-of-hearing users in similar terms.

8.2 Resumen

Las publicaciones que forman parte de la presente tesis doctoral –tres como cuerpo principal de la misma y cuatro como parte de los anexos– ofrecen una detallada visión del carácter progresivo de la investigación llevada a cabo por la autora en el ámbito del Subtitulado para Sordos (SPS) y la Accesibilidad Audiovisual.

El Subtitulado para Sordos (SPS) se ha caracterizado por la objetividad de los estudios, centrados en el usuario. Este hecho ha dado como resultado la obtención de datos confrontados en diferentes contextos nacionales e internacionales. Este hecho, unido a la falta de rigor estilístico en la práctica profesional, motivó la necesidad de llevar a cabo un estudio más profundo sobre esta modalidad. El análisis de la práctica profesional desde un punto de vista científico serviría para dotar a esta disciplina del marco teórico necesario, al tiempo que profundizaría en algunos de los aspectos – parámetros – más representativos del SPS.

Partiendo de la taxonomía desarrollada por Bartoll (2008) para el studio del subtitulado desde un punto de vista general, y teniendo en cuenta todos los aspectos específicos del SPS, se desarrolló un modelo ampliado y adaptado al estudio de esta modalidad de subtitulado. Así, a los parámetros recogidos por la taxonomía original –lingüísticos, pragmáticos y técnicos– el nuevo modelo taxonómico incorpora nuevas categorías: extralingüísticos, estéticos y estético-técnicos. De todas ellas, únicamente los parámetros extralingüísticos resultan exclusivos del SPS, y hacen referencia a todas las formas de información sonora que están presentes en el producto audiovisual y que es preciso transcribir para que la audiencia con problemas de audición acceda al contenido: información sobre la identificación de personajes, información paralingüística, efectos sonoros y música. (Ver Capítulo 5)

Tras la definición de la taxonomía, y teniendo en cuenta las diferencias estilísticas que es posible apreciar en el SPS en Europa, el estudio se centra en las prácticas llevadas a cabo en España y en la opinión de los usuarios sobre las mismas.

El proyecto ‘Digital Television for All (DTV4All)’ *(Televisión Digital para Todos) facilitó el contexto ideal para el desarrollo de la investigación que queda recogida en los otros dos artículos de la presente tesis. El estudio del SPS desde un punto de vista objetivo sirvió para comparar los datos obtenidos en España con los resultados de los demás países miembros del proyecto DTV4All.*

El proyecto, estructurado en dos fases, contó con la participación de tres grupos de usuarios –Sordos, Deficientes Auditivos y Oyentes. A lo largo de la primera fase los participantes rellenaron cuestionarios que buscaban identificar patrones de consumo de subtítulos y opinión sobre el SPS entre los distintos grupos. Las respuestas sobre las cuestiones estilísticas de los subtítulos -diferentes formas de identificar a los personajes, diferentes velocidades de subtítulo, diferente posicionamiento del subtítulo, etc.– desvelaron que los usuarios están fuertemente condicionados por las prácticas a las que están expuestos. Al mismo tiempo, las respuestas proporcionadas también descubrieron cómo un mismo usuario, expuesto a la misma pregunta, podía ofrecer respuestas diferentes en distintos momentos del experimento. Esta falta de consistencia en las respuestas obtenidas resta fiabilidad al método de investigación, haciendo necesaria complementar el estudio mediante otros instrumentos. (Ver Capítulo 6)

Llegados a este punto, la última hipótesis del presente estudio buscaba probar que la mejora en la visibilidad y legibilidad del texto facilitaría el proceso de lectura al usuario. Para poder probarla era preciso adoptar herramientas científicas hasta la fecha poco utilizadas en el ámbito de la traducción: el eyetracking *o seguimiento ocular. Por este motivo, para la segunda parte del proyecto, centrada en el estudio de la percepción y comprensión por parte de los usuarios, se empleó el eyetracker en combinación con cuestionarios de comprensión.*

Los resultados de la segunda fase del proyecto DTV4All desvelaron unos bajos niveles de comprensión entre los usuarios con discapacidad auditiva –Sordos y Deficientes Auditivos– al tiempo que describía cómo los distintos grupos procesaban los distintos tipos de información –textual, visual, general– de forma diferente para obtener la comprensión global de la obra audiovisual.

De igual manera, al analizar el movimiento ocular durante el proceso de visionado, se apreciaron patrones perceptuales diferentes entre los tres grupos. Esto supone que un único estilo de SPS no se adapta a las necesidades de todos los grupos de usuarios. Así, el estándar de SPS actualmente en vigor en España –UNE-153010– no se adapta a las necesidades de la audiencia destino. (Ver Capítulo 7)

Así, teniendo en cuenta la gran cantidad de parámetros que configuran el SPS (Capítulo 5), la falta de consistencia de las respuestas recogidas en las pruebas objetivas con usuarios (Capítulo 6), y las diferencias identificadas desde el punto de vista perceptual y de comprensión (Capítulo 7), el presente estudio no ha servido sino para señalar por dónde debería continuar la investigación en SPS. Mientras tanto, las prácticas actuales deberían ser consideradas 'temporales' y sería preciso plantearse si la designación actual –para Personas Sordas y Personas con Discapacidad Auditiva– realmente cumple con su objetivo.

9. Conclusions

The identification of the most representative SDH parameters, together with their stylistic variables in some of the countries with a longer SDH tradition, revealed that SDH specific parameters –extralinguistic parameters- are most affected by stylistic modifications. However, other aesthetic elements, non SDH-specific, are also tightly connected to these parameters and have direct implications in the reading process. For this reason, the study of SDH in the present work focuses on some of these specific parameters, questioning and/or validating their application to SDH in Spain.

Although the list of parameters selected for the DTV4All project was limited to the parameters identified when confronting national styles, it is necessary to remark that the analysis of the many issues that constitute the SDH practice highlight the need to design a broader scheme. This scheme, that could help us track down and identify every aspect related to SDH practice, should be considered the departure point for any study in the field.

9.1 Development of a Taxonomy

The first general objective was to develop a SDH specific taxonomy which would aid in the analysis of all the aspects dealing with the practice of SDH. The final aim was to provide a tool that would enable a rigorous and patterned study of this subtitling modality. Based on the taxonomy developed by Bartoll (2008) for standard subtitling, a series of minor modifications was carried out. The three original categories of parameters defined by the author –linguistic, pragmatic and technical- are here divided into five: linguistic, pragmatic, aesthetic, technical and aesthetic-technical. Together with these five groups of parameters, most of them common to all subtitling modalities, the taxonomy incorporates a list of parameters specific to SDH practice: extralinguistic parameters.

The category of extralinguistic parameters refers to the transcription of non verbal sound information included in the audiovisual work. Taking into account the

varied nature of extralinguistic information, four parameters have been defined within this category: character identification, paralinguistic information, information from sound effects, and music information. The inclusion of this new category of parameters –extralinguistic- provides SDH from a theoretical and terminological framework open to future updates and modifications, and pretends to set a departure point for further research.

Nevertheless, when it comes to enhancing the reading process –faster ratio and better comprehension– many other non-specific parameters are also of major importance. Modifications on stylistic aspects such as subtitle placement, typography and justification, or linguistic aspects –density– condition significantly the configuration of SDH, as it has been presented (see pg. 53). Thus, bearing this in mind, the DTV4All project analysed the parameters which conditioned SDH styles most and in some cases were not shared by all countries in the project.

Research so far has proven that the modification of any of the parameters in the taxonomy would result in a bigger number of modifications in the final product (see pg. 53) due to the close interdependence among parameters. Thus, the adaptation of Bartoll's taxonomy to SDH provides the discipline with a complete framework for further research, both from a theoretical and practical perspective.

9.2 Evaluation of Studies Based on User Preferences

Through a two-phase questionnaire (both before and after the eyetracking sessions), the DTV4All project collected users' opinions on some chosen SDH parameters. The ones selected included among other aspects, questions on: the specific extralinguistic parameters; on typographical elements such as font type, size, borders, shadows and the use of background boxes; on other aesthetic features such as text justification –alignment– and placement; and finally, on the aesthetic-technical SDH speed.

Different authors had already reported on the questionable reliability of the responses of users under test situations, mostly conditioned by their surrounding environments and subtitling traditions (Kirkland, 1999), and by the lack of consistency of the self perception (Martínez-Tejerina, 2008). Thus, it seemed essential to determine whether user-based approaches provided consistent results for studies on the enhancement of SDH quality.

The contradictory responses collected –reflected in Articles 2 and 3- question the validity of some of the previous studies that had adopted user-based techniques for the study of aesthetic parameters in SDH (Kirkland, 1999).

Whereas pre-test questionnaires show preferences often confronted to current practices, after the exposure to different variables in the eyetracking sessions participants generally selected the predominant styles on TV, mainly in the most specific -extralinguistic– parameters, as well as on the use of typographical elements, such as background boxes, compulsory with analogue teletext subtitling. This coincidence with the current subtitling practices is especially significant among the Hearing Impaired, showing all users similar responses, in contrast to hearing participants, being these less exposed to SDH styles.

On the one hand, all users - Hearers, (signing) Deaf and Hard-of-Hearing (oral deaf) –showed a generalized preference for colour identification, both before and after the test, following the Spanish UNE standard and practice tradition. Nevertheless, when it came to paralinguistic information, most hearing impaired users didn't seem have a marked preference to its transcription before the test, but

changed significantly their mind after the eyetracking sessions. In contrast, as for sound –context- information, requested by all three groups before the sessions, it was only still necessary for the signing Deaf after the eyetracking session. Half of the Hard-of-Hearing, on the contrary, after the tests considered this information to be redundant, and rejected its representation, opposite to common current practice.

Finally, subtitling speed is one of the parameters that best represents the controversy between scholars, professionals and users. Whereas users defend verbatim subtitles, scholars and professionals are aware of the technical difficulty this modality implies, due to time and space limitations. Considering hearing impaired reading skills, scholars support adapted subtitles that would possibly enhance users' reading comprehension. Professionals know that, from a technical point of view, it is not feasible to transcribe literally all the verbal component from audiovisual texts hence providing verbatim representation of all oral utterances.

However feasible or recommended, hard-of-hearing audiences would prefer verbatim subtitles for SDH (100%). Responses showed how after being exposed to verbatim subtitles, preferences differed considerably among the Hard-of-Hearing, falling their preference by half to 50%. The Deaf, more aware of their limitations in terms of comprehension, preferred edited subtitles both before and after the test, being more stable in their responses.

After the very first analysis of the preliminary results drawn from the preference questionnaires, a common pattern on the adoption / rejection of traditional styles could not be drawn with this sole information, so further information on the reading process was essential to back the responses provided. This was one of the reasons for the adoption of scientific and objective research methodologies, as is the case of eyetracking.

9.3 Adoption of Scientific Research Tools

The adoption of eyetracking turned out to be crucial for the study. While there was no previous studies in the field of Translation Studies using this methodology it was thought to be a worth avenue to pursue. It provided worthy information on the SDH reading process, not conditioned by users' responses. This innovative information has been used to validate most of the hypotheses presented in the PhD.

From an aesthetic perspective, background boxes -one of the most traditionally visible typographical elements- has proven to hinder comprehension for all users. Results indicate that even though reading rates may be vary slightly among the Hard-of-Hearing, comprehension is enhanced by removing boxes. This situation -prolonged reading processes– turned out to be one of the most revealing results in the analysis. Even if the hypotheses outlined before the study were looking for faster reading processes to enhance comprehension, the cross analysis of eyetracking and comprehension results showed that faster reading did not correlate with higher comprehension scores. When it comes to typography, a non-traditional SDH display (no boxes, no borders, no shadows) forces longer reading processes among Deaf viewers resulting in better comprehension results.

Subtitle placement data also showed unexpected results. Almost all the international SDH standards and practices consulted recommend a separate? positioning for subtitles, displacing sound from verbal information. Such a display lead to the hypothesis where traditional left-right and top-down reading patterns could be altered to enhance prolonged reading times in SDH. Results confirmed our hypothesis, showing that although 'Mixed' subtitles have good comprehension results for hard-of-hearing viewers, Deaf and Hearing participants obtain poorer comprehension data. Thus, 'Bottom**'** subtitling, currently in use only in DVD subtitling, is the best style in terms of viewing time and related comprehension -- against the preferences shown by participants during the preference questionnaires. Similarly, the use of displaced subtitles for character identification didn't provide positive results in terms of both reading rate and text comprehension. Even if displaced subtitled for identification show how deaf and hard-of-hearing viewers have shorter reaction times and locate the subtitles faster, the use of displaced subtitles require longer reading

rate which, contrary to previous examples, do not guarantee better comprehension results. Thus, as for identification, the use of coloured, non displaced subtitles seem to be the best performing option.

It would be necessary to point out that the use of displacement for the alternative representation of sound–icons in the case of sound information, and emoticons for paralinguistic information– even in the displaced positions suggested by the UNE standard, could both speed up the reading process and improve comprehension tasks. Nevertheless, this innovative technique should require profound training from target viewers and further research, as only 30% -50% of the information displayed following this pattern was perceived, not allowing a successful evaluation of comprehension scores.

Among the nine parameters tested in the DTV4All project, together with the unexpected success for a unified bottom displacement, the most striking results came from the analysis of Subtitle Speeds **-**standard, edited, verbatim. Whereas hearing impaired users -mainly the Hard-of-Hearing- showed a preference for a verbatim reproduction of dialogues, results show how this speed does not benefit comprehension in any case. On the other hand, adapted subtitles, suggested by scholars, do not obtain the most successful results in terms of comprehension, not even among Deaf participants. Surprisingly results support the use of standard subtitles as the option that best meets the needs of all three groups in terms of comprehension.

According to the results drawn by the global analysis of the parameters tested, the best subtitling standards would include the following parameters:

	ID	Place.	Justi.	Box	Border	Shad.	Emot.	Icons	Speed
H	Colour	Top	Centre	No	Border	Shad.	Descr.	Descr.	Stand.
D	Colour	Bottom	Centre	No	No	No	Descr./ (Emot.)	Descr.	Stand.
HoH	Colour	Mixed	Left	No	Border	Shad.	(Emot.)	Descr.	Stand.

Fig. 38: Best options resulting from the analysis of the eyetracking and comprehension results. In green, options differing from the current UNE-153010 standard. In orange results not included in the standard, common between groups.

The common SDH standard in Spain –and in many other countries- is aimed at 'Deaf and Hard-of-Hearing' audiences. However, according to the results obtained from the analysis, a single SDH style would not meet the needs of all the groups –Hearers (H), Deaf (D), Hard-of-Hearing (HoH)-, making it necessary to design, at least, three different subtitling styles. Even if viewers seem to prefer similar formats with minor modifications, eyetracking and comprehension tests show that the needs from all the groups are significantly different. Sound information displayed in a top right position is almost always not perceived; displaced identification of characters prolong reading and make comprehension more difficult; verbatim subtitles force longer reading times and important comprehension problems.

According to these results the study also reveals how hearing impaired audiences have preferences directly related to the prolonged exposure to current SDH practices. This situation makes users support practices that do not benefit their reading process. Furthermore, the inclusion of new elements, such as icons or emoticons, that could enhance reading, is often rejected by potential viewers, although lesser conditioned audiences –younger participants- or those more exposed to alternative subtitling styles –videogames, online subtitling- support this style that, in terms of comprehension, could be considered a potential alternative. Such contradictory scenario, where users' preferences and scientific results are partially opposed, gives rise to a controversial context. On the one hand, by prolonging the arbitrary practices that have conditioned today's user preferences subtitlers could continue adopting SDH styles. These do not to meet the needs of target viewers in terms of comprehension, as shown by studies. On the other hand, ignoring users'

preferences and adopting the modifications in parameters resulting from the present research would force viewers to get used to a new SDH style, and for subtitlers to 'work against the will' of the final audience.

In any case, according to these results, this research evidences that current practices and standards do not meet the needs of any of the aimed target groups. Evidence suggests that for a successful accessibility practice, different SDH styles should be performed: Subtitling for the Deaf (SD) and Subtitling for the Hard-of-Hearing (SHoH).

Considering all the parameters analysed individually, and taking into account the different variables studied for every parameter, SDH should be partially modified as for Spanish viewers. However, the work here presented is no more than an insight –from a very comprehensive perspective- into the complicated nature of this discipline, and further research is still necessary to unveil other important aspects.

9.4 Further research

As it has been presented, the study of SDH should only be approached from a multidisciplinary perspective. The close relationship and interdependency among the parameters that define the discipline recommend a global approach to the SDH practice.

All the data and information presented in these pages focus on the most specific parameters in SDH. However, it has also been demonstrated that many others, originally non-specific to this discipline –such as 'Moment of elaboration'– are somehow conditioned by technical aspects non related to subtitling and/or hearing impairment.

Bearing in mind the continuous incorporation of new parameters and variables to the SDH scenario, it seems necessary to broaden the practical study of all the parameters included in the global taxonomy here presented. In accordance to this, and considering the different research fields that have approached SDH up to date, the nature of the parameters that build up the taxonomy represents the multidisciplinary effort requested for its success.

Following the taxonomy presented in Article 1, the main aspects that should be taken into consideration for further investigation would need to cover all groups of parameters. Thus, future initiatives should cover issues such as:

9.4.1 Linguistic Parameters

One of the key aspects in SDH practice is condensation. Nonetheless, only a few studies have focused on the linguistic processing of subtitled contents among deaf and hard-of-hearing audiences. Although several initiatives had already pointed at the comprehension difficulties users faced at processing SDH, newer research projects on SDH perception and reception have highlight the need for further research. The effect of simplified, standard or subtitles adapted to the syntax of sign language should be tested in search for the best option for every group of users.

Also at a linguistic level, research should focus on the evaluation of the linguistic components (syntactic, lexical and/or grammatical) which represent a variable degree of difficulty in the reading process. On the one hand, and following previous research initiatives, further studies on the perceptual span and gazeplots of these structures should be considered, trying to describe the underlying cognitive processes. On the other hand, the evaluation of the verbal component of extralinguistic parameters should also be tested. Different stylistic formats are adopted for the representation of this information in SDH (nominalised structures, sound descriptions, onomatopoeic representations, etc.) considering the different user groups, audiovisual products, genres, and communicative contexts. In accordance to this, a comprehensive study of the implication of the linguistic components could lead to the elaboration of descriptive dictionaries that could help with the linguistic description of paralinguistic and extralinguistic parameters, such as music and sound information.

9.4.2 Extralinguistic Parameters

Of all the extralinguistic parameters identified in this research not enough attention has been played to music. There is a lack of literature –both in deaf and audiovisual translation studies– and contrast information –eye-tracking and comprehension tests. Thus, future research initiatives should aim at filling this gap looking also at the perception of the music component by deaf audiences in order to determine the best approach for the representation of this part of information, beyond user preferences.

While much work is still needed, the research presented here is a departing point in the study of extralinguistic parameters. Tests performed and resulting data should be replicated on a larger group of users, so as to represent all ages and hearing degrees. Working with users and the liaison with user associations was in itself a challenge that hindered in the nature and scope of the tests taken on board. Furthermore, the existence of new scientific tools to perform new tests and triangulate existing results may prove useful for understanding perception and reception processes, both for linguistic and extralinguistic parameters, as well as in aesthetic components. Specific techniques such as electroencephalography (EEG)

or magnetoencephalography (MEG), together with the one already adopted –eye-tracking– could complete the final mapping of reading.

9.4.3 Pragmatic Parameters

Also at a pragmatic level further research initiatives would be welcome. Although pragmatic parameters could be considered non-specific to SDH practices, the effects of variable differences on SDH perception and comprehension should also be tested. Even though some parameters such as ‘Aim’ and ‘Authoring’ could be common regardless hearing capacities, other parameters such as ‘Target Users’ and ‘Moment of elaboration’ could imply relevant differences in terms of perception and comprehension among the groups of users. In the specific case of ‘Moment of Elaboration’, for example, production could produce latency: a delay in synchrony.

Most research initiatives dealing with this group of parameters have traditionally adopted a subjective perspective, focusing on the evaluation of user preferences. Hence there is a need to analyze the influence of perception and comprehension in the different groups of users, audiovisual genres, and audiovisual formats. A better knowledge of the reading strategies developed in the reading process for the different variables would provide key information for SDH production. A higher adequacy of the linguistic and aesthetic content of subtitles may possibly imply the enhancement of perception and/or comprehension processes among target viewers.

9.4.4 Aesthetic Parameters

Given that most aesthetic parameters are conditioned by the extralinguistic parameters, it should be necessary to engage in further research initiatives also at this level. Eventhough typography has been one of the most researched aspects within this group, its combination with other aesthetic parameters such as ‘Placement’ and ‘Justification’ is strongly recommended in order to determine the gazeplots and reading maps of every group for all the variables in use.

9.4.5 Aesthetic-Technical Parameters

This group of parameters concentrates most of the research studies carried out up-to-date, due to the relevance of its implications.

The changing scenario, both from a medical, technical and social point of view, redefines continuously the profile of the average hearing impaired user. Hence there is a need to review different elements, such as reading speeds, periodically. The use of eye-tracking techniques, such as the one presented in this research, would shed some new light to previous research projects, providing new objective data to previous estimates on issues such as reading speeds.

At the same time, further research should be carried out on the effect of technical restrictions that condition subtitle presentation. The various presentation modes currently used force marked reading paths that should be further analysed in search of proficiency. Although Romero-Fresco (forthcoming) has recently analysed the effects this parameter shows on English-speaking audiences in the United Kingdom, the differences in traditions and reading habits of Spanish-speaking audiences invite to a similar study in Spain.

From a global perspective, the aesthetic-technical parameters should be analysed in detail. The continuous evolution caused by the technical innovations should force a continuous study for the adoption or rejection of the new coming variables that would emerge.

9.4.6 Technical Parameters

Although non-specific to SDH, technical parameters have a direct impact on the development of SDH. As in the case of aesthetic-technical parameters, this group is tightly linked to technical and technological restrictions. Parameters such as ‘Moment of elaboration’ and ‘Media’ are subject to a high number of innovations. In this sense, the creation of a new parameter within this category should be taken into account, considering not only the methodology, but also the software adopted for SDH creation. Currently, there is no evidence of the existence of SDH-specific software for subtitle production. Thus, standard programs for SDH production do have to adapt,

failing to succeed in the elaboration of SDH given the restrictions of the different programs. This fact, together with the close relationship among the different parameters, makes it necessary to evaluate the relevance of this element.

As well as in the case of aesthetic-technical parameters, the continuous update and upgrade of many technical aspects give evidence of the need for further research that backs up the advances emerging in this field.

According to this extended summary, much has to be done in SDH. The scarce research initiatives focused on user perception are a representative example of the effectiveness of this kind of studies. Thus, looking into adjacent fields, and adopting new scientific methods at our reach may help in a better understanding of the reading and perception processes regarding subtitling. Only then SDH production will be effective and really accessible to target audiences.

10. Annexes

10.1 'Research on Subtitling for the Deaf and Hard of Hearing: TOP SECRET?'

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ABSTRACT

Research on Audiovisual Translation has lately enjoyed a boom due to the great increase of multi-media products and technological advances. In many countries such as Spain, where dubbing has traditionally been the only official technique, subtitling, a minor and socially marked discipline, is claiming its place. The increasing social awareness for universal accessibility has given rise to a specific subtitling practice: the Subtitling for the Deaf and Hard of Hearing (SDHH). This discipline, first practised in Spain in the early 1990s, has scarcely been studied and, thus, its research is in its infancy. The practice is not easy to classify given the lack of a theoretical framework leads us to a vastly heterogeneous output. This paper provides a brief overview of the practice in Spain and explains the difficulties encountered when tackling research. The outcome is an attempt to map the situation in Spain which ironically comes to the conclusion that a discipline purporting to promote accessibility has in fact become a 'restricted area' of study: A 'Top Secret'.

KEYWORDS: Audiovisual Translation Studies, Subtitling for the Deaf and Hard of Hearing (SDHH), Media Accessibility.

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10.1.1 Introduction

SDHH as a discipline was almost unknown in Spain until recent times. It was first introduced as a service in 1990 by the public national Catalan television channel TV3, a year before it was adopted for broadcasts by the public Spanish estate channel TVE[27]. Sixteen years later, part of the audiovisual industry interested in cutting costs along the production and postproduction processes still considers SDHH unnecessary, as ordinary subtitles are thought to be sufficient to meet the needs of Deaf and Hard of Hearing (DHH) users. This is one of the reasons why this form of audiovisual translation remains 'hidden', but it is our belief that its silent development is worthy of further investigation.

With this situation in mind it was thought to be necessary to map the production of SDHH Spanish industry in order to study the many distinguishing elements which differentiate subtitles for the DHH from ordinary subtitles –its contextual information. But before the study was launched, a mandatory search for some academic literature on the subject was required. At this stage, only a short list of texts and surveys conducted by different deaf associations and institutions was found[28], making it necessary to move a step forward and contact the DHH community in order to have some first-hand information on the topic.

A service company developed within a local DHH community, *(MQD) – Aransbur*[29], showed us the first glimpse of the current situation of SDHH in Spain. With their help it was possible to begin to identify the sources of production of accessible audiovisual material available to the DHH:

a. Television stations.

b. DVD and VHS distributors.

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[27] *Real Patronato sobre Discapacidad* (RPD) (2004: 115)

[28] Pardina i Mundó (2000); RPD (2004 / 2005)

[29] 'Mira lo que te digo' (MQD) - http://www.mqd.es/ - is a service company created in 2000 specialising in the production of live subtitling

c. DHH associations.

Access to the materials and any sources of information was the first stepping stone for the advance of its study. Given the small market and short tradition, such an apparently 'reduced' subject of investigation led in reality to complex and uneven practises.

Although the aim of the current study was the analysis of contextual information, the number of variables found in the process of building up the corpus, together with difficulties encountered when mapping out SDHH production in Spain, made it necessary to redirect the original project. The limited access to any information related to SDHH production, the ongoing production processes taking place in the Spanish market, and the identification of all the agents involved were the final goals of the present study.

10.1.2 Sources of SDHH in Spain

Once the different formats for broadcasting SDHH were identified –Teletext, DVD and video VHS– attention was paid to the agents marketing these subtitled products.

10.1.2.1 TV stations

Context

TV Stations were found to be the first produce, in quantity, of accessible material. While the number of TV Stations in Spain has multiplied in recent years, only a very small number of these stations, in comparison, offer subtitles SDHH. The presence of TV SDHH products within reach of the DHH Community is the largest in the market, as at least 20 per cent of all television programmes broadcast are subtitled (RPD 2004: 105).

Despite recent technological advances, which have led to digital television, analogue continues to be the most extensive broadcast technology in Spain still offering higher rates of accessible material, which proves that there is still a public

demand for this form of television[30] and a certain rejection towards updating TV sets and modes of reception. Nonetheless, the main problem of TV subtitled material concerns the technological difficulties of working with analogue broadcasts since analogue Teletext cannot be recorded using standard home recording material. This is a problem for DHH audience who do not have the means of recording subtitled TV programmes, and it was also a problem for a systematic research of the accessible material on offer and the constitution of a corpus. However, the current co-existence of both analogue and digital technologies[31] and the fact that a single Teletext signal is currently being broadcast in both systems, have simplified the task of collecting Teletext SDHH as digital recordings have been used to build up the corpus for the present study.

Let us have a look first at the best SDHH subtitles offered in Spain. They date from 1990, and were broadcast by the public national Catalan TV3. The Spanish public national station TVE did not provide the service until a year later: 1991. From the 25 hours per year broadcast in 1991, the station currently broadcasts more than 7000, using both its first and second channel programmes.

A few national private televisions also offer SDHH through their Teletext services. Antena 3, the oldest national private station in Spain, created in 1988, started broadcasting SDHH materials in 2001, with some 500 hours per year. Five years later, more than 2400 hours were broadcast for the DHH. Also in 2005, a similar number of hours aimed at DHH audiences were aired by Telecinco, the other popular private TV station in our country, which has been providing this service since 1999. Apart from these stations, which have already been offering SDHH for some time two more private companies have joined the audiovisual market in the last two years. Cuatro, a new TV station created in 2005 which didn't provide complete Teletext services in its early days, is currently working to make 40 per cent of their programmes accessible to DHH audiences. One year later another private TV station, La Sexta, was founded with the goal of making a 100 per cent of material

[30] 93% of Spanish homes still have analogue television sets. Information published in http://www.mundoplus.tv/noticias.php?seccion=tv_digital&id=2246

[31] Analogue television will definitely be 'switched off' in 2010.

broadcast, mainly pre-recorded programmes, accessible to the DHH. The company is currently working on the feasibility of broadcasting live contents. Other regional, satellite and digital televisions are also providing SDHH in Spain. However, access to these materials is either localised or restricted, limiting the possibility of reaching all DHH communities.

Standard

Although SDHH has been carried out in the Spanish television for over 16 years now, the Spanish Association for Standardisation and Certification (AENOR) only took the first steps towards standardising its practise in 2003, issuing of the guidelines on analogue Teletext subtitling: UNE 153010. Apart from the specific constraints of Teletext technology related to formal subtitling aspects such as font size and type, the standard UNE 153010 focuses on specific aspects of SDHH, such as colour identification of characters, two-lined subtitles, 35-37 characters per line (AENOR 2003: 12), etc. One of the most problematic aspects on the said guidelines is exposure time. Estimated to be of 19 characters per second, as Pereira and Lorenzo highlight (2005: 23), the investigation and experience of professionals and researchers within the scope of subtitling have revealed that exposure times proposed by the UNE – maximum exposure times close to 4 seconds – have been demonstrated to be unrealistic whenever a perfect comprehension of subtitled programmes is aimed (Cambra 2006). Other aspects such as colour identification or contextual information analysed in the UNE 153010 are also nowadays being studied scientifically for a necessary updating and upgrading of the existing guidelines when a new draft of the UNE standard has to be made for digital TV.

Practice

A first approach, evaluating the application of the UNE guidelines to Spanish broadcast SDHH, revealed that subtitle production is not usually done in-house. Only the public station TVE has a teletext subtitle department that produces 36 percent of

its material[32], whereas four private companies: Mundovision, Cinematext, Atelier de Soustitrage[33] and CEIAF, provide the rest of the national Teletext subtitle production.

This apparently simple organisation hides a more complicated structure, in which many companies develop different products for different TV channels at the time, as the following chart shows.

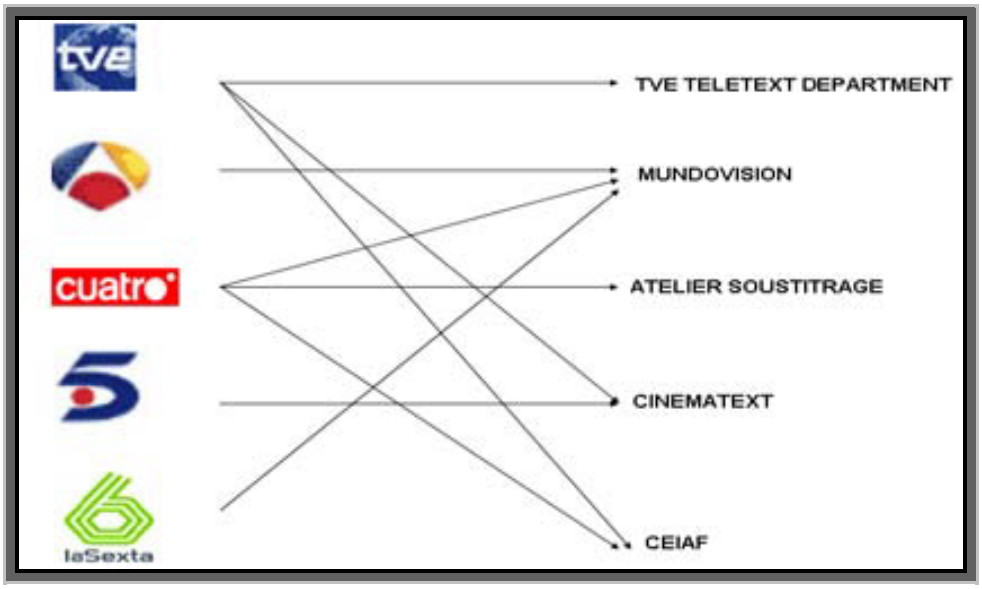

Fig. 39. National Production of Teletext Subtitling

[32] Francisco Javier Martín Ballesteros, responsible on TVE's Teletext Subtitling, reported that their Department develops 36 % of the SDHH broadcast, whereas *CEIAF* and *Cinematext* are responsible for the rest of the subtitled products in the public channel.

[33] *Telecinco* is the main shareholder in *Cinematext*, controlling 60% of the share capital. The remaining 40% is controlled by *Atelier de Soustitrage*.

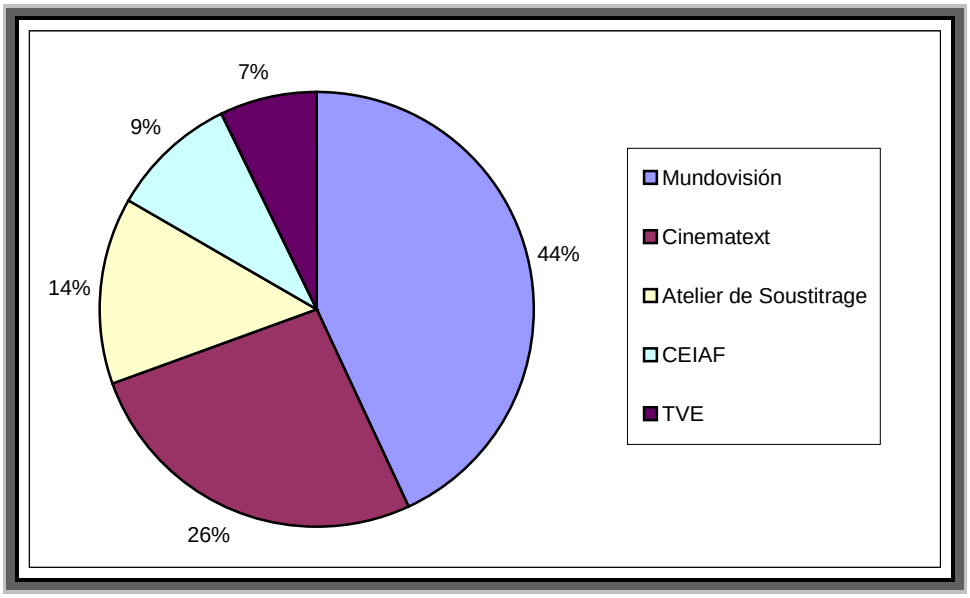

Fig. 40. National distribution of Teletext subtitling

As a result of the external production of Teletext subtitles, TV stations are not usually aware of the technical features of the subtitled products they release. Companies in charge of production, asked about their subtitling styles and processes, normally refer to the UNE guidelines and only in some cases companies acknowledged modifications depending on specific preferences and patterns of each channel and type of programme[34].

However, not all companies spoke openly about their subtitling processes, and it is relevant to note that three out of the four[35] companies providing Teletext subtitling in Spain also provide in-house and out-of-house training courses. This could therefore explain their reticence to provide information about their subtitling styles. Nevertheless, the existence of a common standard specially designed to standardise TV subtitling – UNE 153010 - evens out differences in all production processes, and, as a result, small variations were encountered.

[34] These variations are introduced according to whether the programmes are recorded or live, have children or adult audiences, etc.

[35] *Atelier de Soustitrage* and *Cinematext* are considered only one company in this case due to their special situation.

10.1.2.2 DVD and VHS Distributors

For audiovisual material recorded in both VHS and DVD formats we found that no official Teletext, video VHS or DVD film lists of 'accessible products' or databases on the specific content of VHSs and DVDs including SDHH exist nowadays. Therefore, no official figures on recorded commercial SDHH are yet available in our country.

The National Centre for Subtitling and Audiodescription (CESyA), in collaboration with all broadcasters, distributors and subtitle producers, is currently building up a detailed database of all material subtitled aiming Deaf and Hard of Hearing audiences. SABADO[36], the name of CESyA's database, is still under construction but will provide complete information of all materials available to the Spanish Deaf community (Ruíz *et al*., 2006). However, until the database is ready and working the only way to obtain any approximate information on the real figures of VHS and DVD SDHH seemed to be the personal consultation of films including this specific subtitling information.

The identification of VHS and DVD distributors releasing SDHH products was carried out in two steps. The first one was based on practise and experience of user associations: MQD together with Fiapas – The Spanish Confederation of Parents and Friends of the Deaf[37] – reported on the limited range of titles available including SDHH. According to their explanations, films are only distributed on their DVD format, limiting our search to these products[38]. At the same time they announced the existence of a national video DVD commercial distributor and producer well known to the DHH community for the availability of subtitled DVDs for sale: SOGEPAQ.

Trying to check up on the availability and accessibility to subtitled DVDs, problems arose: the professionals involved in the commercial distribution of these materials – sales staff, video retailers, DVD rental firms – were not aware of the range of information provided with digital disks, and had no access to this information

[36] SABADO http://80.35.173.245:8080/websabado_v2/index_sabado.php

[37] http://www.fiapas.es/

[38] No video VHS including SDHH has ever been marketed in Spain. The only existing examples of VHS titles aiming DHH users are included in the FIAPAS video library.

through their own internal databases. Hence a time consuming manual search made it possible to identify some isolated examples including SDHH.

This first basic approach revealed the presence of four different distributors releasing titles including SDHH: 20th Century Fox, Universal Pictures, Vellavision and Filmax.

The first result that came from this search was that SOGEPAQ was not one of the distributors identified. In fact, as it lacks a commercial distribution organisation, SOGEPAQ's titles were distributed first by Universal[39], and since 2005 by 20th Century Fox. That way the search of the producers of DVD SDHH remained concealed beneath a highly complicated schematic structure comprising all professionals involved in the production and marketing process.

Stalled by the dearth of information and materials, the study came across a website that would set a new starting point for its evolution, and the second step in the identification of DVD distributors. This website – http://www.dvdgo.com - a Spanish on-line DVD sales company includes a comprehensive and up to date database with over 18,302 DVDs[40]. Its on-site search engine was proven to be very useful, albeit not a very scientific tool. Searching the site via the category 'Spanish subtitles for the Deaf', 263 titles incorporating SDHH were identified. These 263 films came from 17 –nine Spanish and seven international– different DVD distributors currently working in the national market. However, the database is continuously upgraded and new titles are added on a monthly basis.

[39] Currently, there are no titles released by *Universal* including SDHH.

[40] Figures derived from a last visit on 01.03.2007.

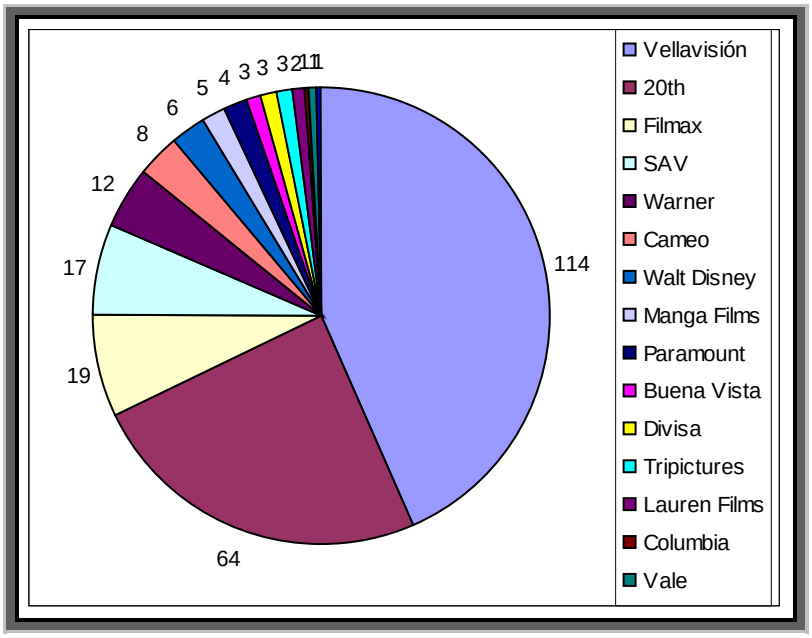

Fig. 41. National DVD distribution of SDHH

So, finally, once the first DVD distributors were identified, work was thought to be easier in any search of further information about SDHH products.

Standard

The first films released in Spain including SDHH came out in 2000, and the number of titles released every year is progressively building up. However, the 263 DVDs containing Spanish SDHH represent just 1.44 percent of the titles included in dvdgo.com's unofficial database and according to official data obtained from the Spanish Ministry of Culture database[41], 0.64 percent of the 41,210 titles of audiovisual products in any format released in Spain up to day. These figures show that access for DHH Communities to DVD titles is still very limited, especially when compared to TV broadcasts. The incorporation of SDHH in DVD materials has led companies to the application of 'existing guidelines', and that implies the adaptation of UNE 153010, which was specially issued for Teletext subtitling.

The many technological differences of both systems – Teletext and DVD – alter the stylistic patterns developed in this form of subtitling, where practice is enforcing the issuing of a specific set of guidelines.

Practice

In an attempt to compare records from dvdgo.com to the titles listed in the distributors' on-line catalogues, it was necessary to search their websites, finding out that only three out of the 16 distributors in the study[42] included information about the specific subtitles contained in their DVDs. But even then, no search engine was made available to carry out any search based on such specific parameters, making it necessary to check every single title individually.

To obtain some further information from the identified distributors, telephone conversations were the most successful means of collaboration[43]. At this stage, majors showed us into the reality of international distribution: international distributors have standard contents designed and marketed for international distribution and all materials included on each DVD are selected taking into account the given DVD capacity –4.7 Gb. The status and rights of specific DHH Communities in Germany and the United Kingdom is the reason for including SDHH on international titles also released in our country, whereas Spanish SDHH are partly restricted to national films[44].

According to official explanations, contents – SDHH in this case – arrive at the distributors and are incorporated into the DVDs before marketing them. Not a single distributor at this stage reported any sort of restriction related to the subtitle style adopted, or the reasons of the company to adopt a specific line. The only 'accurate' information provided at this stage was an updated list of all films including SDHH released by each distributor, but there was no information available on the company in charge of their subtitle production.

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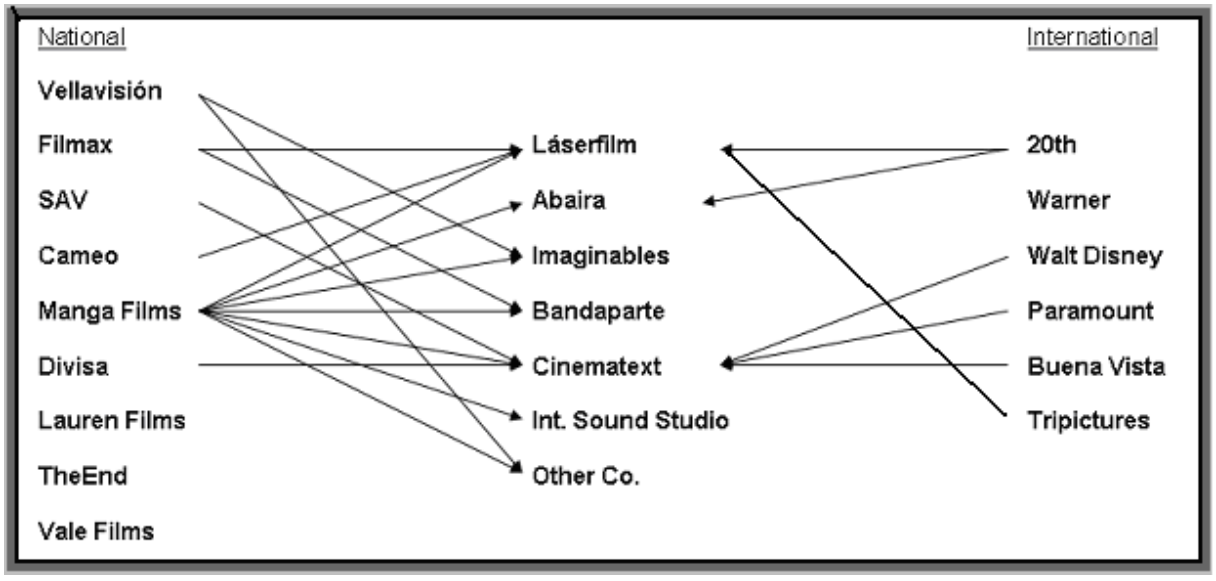
[41] http://www.mcu.es/jsp/plantilla_wai.jsp?id=13&area=cine

[42] *Vellavisión, 20th Century Fox, Divisa*.

[43] Only in one case email contact was forwarded to a subtitling company that gave some information on the internal processes relating distributors and subtitle producers. The lack of information made a second attempt essential and telephone calls were then the way selected to approach DVD distributors.

[44] In the same site we have access to more than 2395 films which include SDHH for English Speaking Audiences, together with some other 1121 films for German speaking audiences, in contrast to the 263 films including Spanish SDHH.

Trying to identify the names of the companies behind subtitle production, the first relevant examples of 'private information' came out: up to four different SDHH styles could be identified on offer from some producers, making it necessary to analyse the reason for this variety. Although an 'off-the-record' conversation informed about the presence of different subtitling companies and differing requirements from film producers, no official explanations were finally given as these data were considered private and could not be shared. Once again, the study suffered a drawback, and no answers were given to such procedures in the subtitling policy. Upon further investigation it became evident that products belonging to different distributors shared common patterns that led, overwhelmingly, to the same subtitling companies. However, as it had already been shown, there were serious difficulties in accessing the information. Considering the fact that Díaz Cintas (2003: 367) lists more than 20 companies providing subtitling for the Deaf and Hard of Hearing in Spain and that there are no specific standards set on DVD subtitling, SDHH variety was evident at every step. But every cloud has a silver lining and thanks to the help provided by those distributors who informed about their work practice, it was possible to draw an approximate map of the current market on DVD distribution and contact companies in charge of Spanish DVD subtitle production[45].



[45] Titles distributed are unknown to include SDHH. No useful information was provided by the companies. As we can see in Chart 4, Cinematext, is again present at this stage. It becomes relevant to the project for its outstanding position within the Spanish subtitling market, as it is currently

Chart 4. DVD distributors and related subtitle producers.

When challenged with the subject of subtitling patterns, information became vague once again. Most companies referred to their application of the standard UNE 153010, but these guidelines were issued to regulate Teletext production and many elements cannot be applied to DVD processes[46]. Furthermore, all DVD products subject to this study demonstrated that only basic elements of the UNE guidelines, such as colour identification, were often used. Other relevant features, such as context or suprasegmental information, were generally omitted, making it clear that guidelines were only partially being applied.

Apart from this 'inconsistent' application of the UNE guidelines, information provided by both DVD distributors and subtitle producers was contradictory. Distributors identified subtitle producers as being responsible for the whole process regarding the subtitles, whereas producers blamed the financial constraints of the distributors on the 'customised' subtitling approach they took to the final product. In any event the final result is often of doubtful quality and far from any acceptable standard. However, interestingly some subtitle producers, providing in-house training programmes or not, develop their own stylistic guidelines borne out of internal research projects stemming from production process improvements. These improvements in quality are often not implemented, as companies are unwilling to pay the increased price they carry, making this internal research be neither used nor shared.

10.1.2.3 DHH Associations

Context

The Deaf Community was the third source of information for this study. At first glance, this community seemed cut out totally apart from broadcasters, subtitling

providing 33 percent of the national Teletext subtitled material at the time it works for several different national and international DVD distributors.

[46] Contextual information, as it is included in UNE 153010, has to be presented at the top of the screen.

companies or DVD distributors. The study of all materials produced within this community was also as challenging if not more difficult than the commercial market.

Some examples of audiovisual material with SDHH merging from the deaf community include a number of titles launched by AICE – Cochlear Implant Association of Spain[47]. However, it was not possible to access these examples for this study due to an ongoing reorganisation in their facilities. The contact group at this stage was Fiapas, the Deaf Association who promotes the production of a video collection specially adapted for the hearing impaired. They first launched its VHS collection in 1993, although it was not internally distributed until 1995. Due to the low status of subtitling in Spain and the little attention paid to the DHH, distributors had not previously released films adapted to the needs of the DHH community. As a result, Fiapas's video library, including more than 235 films nowadays, was the first private source of recorded material available for the DHH in Spain. This collection currently reaches more than 100 different organisations, making it the widest example of internal distribution in Spain. The library has been progressively released with government funding and includes a wide range of titles, genres, and film distributors in order to provide as much varied material as possible: cartoons, documentaries, films, etc. It is continuously being updated and evolves adapting itself to the latest technological changes[48].

[47] http://www.implantecoclear.org/

[48] Fiapas has just launched its new edition –the 6th- of its Video Library including 23 titles on DVD format.
http://www.fundacionONCE.es/WFO/Castellano/Actualidad/Noticias/Discapacidad/Ndiscap131.htm

Standard and practice

Contact with Fiapas provided detailed information and data about their processes, partner companies and subtitle producers. In this case a single company – Viva Vídeo – was in charge of all subtitles included in the Video Library, with Fiapas outlining the subtitle parameters and style adopted. The subtitling company had no previous experience in this specific type of subtitling and were happy to adopt their parameters and style FIAPAS pointed towards the official guidelines UNE 153010, as they were one of the members present in the working group which drafted the UNE standard.

This explanation proved helpful in understanding part of the practice, but further analysis of some of the audiovisual material revealed the use of new elements not present in the guidelines, making it necessary to do more research. A second attempt to obtain more information produced vague answers, unwilling to talk openly about their own processes. Once again the patterns applied were the result of internal research in the field of accessibility to the media, and do not result in any research being published and accessible for public consultation.

10.1.3 Conclusion

As can be seen, access to information about the production and postproduction of subtitling for the DHH remains a difficult issue in Spain. Although some studies about this specific subtitling have been conducted by private companies and associations, a refusal to share any results obtained, together with the reluctance to apply these results commercially due to their increasing costs –mainly for DVD distribution– make mapping the 'State of the Art' a difficult task.

On the other hand, official projects attempting to identify current practices are also blocked by this same refusal of many companies to share their expertise. So the Spanish market for SDHH continues to be an immense ocean in which companies, distributors, associations and users continue to work in isolation of each other and independently, apparently unconscious of the importance and possible benefits of a

joint effort. The lack of standardisation makes it impossible to unify practices.

The National Centre for Subtitles (CESyA) aims to be the only official institution in Spain unifying both research and all agents involved in subtitling. It expects to regulate production, guidelines, formation and all other processes involved in subtitling. So for the first time unification appears possible and subtitling for the DHH would be able to leave behind its 'Top secret' status. But the Centre is still in its infancy, and knowledge and research have no red lights to regulate their continuous evolution. Projects are ongoing, the market continues to locate scarce and heterogeneous products and research attempts to make progress, as ever, with less help than expected. Unfortunately, as we have seen, as far as the market is concerned, knowledge has its price, and research -and with it progress– is always suspicious when it arises from academic projects.

With such a complicated situation it may not be possible to implement standardisation if no rules, laws or external imposition forcing its application exist. Until such time, research into SDHH will be considered a 'Mission Impossible'.

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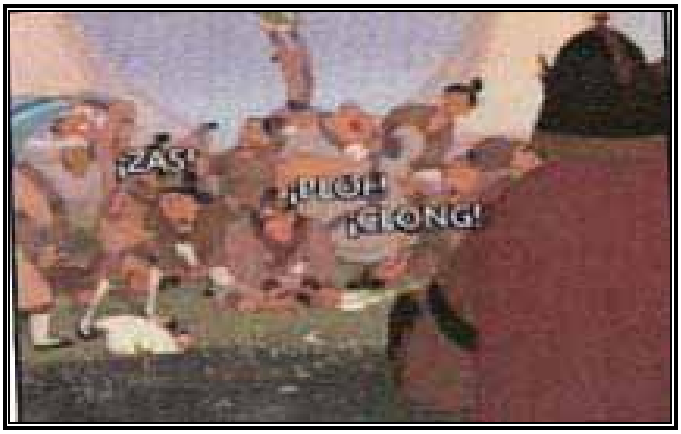
10.1.5 Appendix

Different Subtitling Styles Broadcast in Spain

Example 1

Example 2

Example 3



Example 4

Fig. 43: Context information for shouting, shouting, farting and some onomatopoeias respectively.

Example 5

Example 6

Fig. 44: Character identification

9.1.6 Notes

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10.2 Annex II[49]

'La objetividad en el subtitulado. Justificación de los parámetros formales mediante Eye-Tracking[50]*'*

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10.2.1 Introducción

La irrupción del sonido en el panorama cinematográfico internacional allá por 1927 supuso un punto de inflexión dentro de la historia del cine. Más allá de la perspectiva artística, este hecho sirvió para marcar una división entre países, esta vez atendiendo a la modalidad adoptada para el trasvase de películas. A menudo dicho hecho se plantea como una simple dicotomía doblaje-subtitulado, ignorando otras muchas modalidades menos presentes por su peso histórico u económico, como son la interpretación simultánea o el voice-over entre otros; sin embargo, esta clasificación simplificada esconde una compleja variedad de productos cuyas divergencias radican en las diferentes prácticas nacionales, regionales, lingüísticas, comerciales, sociales, etcétera.

En el presente artículo nos centraremos en una de las prácticas consideradas 'menores' hasta fechas recientes en aquellos países en los que el doblaje era la

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*[49] 'La objetividad en el subtitulado: Justificación de los parámetros formales mediante Eye Tracking' ('*Objectivity in Subtitling: Validation of formal parameters through Eye Tracking'*), in Pérez-Ugena, Álvaro and Ricardo Vizcaíno-Laorga (Coord) ULISES y la Comunidad Sorda, Madrid: Observatorio de las Realidad Sociales y de la Comunicación (2008). (73-82).*

[50] Este artículo forma parte del proyecto de investigación 'La subtitulación para sordos y la audiodescripción: primeras aproximaciones científicas y su aplicación' (HUM2006-03653FILO) financiado por el Ministerio de Educación.

modalidad imperante: el subtitulado. Trataremos de analizar las enormes diferencias que se presentan en su ejercicio y las implicaciones de las mismas, así como la posibilidad de llevar a cabo una armonización haciendo uso de herramientas de carácter científico, como es el caso de la tecnología de seguimiento ocular o eyetracking.

10.2.2 Subtitulado y prácticas diferenciadas

Como ya adelantaba Díaz Cintas (2003:138) '(...) No hace falta ver muchos programas de subtitulado en cine o televisión, en España o en otros países, para darse cuenta de la falta de consenso armónico a la hora de implementar las convenciones formales que regulan la entrega de los subtítulos en pantalla. (...) Las discrepancias son visibles en distintos productos comercializados por la misma distribuidora o cadena de televisión y entre distintas compañías a nivel regional, nacional y entre distintos países.'Así pues, como bien resume el autor, son muchos los estilos desarrollados en los diferentes países y situaciones comunicativas cuyas divergencias radican principalmente en los parámetros técnicos del subtitulado: tipo y tamaño de letra, posicionamiento, justificación, ortotipografía..., y que se multiplican cuando se trata de otras modalidades más específicas, como es el caso de la subtitulación para sordos, donde entran en juego la identificación de caracteres, la subtitulación de la información contextual, o la velocidad de lectura entre otros.

Son cada vez más los autores que se han hecho eco de la pluralidad de la práctica[51] *y que en la mayoría de las ocasiones nos remiten a los datos que se desprenden de las escasas normativas y guías de estilo que tratan de regular el ejercicio de la profesión. Al mismo tiempo contamos con iniciativas de carácter internacional, como es el caso del proyecto 'Comparative Subtitling' lanzado por ESIST*[52] *en el año 2000 y que, una vez más, dejó constancia de cómo las variaciones en la práctica profesional se plantean en todo tipo de niveles: letra (tipo, regruesado, color, espaciado...), interlineado, ubicación, justificación, número de*

[51] *Ivarsson (1992), Díaz Cintas (2003), Gottlieb (2005) y Neves (2005), por citar a algunos de ellos.*

[52] *European Association for Studies in Screen Translation: http://www.esist.org/*

caracteres, ortotipografía[53]... Pero, ¿cuáles son las pautas que determinan la adopción de las distintos parámetros técnicos? ¿En base a qué criterios? ¿Afecta dicha pluralidad a la recepción del subtitulado?

Refiriéndose al subtitulado general – pero su comentario sería igualmente aplicable a la elección de doblaje / subtitulado o al subtitulado para personas con deficiencia auditiva – Díaz Cintas (2003:139) también afirma que '(...) Ha habido una evolución marcada por cambios, nuevos parámetros y nuevas convenciones que, a lo largo de los años, se han convertido en acervo nacional y con las que el público está familiarizado. Es precisamente este grado de familiarización el que hace que los usuarios muestren sus reticencias ante la idea de aceptar nuevos cambios, independientemente de su naturaleza.' Pero, ¿cómo se ha llegado a estas convenciones? Entre las numerosas explicaciones que encontramos a la situación actual, las razones económicas (Gottlieb, 2005:30), técnicas (Ivarsson, 1998:49) o humanas (Díaz Cintas, 2000:64) destacan entre las motivaciones más recurrentes. Ante esta situación, con las prácticas instauradas y reforzadas por el paso del tiempo, el ejercicio se convierte en normas interiorizadas para profesionales y usuarios que, anclados en el hábito, se muestran reticentes ante cualquier tipo de modificación al respecto.

Estas diferencias, que para algunos podrían suponer cuestiones de menor relevancia en el caso del subtitulado ordinario, pasan a ser elemento fundamental dentro la de la subtitulación para sordos (Bryant 2004:1) – ámbito en el que la pluralidad de estilos en el mercado resulta todavía mayor – por ser el texto escrito el único vehículo de comunicación al alcance de un importante sector de la sociedad[54].

Sin embargo, y pese a la aparente inmovilidad de las tendencias y conformidad por parte de los usuarios, son cada vez más las voces que reclaman la necesidad de

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[53] El ejemplo más próximo lo encontramos en la norma UNE-153010, que recoge, por ejemplo, la posibilidad de emplear hasta tres modalidades diferentes para la identificación de personajes.

[54] La naturaleza heterogénea de la población con deficiencias auditivas hace que las lengua oral, escrita y la lengua de señas sean tres herramientas comunicativas cuya coexistencia es la única garantía de accesibilidad para la totalidad de la población sorda. Esta iniciativa queda perfectamente recogida en el proyecto Ulises, que con la combinación lingüística pretende ofrecer un ejemplo real de accesibilidad integral.

llevar a cabo estudios que permitan evaluar la adecuación de los parámetros actuales, como es el caso de Neves (2007:30):

> *'(...) it is worth considering deeper research into issues such as reading speed, readability, legibility (fonts, use of colour, positioning...), character identification, conveyance of sound effects or music, or at a yet more detailed approach, of the importance of conveying paralinguistic information in subtitle form'*

Ahora bien, el hecho de contar con prácticas diferenciadas en cada uno de los países, así como los estrictos parámetros a los que está sujeto el ejercicio de la subtitulación[55], hacen que sea necesario replantearse la imprecisión de la gran mayoría de los estudios efectuados hasta la fecha, cuyos datos eran extraídos de experimentos y encuestas de opinión que confirmaban la aceptación de las pautas existentes como opciones más adecuadas.

Son de sobra conocidos los especialistas que han abordado el tema de las habilidades lectoras de la población sorda teniendo en cuenta su heterogeneidad – King & Quigley (1985), Augusto (1999) y Villalba (2005) –; e incluso desde el estudio del subtitulado, autores como De Linde y Kay (1999) o Neves (2005) también se han planteado esta problemática. Sin embargo, pocos han sido los estudios que se han llevado a cabo para determinar cómo se podrían depurar las prácticas desde un punto de vista científico, adecuar las convenciones del subtitulado a los requisitos y necesidades del espectador, y, ayudar así a mejorar o incrementar las velocidades de lectura entre la comunidad con problemas de audición.

10.2.3 Validación científica mediante eyetracking

La creciente realidad de los estudios interdisciplinares ha permitido a la traducción, como a otros campos, dotarse de instrumentos que conceden un fundamento científico a sus ámbitos de especialidad[56]. Esta necesidad resulta aún más acuciante en la traducción audiovisual, y concretamente en el subtitulado para sordos, debido a la imprecisión de los estudios, demasiado focalizados en los gustos de consumo

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[55] *Bartoll (2004: 58).*

[56] *'Nos encontramos en un campo de especialización (subtitulado intralingüístico) donde la interdisciplinariedad es no sólo imprescindible sino que es la clave del progreso (...)' Orero (2007:12).*

de la audiencia. Esta es la razón por la que los profesionales en la materia se han aproximado a otras disciplinas para tratar de encontrar las herramientas adecuadas para la valoración y justificación científica de los parámetros en vigor. Como resultado de esta aproximación, ya desde mediados de los '70[57]*, se planteó la posibilidad de adoptar una tecnología que permitiera analizar el seguimiento ocular: el eyetracking. Con el paso del tiempo este método ha demostrado ser una de las herramientas de mayor utilidad y presencia en los ámbitos más diversos, desde la medicina hasta el marketing pasando por la psicolingüística, enfoque a través del cual los Estudios de Traducción lo han adoptado para su aplicación a la traducción audiovisual. Así, son cada vez más los proyectos que emplean esta nueva tecnología como herramienta para recopilar información sobre la percepción y recepción del material audiovisual. Autores como Bryant (2004), Chapdelaine (2007), D'Ydewalle (1987, 1991, 1992, 2003), Jensema (1998, 2000) y Peli (2005) entre otros, destacan entre los especialistas de diversas disciplinas que han aplicado estas herramientas a la evaluación de la recepción de los subtítulos.*

10.2.3.1 ¿En qué consiste?

Tal y como recoge Usolab (2007) en su presentación, 'El eyetracking es una tecnología que permite seguir los movimientos oculares de una persona para inferir qué mira y qué ve. Esto se consigue actualmente mediante un eyetracker, un monitor especial que lanza rayos infrarrojos a los ojos de quien lo usa. Estos rayos rebotan en su pupila y vuelven al aparato, permitiendo así calcular con precisión dónde está mirando.'[58]

10.2.3.2 ¿Para qué sirve?

En su aplicación para el estudio del subtitulado, '(…) eye tracking is used to identify the patterns of visual attention exhibited by viewers when attention is divided between visual content and caption reading. Attention overload is recorded to detect

[57] *Jensema (2000: 275).*

[58] *Existen otras modalidades de eyetrackers, monoculares o binoculares no integrados en el monitor sino en soportes – cascos o gafas para el usuario - , cuyo funcionamiento es similar.*

critical conditions when viewer's attention is saturated by the information to be processed*'. (Chapdelaine, 2007:197)*[59]

Así, tal y como podemos comprobar tras la explicación de Chapdelaine, la aplicación de la tecnología de seguimiento ocular permite conocer la percepción real y el procesamiento efectivo de la información contenida, en este caso, en el producto audiovisual por parte del espectador. La aplicación de este instrumento al estudio del subtitulado, y más específicamente al subtitulado para sordos, permitiría además depurar las técnicas actuales de forma realmente científica, estandarizada y no condicionada, al margen de las deformaciones – de uso y consumo – imperantes a las que los usuarios se ven expuestos aún a día de hoy. Así, el empleo de eyetracker nos permitiría, entre otras cosas:

- *conocer el tiempo y orden de reacción y procesamiento del contenido textual con respecto a la imagen;*
- *determinar la supeditación o relevancia de los elementos que integran el producto audiovisual;*
- *determinar el número de caracteres y, por lo tanto, la velocidad efectiva de lectura*[60]*;*
- *evaluar los diferentes parámetros estilísticos y técnicos que configuran la práctica del subtitulado con el fin de determinar cuáles son los que servirían para rentabilizar y tratar de reducir el tiempo de lectura: tipo y tamaño de letra, posicionamiento, justificación, interlineado, empleo de 1 / 2 / 3 líneas, aplicación de colores e iconos, tiempos máximo y mínimo de exposición del subtítulo...*

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[59] *La segunda parte de la explicación de Chapdelaine se centra en su aplicación concreta al proyecto.*

[60] *Este, precisamente, resulta ser uno de los aspectos más controvertidos de la norma UNE-153010. Dicha norma recoge de forma general un cálculo de tiempos de exposición expresados en caracteres por segundo (12-19) y palabras por minuto (95-150). A esta referencia, excesivamente laxa e imprecisa, se une la falta de consistencia existente en la definición de la unidad de medida. Así pues, esta situación ofrece un fiel reflejo de la imprecisión existente en la estimación de uno de los parámetros fundamentales del subtitulado: las velocidades de lectura que marcan los tiempos de exposición*.

No obstante, si bien la aplicación del eyetracking nos permitiría dotar a la práctica de datos de origen científico, no es menos cierto que conviene ser cuidadoso a la hora de analizar los resultados obtenidos en el proceso. El análisis del movimiento ocular recoge – y en ocasiones analiza – los datos que se derivan de la percepción del producto audiovisual en este caso, pero resulta imposible inferir de los mismos los relativos a la comprensión (De Linde & Kay, 1999:38), motivo por el que es necesario aplicar – al menos – un doble método de análisis que permita combinar ambas herramientas para derivar resultados significativos del proceso.

La combinación de ambos métodos, contrastada con los estudios tradicionales sobre la recepción de subtítulos, permitiría dibujar un perfil detallado de la práctica y determinar si sería factible hablar de una estandarización internacional y una 're-educación' de los gustos de la audiencia para su adaptación a nuevas modalidades de subtitulado configuradas atendiendo a sus capacidades y limitaciones lectoras reales.

10.2.3 Conclusiones

La estandarización y normalización imperantes en la sociedad actual tratan de abrirse camino también en el campo de la traducción audiovisual, siendo el subtitulado, por su creciente peso en el mercado internacional, la modalidad situada en el 'punto de mira'. Las diferencias técnicas y estilísticas, cuyo asentamiento radica, en un gran número de ocasiones, en imposiciones económicas, técnicas y humanas, han ido perfilando la cultura audiovisual de las audiencias, condicionando la perspectiva real del usuario sobre sus propias necesidades y la evolución de una práctica que, aún a día de hoy, carece de fundamento científico para la determinación de gran parte de los parámetros que la integran.

Gracias a la colaboración interdisciplinar hoy es posible contar con una herramienta que permite evaluar la percepción real de los productos audiovisuales: la tecnología de seguimiento ocular o Eyetracking. La aplicación de esta tecnología, que permite extraer datos exactos sobre la percepción real de los individuos del subtitulado, en combinación con los métodos de análisis tradicionales – análisis de

comprensión y valoración – nos permitirían replantearnos la efectividad de las modalidades de subtitulado imperantes y, posiblemente, llegar a definir prácticas mejoradas realmente adaptadas a las necesidades y limitaciones de la audiencia.

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10.3 Annex III[61]

'Subsordig: The need for a deep analysis of data[62]'

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Abstract: SUBSORDIG analyses the subtitling parameters currently used in the Spanish audiovisual market, and, in particular, compares them to the different subtitling conventions adopted in other European countries. All the data analysed in the SUBSORDIG project was obtained from detailed interviews and questionnaires passed to different groups of users, following a bottom-up methodology. Results derived from the project reveal tendencies that might question the validity of this data, as a result of the possible influence of local subtitle conventions on individuals' reading habits and, consequently, on these individuals' subtitling preferences.

In order to remove any subjective information from our study, it was essential that we adopt scientific tools such as *eyetracking* technologies, which are currently used in other disciplines like psychology, marketing and medicine, to enable further studies based on objective analysis, and to provide a basis for comparison and proper definition of the technical aspects involved in subtitling. This article describes the application of *eyetracking* to the study of subtitling, and will focus on the steps taken to evaluate and update many of the technical parameters involved in the process.

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[61] 'SUBSORDIG: The need of a deep analysis of data', in Matamala, Anna and Pilar Orero (Eds) *Listening to Subtitles: Subtitles for the Deaf and Hard of Hearing*, Bern: Peter-Lang. (2010). (163-174)

[62] This paper is part of the research project *La subtitulación para sordos y la audiodescripción: Primeras aproximaciones científicas y su aplicación* ('Subtitling for the Deaf and Hard-of-Hearing and Audiodescription: First scientific approaches and their application') (HUM2006-03653FILO) funded by the *Ministerio de Educación*.

Keywords: SUBSORDIG, subtitling, conventions, *eyetracking*.

10.3.1 Introduction

Since its early days, subtitling has evolved in a number of forms and styles into what is now a heterogeneous landscape worldwide. Different factors – either economic (Gottlieb, 2005: 30), human (Díaz Cintas, 2000:64) or technical (Ivarsson & Caroll, 1998: 49; Kirkland, 1999: 251[63]) – have progressively and simultaneously reconfigured today's uneven subtitling panorama, turning it into little more than a collection of various – and differing – styles and guidelines available on the market. Having said that, most of these guidelines are the result of arbitrary conventions 'coined' through practice and, in many cases, as has occurred with the '6-second rule'[64], are based on unknown or, for the most part, non-existent research.

Subtitling for the Deaf and Hard-of-Hearing (SDH), currently one of the most relevant disciplines aimed at achieving accessibility, is directly affected by such a heterogeneous panorama. In Spain, SDH first appeared on television screens in the 1990s, yet it was not until 2003 that the first initiatives for harmonising this growing industry came into effect with the issuing of a non-binding UNE Standard[65]. However, due to its non-binding nature, the fact that it was restricted to analogue television, and the lack of empiric validation of all parameters gathered, the accuracy and validity of this subtitling standard has been questioned since its conception (Pereira y Lorenzo, 2005; Arnáiz 2008).

Similarly, as Kirkland (1999: 251) points out, current SDH standards throughout the world are based on relaxed and open criteria in the application of specific parameters relating to character identification, context information description, colour definition, orthotypographic conventions or reading speeds. Now

[63] The author summarises the current state-of-the-art: '[…] The current style of captions is affected by the limitations of analog television technology and decoder capabilities. Within these technical limits, various captioning practises and policies evolved, creating a 'style' of captioning that utilizes a subset of the features provided by the technology. […] there are several options that relate to these matters of style that could be varied to best meet the needs of people who are deaf, hard of hearing, learning English, learning to read, or otherwise able to benefit from captions.'

[64] '[…] This rule [6-second rule] is being applied in all countries that use subtitles, although no one seems to know why' (Gielen & D'Ydewalle, 1992: 248).

that analogue television is progressively being replaced by digital television and we are moving into new technological possibilities and audiovisual products, traditional subtitling standards also need revisiting, for they were specifically developed for teletext production and the ongoing adoption of these standards seem outdated and vague.

Under this distorted panorama, institutions, professionals, scholars and users have continuously put forward a set of initiatives to update and review the SDH production scene, including surveys, training and regulatory bodies.[66] Finally, in 2005 the National Centre for Subtitling and Audiodescription (CESyA) was created and its aim was to promote and harmonise accessibility in Spain. But much has yet to be done and research is still being carried out to try to establish a basis for a more standardised development in the near future.

It is into this context that the SUBSORDIG project fits, trying to look for the necessary framework to analyse current styles by following a bottom-up methodology. A close look into the results obtained, first from a pilot study, and then from the body of research, highlights the importance of data gathering and analysis.

The growing evolution of multidisciplinary studies, together with the need for further research on perception studies within audiovisual translation and accessibility, has led us to new technologies. New tools such as eye trackers can now help us bridge the gap between long-lasting subjective SDH practises and increasing calls for empirically based, standardised guidelines.

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[65] UNE-153010: *Subtitulado para personas sordas y personas con discapacidad auditiva. Subtitulado a través del teletexto* ('Subtitling for Deaf and Hard-of-Hearing People. Subtitling by teletext'). Issued by AENOR (Spanish Association for Standardisation and Certification).

[66] Some examples of these initiatives were the issuing of the Subtitling Standards UNE-153010 (AENOR, 2003); state-of-the-art studies by CMT (Pardina I Mundó) and the *Real Patronato sobre Discapacidad* – '*Estudio de Viabilidad del Centro Español de Subtitulado: FASES I y II'* (RPD, 2004-2005).

10.3.2 SUBSORDIG: The project

The SUBSORDIG project was initially envisaged for the research and development of criteria for subtitling for the Deaf and Hard-of-Hearing in digital television'[67]. Its aim is to analyse the current subtitling production, comparing examples from the Spanish scene with different practices and styles which are used in other countries. Examples of subtitling guidelines were taken from Italy, Belgium, France, the United Kingdom, Ireland, the United States, Canada, Australia, Switzerland and Spain[68]; whereas further information or real production was found in the 'Comparative Subtitling' project carried out by the European Association of Studies in Screen Translation (ESIST)[69].

The project, designed for implementing SDH for digital television, focuses on the most important parameters involved in current SDH production in the audiovisual market. It examines the adequacy of a set of local, national or foreign conventions applied to some technical, stylistic and linguistic parameters in subtitling. Such as: font type and size, character identification, subtitle placement, linguistic strategies in use – verbatim subtitling versus condensation or reduction[70] -, etc.

Once the desired parameters have been identified, they are applied to the subtitling of different short videos that are passed to three different groups of users – twenty Deaf, Hard of Hearing and Hearing viewers per group –for both adult and child audiences. Volunteers are then asked to fill in different personal interviews and preference and comprehension questionnaires. This procedure, repeated in a number of cities across the country – Barcelona, Madrid, Vigo and Burgos-, aims to detect and analyse whether differences could be identified depending on the local development and social reality of deaf users within their local communities. Bilingual

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[67] *SUBSORDIG: Investigación y desarrollo de criterios para la elaboración de subtítulos para sordos en la televisión digital.*

[68] See 9.3.7

[69] http://www.esist.org/projects.html

[70] For further information on the phases and results of the project, see Bartoll & Martínez (2008) and Martínez (2008)

communities such as Catalonia (Barcelona) and Galicia (Vigo) were represented in the test together with monolingual ones, such as Madrid or Castile.

10.3.3 SUBSORDIG: Pilot Study

All the data gathered in SUBSORDIG aimed to shed light on the formula for the elaboration of perfect – non-customised – subtitles. Therefore, in order to outline the final test and avoid unexpected results, it was first necessary to launch a pilot study with the goal of identifying general mistakes and weak areas within the tests to be conducted. The pilot study – 'control group' in our research – was carried out with a sample audience – 5 users per group – in Barcelona and the collaboration of AICE (*Asociación de Implantados Cocleares en España*).

The three groups[71] which made up the pilot study were shown the videos and given the questionnaires, and their answers, together with their feedback information, were vital to detect problems and prevent further disruptions in our study. At the same time, new areas of interest concerning SDH elaboration and perception arose when examining the data.

The first problem to arise, and a basic example of subsequent reorganisation which was carried out, concerned the identification of age groups.

Through our pilot study we could confirm the differences between young and older audiences in terms of subtitling preferences – and even perception – already exposed in previous research projects[72]. Adult viewers – aged from 21 to 65 – showed particularly varied choices for the first visible part of subtitles: characters and fonts[73]. Deaf, hard-of-hearing, and hearers under 50 showed their preference for Verdana whereas older viewers – 50 to 65 – in all three groups preferred Arial or

[71] 5 Deaf, 5 Hard-of-hearing, 5 Hearing adults.

[72] D'Ydewalle et alii (1992), Kirkland (1999), and Peli et alii (2005) conducted different experiments to trace reading and perception patterns in young and old audiences. In all cases common patterns and differences were identified between these major age groups.

[73] Technologically restricted by analogue teletext restrictions, font types have traditionally been taken for granted, limiting their application without questioning their functionality. New audiovisual technologies have brought new possibilities, making it essential to analyse this step. Furthermore, the great differences implied in font type variations make their study compulsory to any other modification of current SDH parameters.

Tiresias. This fact, unexpected when the project was first outlined, led us to redefine age groups within the existing categories. Would this difference be caused by habit, cultural or perceptual – sight – reasons? Questionnaires, previously thought to provide useful background information on each viewer's socio-cultural profile, revealed vague answers that frequently didn't match results derived from comprehension or preference tests. It was by analysing and processing all the data gathered that the second main difficulty came to light: subjectivity and socio-cultural inference.

The direct influence of subjective responses in data collection is perfectly described by Schiessl et alii (2003:9), who summarises the problems these sort studies encounter when dealing with people's reactions: 'Another well known major validity problem using conventional usability methods arises when testing subjects in an artificial environment, such as a usability lab. Subjects are aware of the test situation. The description and verbalisation of their own behaviour might be biased in terms of social expectations, political correctness or simply to give a good impression.' Although in our case subjects were not confined to a proper usability lab, conditions were far from being those of real life, and this might have also influenced their responses.

As we can see, the presence of subjective thinking might condition research output, making it essential to develop scientific tools that help us differentiate instinctive from acquired – or pretended – behaviour in subtitle reading. However, further research is still required in order to determine the steps and methodologies to be applied for the obtaining of 'sterilized' data.

10.3.4 Further Research: Perception Studies and Eyetracking

Already in 1992 Gielen & D'Ydewalle (1992) confirmed that, '[…] this strategy [information processing: subtitles + images] is already being developed in childhood and because of long-standing experience it is largely based on automatic processes. Some observations, however, indicate that the reading of subtitles should not be considered as a purely automatically elicited type of behaviour […] '; so, taking into account its partly automatic nature, it is then essential to analyse common patterns in

reading behaviours in order to determine a set of basic elements in further research on the topic.

Some other researchers also remark the lack of information on this abnormal type of 'reading'. In this line Jensema (2000) claims: '[…] Over the last 20 years, closed captioning has evolved from a PBS engineering development project to an established part of the overall television system in the United States. Millions of dollars are spent each year providing captioning services, but it is still not known exactly where people are looking when they watch captioned television (e.g. at the captions, at the picture) and how their eyes scan the screen to absorb the information.' This statement, also valid for most European countries in which SDH ('captioning' overseas) is present, describes the real situation of this practice. It becomes essential to adopt technologies that enable a complete record of the viewer's perception of the audiovisual product. Nevertheless, ongoing projects are still trying to define successful procedures that help us remove all subjective, individualized, conditioned or acquired behaviours that have progressively marked the subtitling produced today.

This was traditionally questioned, first in Film, then in Psychology, and now in Accessibility studies, and has allowed scientific tools such as *eyetracking* technologies – currently used in other disciplines such as Psychology, Gerontology, Marketing or Medicine – to enable further research based on objective analysis. Its long-lasting presence in such diverse fields of study gives us a reliable example of its potential application in SDH. In our project, it formed the basis for confront existing SDH parameters with real objective and instinctive reading behaviours.

Eye tracking studies date back to 1890 (Jacob, 2003), although technological developments in search of an accurate methodology for data collection did not make their effective application to subtitle reading possible until the 1970's (Jensema, 2000: 275).

As De Graef et alii (1985) describe: '[…] The eye movement pattern and the attention shift between the image and the subtitles are measured with the use of the pupil-center corneal-reflection method. This method allows the determination of the

subject's point of regard by employing a vector, which is continually being calculated between the center of the pupil and the corneal reflection'.

Nowadays present in many different areas, in recent years different fields of research have turned their attention to the use of this technology in Perception Studies. Publicity, Computing, Psycholinguistics, Medicine and Usability are some of the areas to have recently adopted such an accurate tool, and applied its results in a number of ways. Within Psychology and its Psycholinguistic variant a number of studies have been conducted focusing on reading and perception of simple stimuli with ordinary texts or pictures; within Audiovisual disciplines, there have been several projects applying eyetracking to different studies in Film Perception, revealing frequency patterns in TV and film viewing (e.g. D'Ydewalle et alii, 1989; Peli et alii, 2005).

But, as eyetracking studies evolve and their research possibilities increase, studies are multiplying, adapting and adopting various stimuli into their projects. Different authors such as D'Ydewalle et alii (1987, 1989 and 1991), Kirkland (1999), Jensema (2000) or Chapdelaine et alii (2007) have applied this tool to analyse SDH perception in recent decades. However, the amount of information derived from all these pilot studies makes further research necessary in the field. Whereas in 1987, D'Ydewalle et alii (1987: 321) claim that '[…] switching between the visual image and the subtitle obscures to a certain extent the normal patterns of eye movements in reading.' in 2000, Jensema (2000) states that: '[…] In general, people who view a particular video segment have similar eye movement patterns. The addition of captions to a video results in a major change in eye movement patterns, and the viewing process becomes much more of a reading process.' Furthermore, later studies based on eyetracking application to SDH subtitling and conducted by CRIM[74] in Canada have revealed that '[…] Impaired viewers had different strategies not only for reading caption but also for watching the visual content […] We found that they spent significantly less time reading caption than hearing viewers and time allocated would vary not only upon caption rate, but also motion level in images. So any assessment made by hearing human on caption rate while captioning may be

[74] http://www.crim.ca/fr/index.html

inaccurate if based on reading speed only[75].' So, as we can see, although perception, comprehension and reading behaviours have traditionally been the principal key to these sorts of studies, differences emerging from these projects reinforce the idea that further research is still necessary, especially when applied to SDH and deaf audiences.

10.3.5 Conclusions

The current international scene for SDH is the result of a wide range of different styles and practises in use. Research projects, such as SUBSORDIG, are demonstrating how these practises, however diverse, (in)adequate or (il)logical they are, are always preferred – within their specific areas of influence – to other possible implemented styles.

Previous and on-going research methodologies applied to test subtitle reception have traditionally been based on personal interviews and questionnaires on user preferences, but, as we have seen, results derived cannot be over-analysed due to their imprecise nature. The tight bond between practices and preferences, the lack of accuracy and certainty in conventional usability research methods, together with the generalised lack of empirical evidence behind any of the isolated parameters configuring the different subtitling guides, makes it essential to harmonise production styles by following identical guidelines based on parameters obtained through scientific research.

In recent years, the growing inter and multidisciplinarity and emergence of new technological methodologies have provided Audiovisual Translation and Accessibility with empirical tools that can help eradicate subjectivity from the existing SDH guidelines. Eyetracking, tracing perception through the analysis of eye movements, offers the possibility of gathering accurate and precise data that could help us maximise – and increase – reading speeds; identify 'best practises' in subtitling; adjust existing parameters, and for the most part, standardise a practise which, at the time of writing, remains arbitrary.

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[75] Chapdelaine et alii, 2007.

10.3.6 Bibliography

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Subtitling Guidelines Analysed in the Project

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10.4 Annex IV[76]:

'A comprehensive bibliography on subtitling for the deaf and hard of hearing from a multidisciplinary approach[77]'

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10.6.1

'*Los parámetros que identifican el Subtitulado para Sordos. Análisis y clasificación*' ('The parameters that identify the Subtitling for the Deaf. Analysis and Classification'), *Monti: Monographs in Translation and Interpreting*, 4, (2012). (103-133).

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MULTIDISCIPLINARITY IN AUDIOVISUAL TRANSLATION

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The practice of boundary-crossing in research, although regarded with suspicion up until a few decades ago, is now widely accepted and increasingly more common in many domains. In an era dominated by globalized, instant communication, nothing can be seen as monolithic anymore, and this new situation demands a multifarious outlook on the part of the researcher. In the wake of this new trend, as Willy Østreng puts it (2010: 95), scientific disciplines are nowadays subject to vertical as well as horizontal restructuring:

> The traditional monodisciplinary organization of research is gradually fading away, and a new structure, based on two distinct pillars is emerging. The first pillar is the fragmentation and hybridization resulting in units of topical specialization and sub-disciplines, and the second is extended monodisciplinarity, where research is moved by "imperialistic expansion" into the territory of other disciplines, either by breaking or bridging across boundaries.

The two pillars around which the breaking up of monodisciplinarity is reorganized, in Østreng's words, can be said to apply to, and portray, the evolution of Translation Studies (TS) and Audiovisual Translation Studies (AVTS).

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BIONOTE / NOTA BIOGRÁFICA

Christina Lachat Leal

Christina Lachat Leal, PhD, teaches translation at the University of Granada since 1999. She has published several works related to cognitive translatology, problem solving, learning and expert knowledge in the context of the research team Petra (Expertise and environment in translation) including the book *Identificación, representación y resolución de problemas de traducción* (Identifying, representing and solving translation problems: an empirical study of the behavior of experts and novices). After her involvement in the research project TRACCE (Evaluation and management of accessibility resources for sensory disabled people through audiovisual translation), her research has incorporated visual perception and audiovisual translation.

La doctora Christina Lachat Leal, profesora del Departamento de Traducción e Interpretación de la Universidad de Granada desde el año 1999, ha publicado varios trabajos relacionados con la traductología cognitiva, la resolución de problemas, el aprendizaje y el conocimiento experto, en el marco del grupo de investigación Petra: Pericia y entorno de traducción, entre los cuales cabe destacar el libro *Identificación, representación y resolución de problemas de traducción: estudio empírico del comportamiento de expertos y principiantes*. Tras su participación en el proyecto TRACCE (Evaluación y gestión de los recursos de accesibilidad para discapacitados a través de la traducción audiovisual), sus líneas de investigación incluyen percepción visual y traducción audiovisual.

LOS PARÁMETROS QUE IDENTIFICAN EL SUBTITULADO PARA SORDOS. ANÁLISIS Y CLASIFICACIÓN

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Resumen

En los últimos años ha aumentado la presión social a favor de la accesibilidad audiovisual, lo que ha venido acompañado de un incremento en el número de productos subtitulados para sordos disponibles en el mercado. El significativo crecimiento en el número de estudios ha cuestionado la aplicación sistemática de los parámetros generales del subtitulado a la práctica del Subtitulado para Sordos (SPS). Partiendo de una propuesta de Bartoll (2008) para el estudio de los parámetros del subtitulado, el presente artículo plantea la adaptación de la taxonomía al estudio del SPS. Analizando los parámetros de naturaleza general aplicables al SPS, incorporando aquellos parámetros exclusivos de esta modalidad (la representación de la información extralingüística), y considerando las interconexiones que se establecen entre todos ellos, la nueva taxonomía busca servir en el estudio integral y detallado de cada uno de los aspectos que configuran la práctica del SPS.

Abstract

"A taxonomy on the parameters of subtitles for the Deaf and Hard-of-Hearing. Analysis and classification"

Subtitling for the Deaf and the Hard-of-Hearing (SDH) was long considered a "simple" variant of *standard* subtitling. Only recently, uprising social demands together with a growing presence of SDH materials in different international audiovisual environments, have promoted the proliferation of research initiatives on SDH practices. As a result, the systematic application to SDH of some of the parameters originally adopted for standard subtitling has proven to be controversial. This paper presents a proposal for the specific analysis of SDH parameters. Based on a taxonomy developed

by Bartoll (2008), the new taxonomy describes the restricted application of *standard* parameters to this accessibility modality. The new proposal focuses on the parameters that are specific to SDH –the representation of extralinguistic information– and sheds light into the tight connection established among all the agents involved. The new taxonomy tries to provide researchers and SDH professionals with a tool to evaluate SDH practices and analyze the implications of potential modifications on parameters.

Palabras clave: Subtitulado para Sordos (SPS). Taxonomía. Parámetros. Análisis. Información extralingüística.

Keywords: Subtitling for the Deaf (SDH). Taxonomy. Parameters. Analysis. Extralinguistic information.

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1. Introducción

A lo largo de la última década se ha producido un significativo incremento en la presencia del Subtitulado para Sordos (SPS) en el contexto audiovisual internacional. La creciente presión social, unida a una mayor flexibilidad de medios y soportes, ha incentivado la producción y distribución de esta herramienta de accesibilidad. Es precisamente la mayor visibilidad de la práctica y su creciente profesionalización la que ha dado origen en los últimos años a un cada vez mayor número de estudios sobre la cuestión, surgidos desde los más diversos ámbitos de especialidad, desde la Ingeniería (cf. Martín *et al.* 2007 y 2008), a la Psicología (cf. Cambra *et al.* 2008), pasando por los Estudios de la Sordera (cf. Jensema *et al.* 2000) o el Derecho (cf. Pérez-Ugena *et al.* 2010). En este sentido, resultan de especial interés los promovidos desde los Estudios de Traducción, por su visión transversal y el carácter interdisciplinar del que suelen estar dotados.

Si bien es cierto que el SPS es, a menudo, considerado una de las muchas disciplinas que integran la práctica del subtitulado ordinario, son precisamente sus características diferenciales las que invitan a una clasificación específica. Como recoge De Linde (1996: 182):

> Le sous-titrage intralinguistique souligne de fait les interrelations subtiles entre parole, écrit et visuel, en tentant de reproduire l'information sonore par d'autres éléments qu'auditifs tout en cherchant à garder un certain équilibre spatio-temporel avec les images.

El contenido sonoro adicional de la obra audiovisual que es preciso representar mediante el SPS, como señala De Linde, hace necesario incorporar parámetros de estudio exclusivos o de especial interés dentro de esta modalidad. Centrándose principalmente en elementos lingüísticos, pero abordando también cuestiones formales o técnicas, diversos autores se han adentrado en el estudio del SPS desde el ámbito traductológico (cf. De Linde 1996; De Linde y Kay 1999; Neves 2005; Pereira 2005, entre otros). Sin embargo, el elevado número de elementos que configuran el desarrollo de esta especialidad de subtitulado sigue haciendo necesaria una clasificación que permita describir cada uno de los aspectos que dan forma al producto final.

2. Taxonomía del subtitulado de Bartoll (2008)

A pesar de que, hasta la fecha, no se ha llevado a cabo en el ámbito del SPS ninguna propuesta de análisis taxonómico, sí que existen iniciativas surgidas para el estudio del subtitulado ordinario. Basándose en estudios previos de Gottlieb (1997), Ivarsson y Carroll (1998) y Karamitroglou (1998), Bartoll (2008) ha elaborado una propuesta con el objeto de establecer un modelo de análisis y clasificación de los parámetros del subtitulado que permita determinar los diferentes tipos de subtitulado que se desarrollan en el mercado. El autor identifica hasta 15 parámetros, organizados en torno a tres perfiles, como aspectos configuradores del producto subtitulado:

- Parámetros lingüísticos: entre los que recoge los parámetros "Lengua" y "Densidad".
- Parámetros pragmáticos: con aspectos como "Destinatarios", "Intención", "Tiempos de Elaboración" y "Autoría".
- Parámetros técnicos: recoge elementos como "Opcionalidad", "Difusión", "Color", "Incorporación", "Posicionamiento", "Emplazamiento", "Archivado", "Tipografía" y "Formato".

El detallado conjunto de parámetros que el autor logra recopilar, y la relación de interdependencia que refleja entre ellos, resultan pioneros a la hora de representar la compleja estructura que tiene lugar en el proceso de elaboración de subtítulos. Como desvela el autor, la elección de una determinada variable en uno de los parámetros supone la alteración de la variable en otro diferente, produciendo un efecto en cadena que quedará reflejado en el aspecto final del subtítulo.

Si bien en su detallada propuesta estaría incluido el SPS, el mismo autor recoge la posible revisión de su modelo en función de las nuevas aportaciones que surjan en materia de accesibilidad a los medios (*ibid*: 4). Por este motivo, en el intento de aplicación de su modelo al análisis del SPS, se plantea la necesidad de ampliar su propuesta.

El análisis de estudios específicos sobre la práctica del SPS, como el de Neves (2005), y de algunas de las normativas públicas de SPS disponibles (cf. AENOR 2003; BBC 2009; BCI 2005; CAB 2008; DFA 2004; DCMP 2011; ITC 1999) desvelan la existencia de una serie de elementos específicos del SPS, condicionados fundamentalmente por la representación de la información sonora adicional, que no aparecen representados en el trabajo de Bartoll. Su incorporación, y efecto sobre otros parámetros, dan origen a la nueva propuesta que aquí se recoge.

3. Taxonomía del SPS

Prestando especial atención a los elementos específicos del SPS, como es el caso de los elementos sonoros externos al diálogo, y a aquellos elementos que desempeñan una función significativa en el desarrollo de los productos subtitulados para sordos, tales como la velocidad de los subtítulos y la tipografía, con este trabajo proponemos la generación de una nueva taxonomía. El nuevo modelo recoge dos de las categorías ya propuestas por Bartoll ("Parámetros lingüísticos" y "Parámetros pragmáticos") y modifica la tercera categoría, "Parámetros técnicos", al considerar que los elementos que la integran pueden agruparse en tres categorías diferenciadas: "Parámetros estéticos", "Parámetros técnicos" y "Parámetros estético-técnicos". Estos últimos hacen referencia a un grupo de parámetros cuyo resultado estético no depende de la elección del subtitulador, sino que viene impuesto por el proceso de producción (cf. apartado 2.6.). Pero la principal aportación a esta nueva taxonomía es, posiblemente, la incorporación de una sexta categoría, "Parámetros extralingüísticos sonoros", diseñada para el análisis específico de los elementos sonoros recogidos de forma exclusiva en SPS.

A las nuevas aportaciones clasificatorias hay que añadirle la incorporación de nuevos parámetros en algunas de las categorías, como son "Justificación", "Método de elaboración" y "Velocidad", así como la inclusión de nuevas variables en algunos de los parámetros ya existentes (cf. anexo I).

3.1. Parámetros lingüísticos

Los "Parámetros lingüísticos" planteados por Bartoll, "Lengua" y "Densidad", mantienen su vigencia en el estudio del SPS, aunque con un enfoque específico. A pesar de que autores como De Linde (1996) o De Linde y Kay (1999) equiparaban la subtitulación intralingüística al SPS, Díaz-Cintas recogió otras cuatro modalidades diferentes de subtitulación intralingüística, al margen de esta: para personas con déficit auditivo, para el aprendizaje de idiomas, efecto karaoke, variantes del mismo idioma y noticias y publicidad (2003: 38). Cabe destacar aquí que la consideración lingüística (parámetro "Lengua") del SPS no depende únicamente de las lenguas origen y meta inherentes a la traducción, sino que viene marcada por la tradición audiovisual del contexto de llegada. Mientras en países dobladores, como España, el SPS representa una actividad de naturaleza mayoritariamente intralingüística, en países de tradición subtituladora la presencia original de subtítulos dificultó en sus comienzos el desarrollo de una modalidad específica para sordos por considerarla innecesaria (cf. De Linde y Kay 1999: 8). Afortunadamente, la

eclosión de los nuevos soportes y de la conciencia social ha justificado el desarrollo de esta modalidad, al margen de la lengua y de la tradición audiovisual (cf. Neves 2005: 241; Neves 2009: 152). Por este motivo, fruto de este contexto audiovisual heterogéneo, salvo en contadas excepciones, no resulta habitual encontrar referencia alguna al parámetro "Lengua" en el estudio del SPS, ni en ninguna de las normativas publicadas que regulan su producción. Arnáiz-Uzquiza (2007) señala que el ejercicio del SPS se basa en una serie de normativas cuya difusión suele estar limitada al contexto privado. Son escasos los ejemplos públicos disponibles, en su mayoría procedentes de instituciones públicas o privadas de países de lengua inglesa (cf. apartado 2).

El parámetro "Densidad", que recoge la relación entre la cantidad de información textual presentada en el subtítulo y la información verbal procedente de la pista sonora, está sujeto a otro tipo de enfoque. Además de estar supeditado a las características del producto audiovisual y a las restricciones espacio-temporales propias del subtitulado, pueden ser varios los condicionantes impuestos que limiten, y se vean limitados por este parámetro, como es el caso del número de caracteres por línea, el número de líneas, o la velocidad de lectura, entre otros. Las restricciones espacio-temporales que se aplican al subtitulado ordinario ya revelan la imposibilidad (actual) de llevar a cabo una transcripción literal del subtítulo y, dependiendo de las lenguas de trabajo, apuntan a unas tasas de reducción que pueden oscilar entre el 22% y el 75% del texto original (cf. Lonheim 1995: 203; Lorenzo 2001: 15; Díaz-Cintas 2003: 202; Gottlieb 2005: 20). No obstante, en lo que al SPS se refiere, resulta habitual la demanda por parte del público con deficiencia auditiva de una transcripción literal de los diálogos (cf. Ofcom 2005: 16; Romero-Fresco, en prensa). Estas exigencias, cuya justificación radicaría no solo en el desconocimiento de la técnica, sino también en el deseo de disponer de toda la información ofrecida en el original, aparecen reflejadas en la apuesta por la literalidad de los textos normativos consultados. A pesar de que la evolución médica y sociocultural en el seno de la comunidad con problemas de audición hace que sea posible hablar de una mejora en los niveles de alfabetización, y con ello, de una mejora en las capacidades lectoras de los usuarios de SPS con respecto a generaciones anteriores, la heterogeneidad de la comunidad sorda revela que las capacidades lectoras de parte de este grupo de usuarios no aconsejan la transcripción literal si lo que se pretende es garantizar la accesibilidad al contenido. Los estudios desarrollados por Cambra *et al.* (2008), Lorenzo (2010a), Pereira (2010), Romero-Fresco (en prensa) o Zárate (2010) en fechas recientes muestran los problemas de algunos usuarios con deficiencia auditiva para comprender el SPS actual, especialmente en el caso de

aquellos usuarios cuya primera lengua es la Lengua de Señas (LS). Al mismo tiempo hay que tener en cuenta que el SPS se caracteriza, entre otros rasgos, por incorporar información extralingüística al subtitulado ordinario, lo que supone un incremento en el número total de caracteres que el espectador debe leer. Conscientes de esta situación, algunos textos normativos recogen la posibilidad de desarrollar otras modalidades de subtitulado –editado, o reducido simplificado– para públicos específicos, como el público infantil (cf. BBC 2009: 30), los niños con sordera prelocutiva (cf. ITC 1999: 19; BCI 2005: 10) o el público con problemas de lectoescritura. A este respecto, la norma española no determina el perfil del público con problemas de lectoescritura (cf. AENOR 2003: 12).

No obstante, determinados usuarios se muestran reticentes ante la reformulación del subtítulo con el fin de dotarlo de características lingüísticas más idóneas para los espectadores signantes (cf. Lorenzo 2010a: 121; Pereira 2010: 100). Para ellos, el colectivo de usuarios signantes únicamente tendría sus necesidades comunicativas cubiertas con la ayuda de intérpretes de LS y no mediante el SPS, como recogen De Linde y Kay (1999: 10), siguiendo los estudios de Woll (1991).

3.2. Parámetros extralingüísticos sonoros

Siguiendo la clasificación de Neves (2005: 220-258), los parámetros extralingüísticos sonoros constituyen el principal punto identificativo del SPS y suponen la principal incorporación a la propuesta de Bartoll (2008). Aunque este grupo de parámetros supone uno de los aspectos recogidos con más frecuencia por las normativas sobre SPS, su presencia aparece reflejada de forma desigual en la mayoría de los casos.

Esta categoría hace referencia a la representación de toda la información sonora de índole no verbal que forma parte del documento audiovisual. La naturaleza no verbal de esta información hace que, ante la ausencia de un referente visual de acompañamiento, sea preciso representarla por escrito para que el espectador con problemas de audición pueda alcanzar unos niveles de comprensión equiparables a los del público normo-oyente. La diversidad de las fuentes y tipos de información sonora hace que resulte compleja la elección de un único término para la definición de este grupo de parámetros. El *DRAE* (2011) recoge que el término "extralingüístico" hace referencia a "todo elemento externo a la lengua que ayuda a la desambiguación de palabras y frases". De este modo se podría definir determinados elementos acústicos que acompañan al componente verbal en la obra audiovisual y que sirven para contextualizarlo, como son los efectos sonoros y la música. Sin embargo,

existen otros dos elementos, la información paralingüística y la identificación de personajes, que, sin ser totalmente externos a la lengua, también pueden cumplir funciones de desambiguación basándose en su componente acústico, por lo que se ha considerado pertinente su incorporación dentro de esta categoría de "Parámetros extralingüísticos sonoros".

El primero de los parámetros de este grupo, "Información paralingüística", aporta carga propia en el proceso de lectura y comprensión, ya que su función es la de ampliar y esclarecer los parlamentos de los personajes. Es habitual su consideración en la gran mayoría de las normativas de SPS en conjunto con el parámetro "Efectos sonoros", como parte de un único parámetro que hace referencia a la representación de la información sonora. Sin embargo, el tipo de información al que ambos parámetros hacen referencia, como sugieren Neves (2005: 220) y Pereira y Lorenzo (2005: 24), aconseja una clasificación independiente de ambos componentes. Esta información paralingüística, que ambas autoras recogen como "rasgos paralingüísticos" y "didascalias" respectivamente, se correspondería con la "Información paralingüística" aquí propuesta y representaría aquellos matices de la interpretación de los personajes que, por no contar con un referente visual, únicamente dependen de su naturaleza acústica, como son los aspectos calificadores o diferenciadores de la voz (cf. Poyatos 1994b). Su representación práctica mediante la descripción suele ser generalizada, si bien es habitual su uso combinado con otras modalidades, como son el empleo de emoticonos para la información de naturaleza emocional (cf. AENOR 2003: 15); la representación cromática de los parlamentos (cf. Bouzinac 2008: 5); o la representación ortotipográfica (cf. AENOR 2003: 14; BBC 2009: 26), siendo esta última la de uso más extendido.

El segundo de los "Parámetros extralingüísticos sonoros" incorporados en esta categoría, "Identificación de personajes", es uno de los elementos más representativos del SPS debido a su visibilidad y peso específico en los textos académicos y prácticos sobre SPS. A pesar de que no se suele profundizar en su componente acústico, según Poyatos la identificación de un personaje tiene lugar a través del desciframiento de las cualidades primarias de la voz (Poyatos 1994b: 25-80). Recogida por Neves (2005: 236) como una forma de "localización, descripción y ubicación de la voz humana", el parámetro "Identificación de personajes" aporta información que permite al espectador asociar los diálogos escritos a cada uno de los personajes en pantalla, visibles o no. A pesar de que, por su análisis de las cualidades de la voz, este aspecto podría formar parte del paralenguaje, por lo que sería posible encuadrarlo dentro del parámetro anterior, el tipo y relevancia específica de la información que representa invita a su análisis como un parámetro independiente, dejando

el parámetro "Información paralingüística" para la descripción de reacciones fisiológicas y emocionales.

Son varias las técnicas que se pueden emplear para la "Identificación de personajes" (cf. De Linde y Kay 1999: 15), y que, a menudo, condicionan la elección de variables entre los parámetros estéticos del subtítulo. Una de las técnicas más extendidas, al ser una de las que menos condicionan la configuración estética, pues añade únicamente rasgos cromáticos al texto, es la asignación de colores a cada uno de los personajes. A pesar de ser una de las técnicas que menor esfuerzo cognitivo requiere por parte del espectador (cf. King *et al.* 1994: 332), cabe destacar los conflictos que pueden plantearse en la representación de un elevado número de personajes (cf. Pereira y Lorenzo 2005: 11) y la limitada oferta cromática, marcada por las restricciones tecnológicas de los sistemas de emisión (cf. King *et al.* 1994: 333; AENOR 2003: 5)[1]. La segunda técnica de identificación de uso más extendido es el desplazamiento lateral o vertical del texto para situarlo cerca del personaje, empleada principalmente en Estados Unidos y Canadá (cf. DCMP 2001: 19; CAB 2008: 18). Aunque en la mayoría de los países se opta por aplicar la identificación cromática o el desplazamiento de forma exclusiva, en algunas ocasiones se plantea el uso de estas opciones de forma simultánea (cf. Neves 2005: 242).

Otras técnicas de identificación de uso generalizado son el empleo de etiquetas, a modo de acotaciones, precediendo al subtítulo cuando no es posible identificar la intervención del personaje en pantalla (cf. AENOR 2003: 16; CAB 2008: 18; DCMP 2011: 19) o el uso de puntuación distintiva, como guiones o comillas latinas (cf. BBC 2009: 15-16). Las nuevas posibilidades tecnológicas en el mercado y los perfiles de los usuarios finales (cf. Romero-Fresco, en prensa) hacen que en los últimos años se estén planteando nuevas alternativas, como la incorporación de avatares para la identificación de personajes (cf. Quoc y Fels 2009) o el uso combinado de color y etiquetas como acompañamiento al texto monocromo (cf. Quoc y Fels 2010). Sin embargo, se sigue analizando la aceptación por parte del usuario final de cada una de estas opciones.

El tercero de los "Parámetros extralingüísticos sonoros", "Efectos sonoros", recoge toda la información kinésica sonora (cf. Poyatos 1994a) de naturaleza no paralingüística ni musical que tiene lugar dentro de la obra audiovisual y que afecta al desarrollo de la misma. Este tipo de información,

1. A pesar de que el teletexto analógico ha sido reemplazado, o se encuentra en proceso de reemplazamiento, por su versión digital en la mayoría de los países europeos, los aspectos cromáticos se siguen manteniendo debido a cuestiones de legibilidad (cf. BBC 2009: 38; AENOR, en prensa).

que habitualmente no se representa en el subtitulado ordinario, debe recogerse en el SPS para que el espectador con problemas de audición alcance la máxima comprensión del producto audiovisual. De todos los "Parámetros extralingüísticos sonoros", son precisamente "Efectos sonoros" e "Identificación de personajes" los parámetros más demandados por parte del público con discapacidad auditiva (cf. Romero-Fresco, en prensa), de modo que no sólo aparecen recogidos en todos los estudios surgidos desde el ámbito académico (cf. Neves 2005: 243; Lorenzo 2010a: 126; Lorenzo 2010b: 137; Civera y Orero 2010: 152; Pereira 2010: 89), sino también en las guías de estilo y en las normativas surgidas desde el entorno profesional (cf. BCI 2005: 6; BBC 2009: 17) o los entes asesores y reguladores (cf. ITC 1999: 13; AENOR 2003: 6; DFA 2004: 5; CAB 2008: 18; DCMP 2011: 17). Aunque la representación de la información recogida por "Efectos sonoros" suele producirse en la práctica totalidad de los casos por medio de una descripción, los parámetros estéticos aplicados en su representación (posicionamiento y, especialmente, tipografía) difieren sensiblemente de unos países a otros (cf. Neves 2005: 243; Romero-Fresco, en prensa). Del mismo modo, las pautas de redacción del componente lingüístico de esta información no suelen tener reflejo en las diferentes normativas, por lo que es frecuente la falta de consistencia en este sentido (cf. Arnáiz-Uzquiza 2007). Siguiendo la estela de la representación icónica de la información paralingüística, en los últimos tiempos han surgido iniciativas que plantearían la representación icónica de los efectos sonoros (cf. Civera y Orero 2010: 152). No obstante, la desigual acogida por parte de los usuarios arroja resultados contradictorios en función de su edad y grado de exposición a otros medios audiovisuales, por lo que, tal y como sucede con la identificación de personajes, esta, y otras opciones, continúan siendo objeto de estudio (cf. Romero-Fresco, en prensa).

El último de los parámetros que configuran este grupo es "Música". Aunque también en este caso suele ser habitual su catalogación dentro del parámetro "Efectos sonoros", el papel que desempeña en la obra audiovisual va mucho más allá. A pesar de que son pocos los autores que han abordado su estudio (cf. Neves 2005: 252; Pereira 2005: 24; Weber 2010: 31), su compleja naturaleza, diegética, como parte visual integrante de la obra musical, o extradiegética, que sin estar presente en la trama sirve para configurar la realidad audiovisual, hace que resulte determinante su análisis como un parámetro independiente. Muchas normativas, como es el caso de la UNE-153010, abordan

este parámetro de forma meramente tangencial[2] ya sea desde el punto de vista estético, lingüístico o extralingüístico. Sin embargo, en las guías de estilo más recientes se le presta una atención especial, llegando a indicar determinados aspectos lingüísticos (cf. CAB 2008: 7), o incluso pautas detalladas sobre la forma de subtitular estos elementos atendiendo a su relevancia en la escena, carácter, etc. (cf. BBC 2009: 31).

3.3. Parámetros pragmáticos

Los "Parámetros pragmáticos" definidos por Bartoll son una de las categorías que experimentan menos modificaciones en la adaptación de la taxonomía al análisis del SPS, al no contar con ninguna nueva incorporación. Desde el punto de vista práctico, son escasas las referencias a este grupo de parámetros en estudios y textos normativos; sin embargo, la presencia de los "Parámetros extralingüísticos sonoros" condicionaría, y se vería condicionada, por las variables pragmáticas aplicables al margen de los rasgos específicos del SPS.

Mientras aspectos como "Autoría" siguen haciendo referencia al 'agente', humano o no, que desarrolla el SPS, el "Momento de elaboración", que también en SPS se limita a las variables "Anteriores" y "Simultáneos", condiciona la posibilidad de incluir información extralingüística dada la dificultad para recoger esta información de forma sincronizada (cf. Romero-Fresco 2011: 38). Por este motivo en los últimos cinco años, con la necesidad de proveer de accesibilidad audiovisual a eventos en directo, se ha incluido en la redacción de algunas normativas breves referencias a este parámetro (cf. BCI 2005: 11; CAB 2008: 22; DCMP 2011: 4; DFA 2004: 4).

Algo similar sucedería con el parámetro "Intención", que aborda el objetivo que se persigue con los subtítulos. Una vez más, y sin ser exclusivo del SPS, resulta importante la incorporación de una nueva variable en este parámetro, como son los "Subtítulos Terapéuticos", desarrollados para abordar problemas específicos de aprendizaje, y que, dependen, en gran medida, de uno de los parámetros esenciales en esta categoría: "Destinatarios".

El último de los parámetros de esta clasificación, "Destinatarios", aparece recogido por Bartoll para abordar la diferente naturaleza de dos grandes grupos de usuarios, sordos y oyentes. Sin embargo, son otros muchos los aspectos que es preciso tener en consideración a la hora de definir el perfil del usuario. Aspectos como la edad, relevantes para el desarrollo de todo tipo

2. La norma UNE-153010 (AENOR 2003: 14) únicamente recoge en su texto: "Se debe subtitular las canciones, en cuyo caso debe realizarse sobre fondo amarillo con carácter azul".

de subtítulos, interactúan con cuestiones específicas de los usuarios de SPS, como son el perfil lingüístico (signante / oralista), el tipo, grado y momento de aparición de la sordera, o las necesidades terapéuticas de los usuarios (cf. Llombart 2007). Todas estas diferencias marcarían, por ejemplo, la capacidad del espectador para acceder a la información del componente sonoro, una mayor o menor velocidad de lectura o la familiaridad con el lenguaje escrito. No obstante, a pesar de que todas las normativas escritas consultadas se elaboran para personas con problemas de audición, teniendo en cuenta la diferente etiología de los grupos de usuarios, cabe destacar que en contadas ocasiones se hace referencia en los textos al perfil específico del usuario final. Por el contrario, las variables adoptadas en todos los casos van encaminadas a un perfil de usuario determinado: usuarios oralistas con índices de alfabetización medios-altos y destrezas lectoras elevadas.

3.4. Parámetros estéticos

Bartoll (2008: 260) define un único grupo de parámetros, "Parámetros técnicos", para hacer referencia a todos los aspectos relacionados con la parte visual y técnica del proceso de elaboración del subtítulo. Dada la variedad de los aspectos incorporados en esta categoría, sería posible identificar hasta tres grupos diferentes de parámetros en esta categoría: "Parámetros estéticos", "Parámetros estético-técnicos" y "Parámetros técnicos".

El primero de todos, "Parámetros estéticos", agruparía todos los elementos planteados por Bartoll que marcarían el aspecto más visual del subtítulo, y cuya elección puede variar por elección del subtitulador, tales como "Emplazamiento", "Color", "Tipografía" y "Posición". Cabe destacar la incorporación de un nuevo parámetro, "Justificación", que, al margen del parámetro "Posición", recoge la disposición de subtítulo con respecto a un margen establecido.

La alternancia en los métodos de elaboración de SPS, desde los primeros teclados de máquinas de escribir, hasta los modernos sistemas de reconocimiento de habla que han modificado los parámetros estéticos del subtitulado, son, en la mayoría de los casos, producto de la tradición práctica adoptada del subtitulado ordinario (cf. Ivarsson y Carroll 1998: 49).

Estrechamente vinculados entre sí[3], los parámetros "Tipografía" y "Color" han sido fuente recurrente de numerosos estudios en el seno del SPS, desde la traducción (cf. Neves 2005; Martínez-Tejerina 2008) a la comunicación

3. Cuando la aplicación cromática no afecta al conjunto del subtítulo, el empleo del color forma parte del parámetro "Tipografía".

audiovisual (cf. Carrero y Souto 2008; Utray *et al.* 2010), pasando por la ingeniería (cf. Kirkland 1999; Martín *et al.* 2007; Martín *et al.* 2008). La focalización temática, unida a la desactualización de algunas de las normativas que todavía continúan fundamentándose en la tecnología del teletexto analógico en vías de extinción (cf. AENOR 2003: 3; BCI 2005: 2; ITC 1999: 6), hace que muchos de los parámetros estéticos no se lleguen a abordar de forma explícita en los textos normativos. De este modo, por ejemplo, el sistema analógico europeo justificaba la imposición de un tipo de fuente (teletexto), de unos colores determinados, la utilización de una caja sobre la que se representaban los subtítulos, el espaciado e interlineado de los mismos, etc. (cf. AENOR 2033: 5; BCI 2005: 2); mientras, en los Estados Unidos, el sistema Línea 21 forzaba el uso de mayúsculas y la imposibilidad de emplear combinaciones cromáticas para el SPS (cf. King *et al.* 1994). No obstante, al margen de la evolución o las limitaciones técnicas y tecnológicas que han perfilado las diferencias estéticas, también es posible encontrar usos diferenciados en otros países, como es el caso de Francia, en el que las combinaciones cromáticas de cajas y subtítulos adoptan una interpretación única a la hora de representar la información extralingüística (cf. Bouzinac 2008: 5).

Para poder entender la gran complejidad que entraña el parámetro "Tipografía" y su relevancia en el SPS, en la tabla que se recoge a continuación

	Fuente	Estilo	Tamaño	Color	Borde	Sombra	Espaciado	Interlineado	Caja	Ortotipografía	(Nº Carac.)	(Nº Líneas)
Fuente		X	X		X	X	X			X	X	
Estilo	X		X		X	X	X	X		X	X	
Tamaño	X	X			X	X	X	X			X	X
Color					X	X			X			
Borde	X	X	X	X		X			X			
Sombra	X	X	X	X	X		X		X			
Espaciado	X	X	X			X				X	X	
Interlineado		X	X									
Caja				X	X	X						
Ortotipografía	X	X					X				X	
(Nº carac.)	X	X	X				X			X	X	X
(Nº líneas)			X								X	X

Figura 1

se representa la interdependencia que se establece entre los sub-parámetros que la integran. Las "X" muestran aquellos sub-parámetros que se verían modificados por otros en función de las variables seleccionadas para cada caso. Así, por ejemplo, la elección de un determinado tipo de fuente podría limitar las opciones de estilo, borde o sombra que se le podrían aplicar a la misma, su tamaño final, el espaciado entre caracteres, la idoneidad de los rasgos ortotipográficos implícitos en ella y el número de caracteres que sería posible representar con la fuente seleccionada en un subtítulo determinado y así sucesivamente.

Pese a todo, de todos los "Parámetros estéticos", es posible que el parámetro "Tipografía" resulte el menos específico del SPS. Sin embargo, teniendo en cuenta la relevancia que tiene la visibilidad y legibilidad del subtítulo para los usuarios con deficiencias auditivas, dado que un alto porcentaje de este grupo de usuarios presenta problemas de discriminación cromática (cf. BBC 2009: 18; Romero-Fresco 2010: 183), resulta de especial importancia su estudio detallado.

Otro de los parámetros no específicos del SPS es el parámetro "Posición", al que, como ya se ha avanzado, se le ha añadido una nueva categoría técnica, la "Justificación", integrada como una variable de posicionamiento (cf. Bartoll 2008: 264). Teniendo en cuenta el tratamiento que se le da en las diferentes normativas, y la práctica generalizada, se ha creído necesario analizar la posición en base a dos desplazamientos del subtítulo en pantalla: vertical (posición) y horizontal (justificación). Como ya se ha planteado al abordar los parámetros extralingüísticos, la modificación del parámetro "Posición" es uno de los elementos más extendidos en SPS. Pese a que la práctica generalizada recoge la representación del subtítulo en una posición inferior centrada (cf. Neves 2005: 201), es habitual que esta práctica se modifique en el caso del SPS para dar cabida a la información extralingüística, debido a la necesidad de identificar a los personajes o de representar efectos sonoros o música (cf. Bartoll y Martínez-Tejerina 2010: 69).

El último de los parámetros de este grupo, el "Emplazamiento", que hace referencia a la ubicación del subtítulo sobre la pantalla de la obra audiovisual, o fuera de ella, no suele ser mencionado en las diferentes normativas disponibles. Estas, que tratan de armonizar el ejercicio del SPS se centran, de manera casi exclusiva, en la televisión, por lo que únicamente abordan la elaboración de subtítulos internos. Su desarrollo dependerá, sin embargo, del tipo de obra audiovisual a la que se vaya a aplicar al SPS. La subtitulación de actos en directo, en la que se suele emplear el subtitulado en emplazamiento externo, es, a menudo, considerada una modalidad de SPS. No obstante, criterios

pragmáticos (momento de elaboración), técnicos (elaboración) y estético-técnicos (incorporación), limitarían la presencia de parámetros extralingüísticos y estéticos (tipografía y posición) específicos de esta modalidad.

3.5. Parámetros técnicos

Los "Parámetros técnicos" planteados en la presente propuesta taxonómica, a diferencia de los recogidos por Bartoll, harían referencia de manera exclusiva a aquellos aspectos de la producción de SPS menos visibles para el espectador. Como sucede con los pragmáticos, los parámetros técnicos apenas plantean diferencias específicas en el caso del SPS. La restringida visibilidad de este grupo de parámetros hace que no resulte extraño que la naturaleza técnica del SPS no suela estar representada de manera explícita en las normativas escritas, ni en los estudios académicos.

Tres son los parámetros definidos en la propuesta original: "Difusión", "Archivado" y "Formato". De todos ellos el "Archivado", que hace referencia a la vinculación física de subtítulo e imagen, y el "Sistema de difusión", que representa la forma de proyección de los subtítulos desde un punto de vista técnico, no plantean diferencias significativas entre las distintas modalidades de subtitulado. Sin embargo, no sucede lo mismo con el "Formato", o código de almacenamiento de los subtítulos, dependiente en gran medida de las características estéticas del SPS. Mientras muchos de los formatos empleados almacenan exclusivamente aspectos lingüísticos y temporales del subtítulo, el SPS precisa en igual medida del almacenamiento de rasgos cromáticos y posicionales esenciales en esta modalidad, algo que solo se consigue con determinados formatos, entre los que actualmente destacan Substation Alpha, Advanced Substation Alpha o Viplay Subtitle File (cf. Bartoll 2008: 268). Dentro de los parámetros técnicos, este es uno de los aspectos de mayor estudio y crecimiento, impulsados por las innovaciones tecnológicas y el surgimiento de nuevos medios.

Sin embargo, es posible añadir dos nuevos parámetros a esta categoría: "Método de elaboración" y "Medio", que hacen referencia al sistema de transcripción de los subtítulos y al soporte al que se incorporan los subtítulos respectivamente. Ambas aportaciones, igualmente aplicables al subtitulado general, condicionan en gran medida las características de cualquier tipo de subtítulo.

De todos los parámetros técnicos, el "Medio" es el más relevante para cualquier modalidad de subtitulado, y en el caso del SPS, requiere una especial consideración si se tiene en cuenta las diferencias estéticas y técnicas que lleva implícitas (cf. Arnáiz-Uzquiza 2007: 37; Romero-Fresco 2011: 38).

Las diferentes características y posibilidades de cada uno de los soportes audiovisuales (televisión, DVD, Internet, videojuegos, actos en directo, etc.), que apenas han llegado a ser objeto de estudio por parte de los académicos, obligan al subtitulador a valorar este parámetro antes de abordar cualquier otro aspecto, ya sea lingüístico, extralingüístico, pragmático, estético, técnico o estético-técnico.

Por lo que respecta al "Método de elaboración", si bien en la mayoría de los casos estos subtítulos se elaboran utilizando el método de teclado ordinario, para la producción de subtítulos en directo (simultáneos) suele utilizarse otro tipo de teclados (máquinas de estenotipia, velotipia, palantipia) y sistemas que permiten una transcripción más rápida, como es el caso del reconocimiento de habla (cf. Romero-Fresco 2011: 35). Como ya se ha apuntado para el parámetro "Emplazamiento", el tipo de productos audiovisuales para los que se emplean estos métodos no permite hablar de una forma de subtitulación exclusiva para sordos, pues suelen ser materiales en los que no es habitual la presencia de información extralingüística (cf. Vela 2007: 7). Por lo tanto, todavía a día de hoy su demanda funcional suele estar cubierta por modalidades de subtitulado ordinario.

3.6. Parámetros estético-técnicos

El último de los grupos de parámetros que se incorporarían a la propuesta de Bartoll estaría a medio camino entre los "Parámetros estéticos" y los "Parámetros técnicos", ya que, aunque el espectador percibe el resultado visual de la manipulación de las variables, no se trata de una elección estética del subtitulador, sino de una consecuencia del proceso de producción y de configuración del material final.

Mientras el parámetro "Incorporación", que hace referencia a la forma en la que el texto escrito aparece en pantalla, está estrechamente ligado al "Método de elaboración" técnico o la "Intención" pragmática, el parámetro "Opcionalidad" (visibilidad obligatoria, o no, de los subtítulos) suele estar marcado por los parámetros "Destinatarios" y "Medio de difusión" (figura 2). Esta focalización en el grupo de usuarios hace que, sin resultar ninguno de los dos aspectos estético-técnicos exclusivos del SPS, sea posible decir que el parámetro "Opcionalidad" está más estrechamente vinculado a esta disciplina audiovisual. Desde que en 1972 aparecieran los primeros ejemplos no opcionales de SPS (cf. DCMP 2010: 7) y urgiese la necesidad de diseñar sistemas para su difusión reduciendo su visibilidad, la opcionalidad ha sido la elección habitual del SPS. Reducida su presencia de forma casi exclusiva a las páginas del teletexto o a los menús de idiomas del DVD, únicamente el desarrollo de

nuevas tecnologías de distribución, como es el caso de Internet y sus múltiples plataformas, está permitiendo facilitar el acceso a esta herramienta de accesibilidad audiovisual.

Pero al margen de estos dos parámetros, ya identificados en la taxonomía anterior, la incorporación del parámetro "Velocidad" supone la principal aportación dentro de esta categoría a la propuesta de Bartoll. Suele analizarse de manera conjunta con otro parámetro lingüístico importante en esta modalidad, la "Densidad" (a menor densidad, mayor velocidad) y es uno de los elementos de principal importancia en el seno del SPS. Sin embargo, mientras que con el parámetro lingüístico los usuarios reclaman la transcripción literal del texto (cf. OFCOM 2005: 16; Romero-Fresco, en prensa), no son habituales las referencias al parámetro "Velocidad". No obstante, su modificación supondría, por ejemplo, elevar el número de caracteres por segundo y línea y una reducción en los tiempos de exposición, lo que alteraría considerablemente el patrón de lectura (figura 2). Sin resultar exclusivo del SPS, pero esencial para su óptimo desarrollo, es uno de los parámetros que ha concentrado un mayor número de estudios en el seno de esta disciplina en los últimos años (cf. Cambra *et al.* 2008; Romero-Fresco 2010; Romero-Fresco, en prensa). Las velocidades del SPS propuestas por algunas normativas recogen cifras que suelen ser similares entre sí y se establecen en torno a las 180 palabras por minuto (ppm) como máximo: 140-180 ppm (cf. BBC 2009: 7); 160-180 ppm (cf. BCI 2005: 5); 180 ppm (cf. DFA 2004: 6); 200 ppm (cf. CAB 2008: 21). En España, por ejemplo, donde la UNE-153010 actual (2003) plantea una cifra de 19 caracteres por segundo, o 150 ppm, la velocidad es considerablemente superior a los 12 caracteres por segundo propuestos para el subtitulado ordinario en español (cf. Díaz-Cintas 2003: 118). De igual manera, no es posible equiparar totalmente las velocidades de lectura en inglés y español, expresadas en "palabras por minuto", si no se tiene en cuenta que la longitud media de una palabra inglesa es de 4,5 caracteres, mientras en español es de 4,9 (cf. Pierce 1980: 75; Morelli 2010). Ambos planteamientos, unidos a la necesidad de ajustar las velocidades en función de los públicos y sistemas de incorporación de subtítulos (cf. Romero-Fresco, en prensa), hacen que en la actualidad se esté revisando este parámetro en la redacción de la nueva normativa que regule el ejercicio del SPS.

4. Conexiones entre parámetros

Como se ha podido comprobar al analizar la tipografía de los subtítulos (figura 1), son muchos los parámetros y sub-parámetros que entran en juego en el desarrollo del SPS y la estrecha relación que se establece entre ellos hace que

sea preciso tener en cuenta cualquier mínima variación (figura 2). Los 23 parámetros que dan forma a la presente taxonomía y sirven para describir el SPS establecen una compleja serie de relaciones que dan cuenta de la dependencia que se establece entre ellos. De este modo, por ejemplo, la elección de una determinada opción de identificación de personajes tendría implicaciones desde el punto de vista lingüístico (en la densidad, si se adopta la identificación mediante etiquetas), pragmático (en la autoría, en cualquier caso), estético (si se opta por el desplazamiento) o técnico (por restricciones de formato).

La siguiente tabla representa las relaciones de interdependencia que se establecen entre todos los parámetros identificados. Las "X" marcan aquellos parámetros en los cuales la elección de una determinada variable condicionaría la elección de variables en otros parámetros.

Como se puede comprobar, los "Parámetros pragmáticos" y, en especial, el parámetro "Destinatarios", son los que más peso tienen en su conjunto por ser los que justifican el objetivo final del subtítulo. Este será el punto de partida para determinar, en el caso concreto del SPS, que un subtítulo se desarrolla específicamente para públicos con deficiencia auditiva. Pero no es el único parámetro determinante en este sentido. También desde el punto de vista técnico es posible marcar la dependencia. Al igual que en el parámetro "Destinatarios", el parámetro "Medio" condiciona la totalidad de las variables que se aplican al SPS, e incluso aspectos en apariencia no vinculados, como la elección lingüística, resultarían relevantes en determinados contextos (cf. apartado 1.1).

Pero al margen de estos, cabría analizar la especial relevancia de otros grupos de parámetros, como es el caso de los "Parámetros extralingüísticos sonoros". Si se analiza la tabla en detalle, es posible comprobar que aquellos parámetros con mayor peso en el desarrollo del SPS, por el efecto que puede tener su modificación en otros (como sucede con los parámetros pragmáticos y técnicos), no son aquellos exclusivamente representativos de esta modalidad. Sin embargo, la presencia de los parámetros específicos del SPS adquiere especial relevancia al condicionar a todos los demás grupos de parámetros. La incorporación de información extralingüística altera los componentes lingüísticos ("Densidad"), estéticos ("Color", "Tipografía" y "Posición"), técnicos ("Formato") y estético-técnicos ("Velocidad", "Opcionalidad"), dotando al subtítulo de características muy marcadas. No obstante, su representación también se ve modificada por aspectos pragmáticos ("Momento de elaboración") y técnicos ("Método de elaboración" y "Medio").

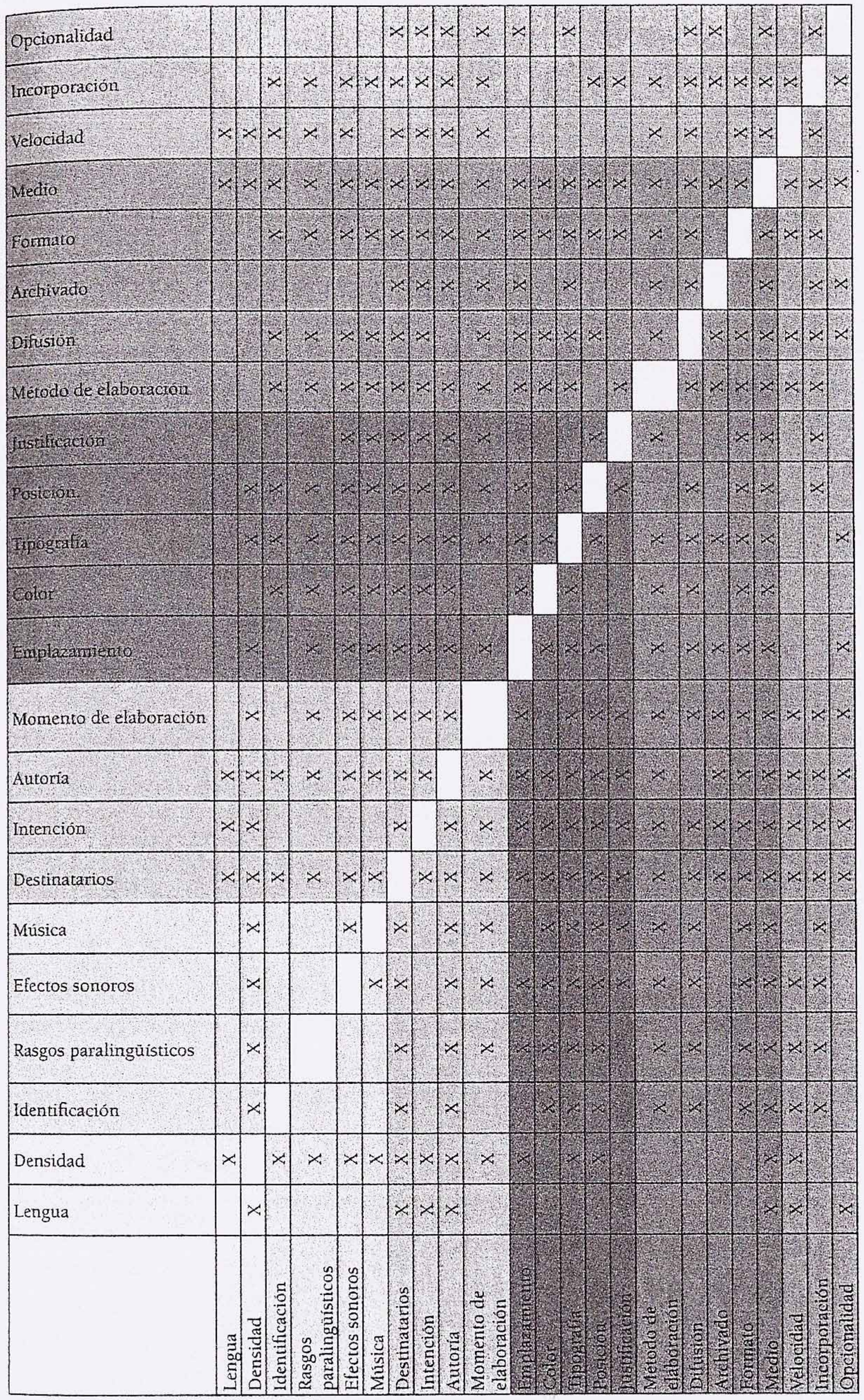

Figura 2. Ilustración en color disponible en anexo, página 420.

5. Conclusiones

Dada la escasa disponibilidad de otras modalidades de accesibilidad audiovisual para las personas con discapacidad auditiva, y la gran heterogeneidad que caracteriza a este colectivo de usuarios, es preciso conocer todos los factores que condicionan el ejercicio del SPS en cada una de sus etapas y su resultado final. Partiendo de la taxonomía desarrollada por Bartoll para el subtitulado ordinario, hemos planteado el desarrollo de una clasificación específica para el estudio del proceso de elaboración del SPS en su totalidad. La necesidad de incorporar elementos específicos de esta modalidad, así como otros elementos y parámetros no exclusivos de la misma, pero de especial relevancia para su desarrollo, justificaría esta iniciativa. De esta forma, la nueva taxonomía estaría integrada por los grupos de parámetros: "Lingüísticos", "Extralingüísticos", "Pragmáticos", "Estéticos", "Técnicos" y "Estético-técnicos".

Desde el punto de vista lingüístico, al margen de la dualidad marcada por la tradición audiovisual de países dobladores y subtituladores, el parámetro "Densidad" es el más relevante. Son muchos los estudios que ya se han llevado a cabo y que han dejado constancia de las diferentes capacidades lectoras de los grupos de usuarios, así como de sus demandas en lo que a literalidad se refiere. Teniendo en cuenta que, en la actualidad, los espectadores con problemas de audición únicamente disponen de una modalidad de SPS, las necesidades del colectivo quedan cubiertas de forma dispar en lo que a aspectos lingüísticos se refiere.

La información extralingüística, exclusiva de esta modalidad de subtitulado, es la principal incorporación a la taxonomía original. Los aspectos extralingüísticos representan toda la información no verbal que resulta preciso recoger para ofrecer toda la información que compone la obra audiovisual al público sordo. Dada la naturaleza variada de este tipo de información, es posible definir hasta cuatro parámetros en este grupo ("Identificación de personajes", "Información paralingüística", "Efectos sonoros" y "Música"), cuya representación altera la composición del subtítulo tradicional. Las variables adoptadas para la representación de cada uno de los parámetros suelen tener su origen en la tradición, por lo que varían de unos países a otros. Esta variabilidad suele ir acompañada de una modificación de otros grupos de parámetros, como son los lingüísticos y los estéticos, dando origen a una sucesión de variaciones en otra serie de parámetros.

A pesar de haber sido objeto de un número menor de estudios académicos dentro del SPS y de estar apenas representados en las normativas publicadas, los parámetros pragmáticos son el conjunto con mayor peso específico en la taxonomía, al tener la capacidad de modificar la gran mayoría de los

parámetros de la misma. Estos parámetros marcan la intencionalidad y funcionalidad de los subtítulos, por lo que gran parte de la efectividad de los mismos radicaría aquí. La aplicación efectiva de los parámetros pragmáticos ha de servir para desarrollar materiales totalmente adaptados a las necesidades de cada grupo de usuarios y, entre ellos, los usuarios con problemas de audición.

Los "Parámetros estéticos" representan los aspectos visuales del subtítulo, y constituyen el grupo de parámetros de mayor relevancia en términos de legibilidad, directamente relacionado con la percepción y la comprensión. Son muchos los parámetros integrados en este grupo. A pesar de no resultar exclusivos del SPS, la representación de la información extralingüística hace que determinados aspectos ("Color", "Tipografía" o "Posición") se vean modificados de forma más o menos directa.

Los "Parámetros técnicos", por el contrario, se centran en la elaboración y diseminación del SPS. En lugar de verse condicionados, este grupo de parámetros suele condicionar la inclusión de información extralingüística. El "Método de elaboración" empleado o el "Formato", permitirán o no la inclusión de esta información exclusiva del SPS, siendo el "Medio" el parámetro más trascendental en este sentido.

A medio camino entre los dos grupos de parámetros anteriores, los "Parámetros estético-técnicos" recogen los aspectos cuya producción tiene un reflejo visual. El más representativo de este grupo, el parámetro "Velocidad", se ha convertido en el aspecto más analizado en los últimos tiempos desde esta disciplina, por la aparición de nuevos "Métodos de elaboración" que ayudarían a incrementar la literalidad demandada por los espectadores.

La suma de las 6 categorías que agrupan los 23 parámetros de la nueva taxonomía dibuja un panorama detallado del proceso de producción del SPS. La identificación de un grupo de parámetros específico de esta modalidad de subtitulado ("Parámetros extralingüísticos sonoros"), y las consecuencias que su incorporación conlleva, no logran imponerse, sin embargo, al peso de otros parámetros considerados generales ("Parámetros pragmáticos" y "Parámetros técnicos"). Los estudios que en los últimos años han surgido impulsados por el creciente avance del SPS en el mercado han tratado de abordar el análisis de aspectos especialmente representativos para su desarrollo, como es el caso de la densidad, la posición o la tipografía entre otros. Sin embargo, el hecho de tratarse de iniciativas centradas en parámetros aislados hace que, en la mayoría de las ocasiones, no se tenga en cuenta la interdependencia entre parámetros y las consecuencias que cualquier cambio implicaría para otras variables.

Esta taxonomía pretende ser no solo una herramienta para el análisis integral del proceso de subtitulado para sordos, sino también un instrumento

de reflexión sobre las consecuencias del estudio aislado de cada uno de los parámetros que configuran la práctica del SPS.

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BIONOTE / NOTA BIOGRÁFICA

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Anexo I (Ilustración en color disponible en anexo, páginas 421-423.)

[LINGÜÍSTICO] LENGUAJE • Interlingüísticos • Intralingüísticos	[LINGÜÍSTICO] DENSIDAD [*] • Íntegros (literales) • Reducidos - Sub. ordinarios - Sub. simplificados	[EXTRALINGÜÍSTICO] * IDENTIFICACIÓN DE PERSONAJES • Posición • Etiquetas • Colores • Puntuación • Combinados - Posición y colores - Posición y puntuación - Colores y puntuación • Sin representación • Nuevas propuestas +
[EXTRALINGÜÍSTICO] * RASGOS PARALINGÜÍSTICOS • Descripción • Onomatopeyas • Emoticonos • Sin representación • Nuevas propuestas +	[EXTRALINGÜÍSTICO] * EFECTOS SONOROS • Descripción • Onomatopeyas • Iconos • Sin representación • Nuevas propuestas +	[EXTRALINGÜÍSTICO] * MÚSICA • Diegética - Título - Letra - Descripción - Combinados - Título y letra - Descripción y letra - Sin representación - Nuevas propuestas + • Extradiegética - Título - Letra - Descripción - Combinados - Título y letra - Descripción y letra - Sin representación - Nuevas propuestas +

[PRAGMÁTICO] DESTINATARIOS [*] • Por audición • Por edad • Por necesidades lingüísticas • Por necesidades terapéuticas	[PRAGMÁTICO] INTENCIÓN [*] • Instrumentales • Didácticos • Terapéuticos • Karaoke • Documentales	[PRAGMÁTICO] AUTORÍA • Subtítulos humanos - Profesionales - Aficionados (*fansubs*) • Subtítulos mecánicos
[PRAGMÁTICO] MOMENTO DE ELABORACIÓN • Anteriores • Simultáneos	[ESTÉTICO] EMPLAZAMIENTO • Subtítulos internos • Subtítulos externos	[ESTÉTICO] COLOR • Subtítulos monocromos • Subtítulos policromos
[ESTÉTICO] TIPOGRAFÍA [*] • Fuente • Estilo • Tamaño • Color • Borde • Sombra • Espaciado • Interlineado • Caja • Ortotipografía • (Nº de caracteres / línea) • (Nº de líneas / sub.) • Nuevos aspectos +	[ESTÉTICO] POSICIÓN [*] • Uniforme - Subtítulos - Sobretítulos - Laterotítulos • No uniforme - (Desplazados) - Posición combinada	[ESTÉTICO] * JUSTIFICACIÓN • Izquierda • Centro • Derecha
[TÉCNICO] * MÉTODO DE ELABORACIÓN • Teclado - Expandido - Abreviado - Estenotipia - Velotipia - Palantype • Reconocimiento	[TÉCNICO] DIFUSIÓN • Sub. proyectados • Sub. emitidos • Sub. automáticos • Sub. manuales	[TÉCNICO] ARCHIVADO • Disociables • No disociables

[TÉCNICO] FORMATO • *.txt • *.ssa • *.sub • *.vsf • *.srt • *.stl • Nuevos formatos +	[TÉCNICO] * MEDIO • Cine • DVD • Televisión - Abiertos - Teletexto - DVB • Internet • Videojuegos • Teléfono • Eventos • Nuevos soportes +	[ESTÉTICO / TÉCNICO] VELOCIDAD * • Nº caracteres / línea • Nº caracteres / segundo • Tiempo de exposición
[ESTÉTICO / TÉCNICO] INCORPORACIÓN [*] • Sub. dinámicos - Letra a letra - Palabra a palabra - Línea a línea - Frase a frase - Desplazamiento lateral - Rodillo - Ascendente - Descendente - Tipos mixtos • Sub. estáticos	[ESTÉTICO / TÉCNICO] OPCIONALIDAD • Opcionales • No opcionales	

* Parámetros nuevos incorporados a la taxonomía de Bartoll.

[*] Parámetros modificados con respecto a la taxonomía de Bartoll: nuevas variables incorporadas.

\+ Categoría abierta a la incorporación de nuevas variables surgidas de la evolución tecnológica: avatares ("Identificación de personajes"); dinamismo ("Música"); profundidad ("Tipografía"); etc.

TOWARDS A MULTIDISCIPLINARY APPROACH IN CREATIVE SUBTITLING

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Abstract

Standard subtitling practices have long been influenced, if not governed, by norms and conventions such as the *Code of Good Subtitling Practice* (Ivarsson & Carroll 1998). Yet recent research into film subtitling has begun to take a creative turn: a trend that is matched by increasing numbers of fansubs and professionally produced creative subtitles. This paper seeks to demonstrate the need for a multidisciplinary approach to creative subtitling and, by drawing upon principles from film studies, suggests some key features for the development of a creative subtitling practice.

Resumen

Hace mucho tiempo que las normas y convenciones del subtitulado, como las del *Code of Good Subtitling Practice* (Ivarsson & Carroll 1998), influyen y regulan la práctica estándar del subtitulado. No obstante, las investigaciones recientes sobre el subtitulado cinematográfico han empezado a tratar el tema del subtitulado creativo: una tendencia que se corresponde con el número cada vez mayor de *fansubs* y también con el empleo de subtítulos creativos en varias películas profesionales. En este trabajo se pretende demostrar la necesidad de desarrollar un enfoque multidisciplinario del subtitulado creativo y, mediante varias aportaciones de los estudios cinematográficos, sugiere algunas características clave para el desarrollo de una práctica de subtitulado creativo.

Keywords: Creative subtitling. Aesthetics. Multidisciplinarity. Film studies. Audiovisual translation.

Palabras clave: Subtitulado creativo. Estética. Multidisciplinariedad. Estudios cinematográficos. Traducción audiovisual.

Arnáiz-Uzquiza, Verónica. "Los parámetros que identifican el Subtitulado para Sordos. Análisis y clasificación"

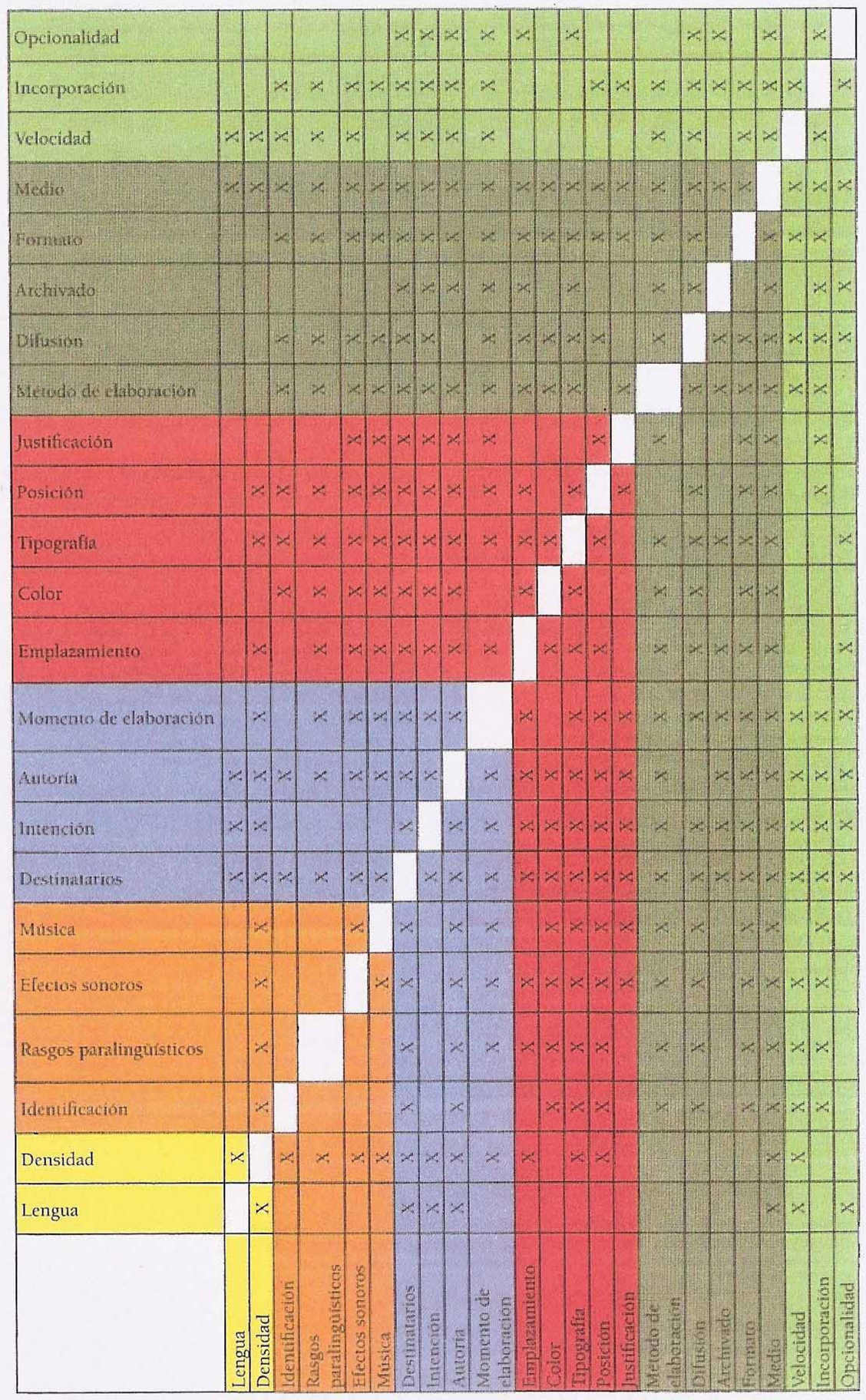

Figura 2

[LINGÜÍSTICO] LENGUAJE • Interlingüísticos • Intralingüísticos	[LINGÜÍSTICO] DENSIDAD [*] • Íntegros (literales) • Reducidos - Sub. ordinarios - Sub. simplificados	[EXTRALINGÜÍSTICO] * IDENTIFICACIÓN DE PERSONAJES • Posición • Etiquetas • Colores • Puntuación • Combinados - Posición y colores - Posición y puntuación - Colores y puntuación • Sin representación • Nuevas propuestas +
[EXTRALINGÜÍSTICO] * RASGOS PARALINGÜÍSTICOS • Descripción • Onomatopeyas • Emoticonos • Sin representación • Nuevas propuestas +	[EXTRALINGÜÍSTICO] * EFECTOS SONOROS • Descripción • Onomatopeyas • Iconos • Sin representación • Nuevas propuestas +	[EXTRALINGÜÍSTICO] * MÚSICA • Diegética - Título - Letra - Descripción - Combinados - Título y letra - Descripción y letra - Sin representación - Nuevas propuestas + • Extradiegética - Título - Letra - Descripción - Combinados - Título y letra - Descripción y letra - Sin representación - Nuevas propuestas +

[PRAGMÁTICO] DESTINATARIOS [*] • Por audición • Por edad • Por necesidades lingüísticas • Por necesidades terapéuticas	[PRAGMÁTICO] INTENCIÓN [*] • Instrumentales • Didácticos • Terapéuticos • Karaoke • Documentales	[PRAGMÁTICO] AUTORÍA • Subtítulos humanos - Profesionales - Aficionados (*fansubs*) • Subtítulos mecánicos
[PRAGMÁTICO] MOMENTO DE ELABORACIÓN • Anteriores • Simultáneos	[ESTÉTICO] EMPLAZAMIENTO • Subtítulos internos • Subtítulos externos	[ESTÉTICO] COLOR • Subtítulos monocromos • Subtítulos policromos
[ESTÉTICO] TIPOGRAFÍA [*] • Fuente • Estilo • Tamaño • Color • Borde • Sombra • Espaciado • Interlineado • Caja • Ortotipografía • (N° de caracteres / línea) • (N° de líneas / sub.) • Nuevos aspectos +	[ESTÉTICO] POSICIÓN [*] • Uniforme - Subtítulos - Sobretítulos - Laterotítulos • No uniforme - (Desplazados) - Posición combinada	[ESTÉTICO] * JUSTIFICACIÓN • Izquierda • Centro • Derecha

[TÉCNICO] FORMATO • *.txt • *.ssa • *.sub • *.vsf • *.srt • *.stl • Nuevos formatos +	[TÉCNICO] * MEDIO • Cine • DVD • Televisión - Abiertos - Teletexto - DVB • Internet • Videojuegos • Teléfono • Eventos • Nuevos soportes +	[ESTÉTICO / TÉCNICO] VELOCIDAD * • N° caracteres / línea • N° caracteres / segundo • Tiempo de exposición
[ESTÉTICO / TÉCNICO] INCORPORACIÓN [*] • Sub. dinámicos - Letra a letra - Palabra a palabra - Línea a línea - Frase a frase - Desplazamiento lateral - Rodillo - Ascendente - Descendente - Tipos mixtos • Sub. estáticos	[ESTÉTICO / TÉCNICO] OPCIONALIDAD • Opcionales • No opcionales	

* Parámetros nuevos incorporados a la taxonomía de Bartoll.

[*] Parámetros modificados con respecto a la taxonomía de Bartoll: nuevas variables incorporadas.

\+ Categoría abierta a la incorporación de nuevas variables surgidas de la evolución tecnológica: avatares ("Identificación de personajes"); dinamismo ("Música"); profundidad ("Tipografía"); etc.

10.6.2

‘Viewers’ Opinion on SDH in Spain’, in Romero-Fresco, Pablo (Ed.) *The Reception of Subtitles for the Deaf and Hard-of-Hearing in Europe*, Bern: Peter-Lang.
(forthcoming)

• CHAPTER I •

Viewers' Opinion of SDH in Spain

Author: Verónica Arnáiz

This chapter presents the results of the long questionnaire devised as part of the DTV4All project in Spain. By way of introduction, a general overview is provided on the situation of the Deaf and Hard-of-Hearing community in Spain along with a brief description of the audiovisual landscape in the country, particularly with regard to SDH.

Hearing Loss in Spain

Exact and official data about hearing loss in Spain is hard to come by. According to the *Instituto Nacional de Estadística* (National Statistics Institute –INE)[1], in 2008 2.33% of the Spanish population from 6 to over 80 years old (approximately 1,064.,00 people in a country of over 46 million people) were affected by some degree of hearing loss. These data, currently used by national institutions and user associations, are a far cry from the figures reported by international organisations such as "Hear it" (Shield, 2006), which points to 5.5 million people affected by hearing loss in Spain. This would represent 12% of the total population, a figure that is more in line with the information available in the rest of the European countries taking part in the DTV4ALL project.

The significant discrepancy regarding data on hearing loss in Spain may be explained by different factors. Firstly, the largest group among the hearing impaired is constituted by older users affected by presbycusis. Normally defined as the cumulative effect of age on hearing, this condition often lacks a proper diagnosis, which means that this group of people is usually not included in offical statistics. As is the case in other countries involved in this project, another group which often goes unaccounted for is made up by people with mild hearing loss, who tend to lead normal lifestyles and be unaware of their impairment. Finally, and perhaps most importantly, the absence of a national organisation gathering all users with hearing loss in Spain may go a long way towards explaining why there is no precise data on this issue. Users are grouped in different associations depending on their

hearing profiles: cochlear implant users, signing Deaf, children with hearing loss, etc. This heterogeneous landscape provides a wide number of statistics that, in most cases, do not match the official recordings.

The Audiovisual Landscape in Spain: SDH

Evolution

Although Spain belongs to an old dubbing tradition where subtitling was scarcely used for decades, SDH has already been part of the audiovisual landscape for over two decades now (Arnáiz, 2007:10). First used in 1990 by the Catalan broadcaster TV3 and soon afterwards by the State broadcaster Television Española (TVE), its practice has been gradually increasing over the years.

Table 1. Evolution of the number of SDH hours per broadcaster[2].

Broadcaster	2004	2005	2006	2007	2008	2009	2010
RTVE (Public)	5028	6869	8492	8201	9478	16196	20822
Antena 3	2380	2868	3103	2804	8546	8209	7729
Telecinco	2370	2367	2423	2382	6787	8819	11498
Sogecable	1354	1373	1225	942	2576	2890	4236
La Sexta	-	-	-	4725	6380	3566	5194

Another important element in the significant growth experienced in the provision of SDH in Spain was the digital switchover, which led all analogue broadcasters to become digital in 2010. As well as increasing the number of TV channels and subtitled products, this switchover also involved the replacement of the traditional SDH signal for television -analogue teletext- by newer and less restrictive technologies. Taking into account the changing audiovisual landscape in Spain, the *Ley de Comunicación Audiovisual* 7/2010 (General Law on Audiovisual Communication), passed in March 2010[3], set an agenda for the provision of access services (SDH, Audiodescription and Sign Language -SL-) on television.

Table 2. SDH rate per broadcast hours: public broadcasters

	2010	2011	2012	2013
SDH	25%	50%	70%	90%
AD	1%	3%	7%	10%
SL	1%	3%	7%	10%

Table 3. SDH rate per broadcast hour: private broadcasters

	2010	2011	2012	2013
SDH	25%	45%	65%	75%
AD	0.5%	1%	1.5%	2%
SL	0.5%	1%	1.5%	2%

As well as on TV, SDH is also present in Spain in other audiovisual formats. Some private initiatives led by user associations have made films available to deaf audiences via VHS first and now DVD for over 15 years (Arnáiz, 2007), almost as long as the presence of SDH on TV. At the same time, since 2000 and due to the advances of video technology, the film industry has been slightly more accessible to viewers with hearing loss thanks to the DVD format. Although the total number of film titles with SDH released in Spain barely represents 1% of the market, this percentage is growing steadily. Besides, more and more new areas are now accessible -music, videogames, live events, etc.- which calls for new research on practices, preferences and reception of SDH.

Standards

The growing need and demand for SDH in Spain led the Spanish Association for Standarization and Certification (AENOR) to issue the UNE-153010 standard "Subtitling for the Deaf and the Hard of Hearing. Subtitling through (analogue) teletext" in 2003. These are the only open-access national stylistic guidelines in use, and were exclussively issued to control SDH practices on TV. Aspects such as character identification, subtitle placement, paralinguistic information, colour combinations, etc., are taken into consideration in the text, revised in 2012[4]. However, technical restrictions on its application in different formats/settings (such as DVD subtitling or live subtitling) and economic constraints imposed by different companies have given rise to a varied landscape of coexisting, heterogeneous styles. As a result of this, users are often faced with diverse formats which do not always manage to transfer the audiovisual contents successfully.

Questionnaire results

Along with the introductory information on hearing loss and the current audiovisual landscape in Spain, the background to the DTV4ALL project is set by previous studies that have analysed the performance of the most representative SDH parameters in use in Spain (Cambra, Silvestre & Leal, 2008; Bartoll & Martínez-Tejerina, 2010; Lorenzo, 2010; Pereira, 2010). All these examples, together with similar initiatives carried out in other countries (Kyle, 1992; Kirkland,

1999; Neves, 2005), may be regarded as subjective data derived from preference surveys and comprehension questionnaires. The analysis of the long questionnaire included here is a further and more comprehensive contribution to this area, which, in the second part of this book, will be completed with objective information obtained through eye-tracking tests.

Dissemination and difficulties

One of the main difficulties faced in this study was the dissemination of the questionnaire. In the absence of a general national organisation, and in an attempt to have as representative a group of respondents as possible, different associations for the D/deaf and Hard-of-Hearing were approached. Thanks are due to MQD, Arabako Gorrak, Fiapas and the *Centro Cultural de Personas Sordas de Palencia*[5] for their kind collaboration, having provided not only infrastructures, but also professionals for the dissemination of the questionnaire. Teachers and trainers participated to ensure that Deaf users would be able to fill the questionnaire individually, and, in many cases, Sign Language interpreters were also used.

Participants

The questionnaire was filled in by 81 participants from 29 to 46 years old: 35 Hearers (H), 25 Hard-of-Hearing (HoH) and 21 Deaf (D) volunteers. Most Hearers (70%) had completed higher studies, whereas only 40% of the Hard-of-Hearing and 20% of the Deaf had university diplomas. The remaining 80% of Deaf participants only had Primary/Secondary studies and attended special schools.

Table 4. Everyday communication

Which is your natural language?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
Oral Spanish	100	35	100	25	0	0
Spanish Sign Language	0	0	0	0	24	5
Bilingual (oral/SSL)	0	0	0	0	76	16
Other	0	0	0	0	0	0

Interestingly, although when asked about their mother tongue, 76% of the Deaf participants described themselves as “bilingual”, the responses to open questions in the questionnaire revealed the use of Spanish Sign Language (SSL) syntax in written Spanish. Further questions on sight and reading abilities showed that 86% of the Deaf has difficulties reading subtitles, which goes to show how difficult it is to categorize the Deaf community and how self-perception often makes subjective responses less reliable.

Table 5. Difficulties reading subtitles

Do you have difficulties reading the subtitles?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
Yes	0	0	0	0	24	5
No	100	35	100	25	14	3
Sometimes	0	0	0	0	62	13

General information and preferences

All volunteers have access to TV and all the Hearing and Hard-of-Hearing respondents have regular Internet access. Taking into account the above-mentioned reading difficulties experienced by many of the Deaf respondents, their answers in this question (76% own a computer and 62% have Internet access) may be seen considered positive: a higher exposure to reading may improve their skills and enhance reading comprehension.

Table 6. Electronic equipment at home

Which of the following do you have at home?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
TV	100	35	100	25	100	21
DVD player	100	35	100	25	62	13
PC/Laptop	100	35	100	25	76	16
Mobile phone	86	30	100	25	100	21
Internet	100	35	100	25	62	13
Other	11	4	0	0	19	4

In accordance to these results, as far as reading habits are concerned, and due to their communicative difficulties, the Deaf are the group with the highest number of hours of reading a day, from two to more than six, whereas Hearing viewers spend from one to four and the Hard-of-Hearing range from one to five.

Table 7. Hours of daily reading

How many hours a day do you spend reading?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
None	0	0	0	0	0	0
Less than 1 hour	0	0	0	0	0	0
1-2 hours	20	7	20	5	0	0
2-3 hours	42	15	60	15	53	11
3-4 hours	38	13	12	3	12	3
4-5 hours	0	0	9	2	18	4
6 hours or more	0	0	0	0	12	3

Whereas the Hard-of-Hearing spend an average of one to four hours a day watching subtitled TV, the Deaf spend between two and four hours a day, or even more. The Hearing participants are significantly more exposed to sound or aural information, and do not usually watch subtitles on TV. In the examples they do, it is for less than an hour a day and it mostly applies to interlingual subtitling.

Table 8. Hours a day watching subtitled programs

How many hours a day do you watch subtitled TV?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
None	94	33	0	0	0	0
Less than 1 hour	6	2	0	0	0	0
1-2 hours	0	0	64	16	0	0
2-3 hours	0	0	16	4	81	17
3-4 hours	0	0	20	5	0	0
4 hours or more	0	0	0	0	19	4

However, participants were not only asked about the number of hours, but also about their company during the viewing sessions. In the case of Hearing participants, these hours are normally shared with Hearing friends. However, Hard-of-Hearing participants indicated they use to spend this time either on their own, and/or with Deaf or Hearing friends and relatives. In the case of the Deaf, a 100% indicated that they use to be accompanied by Hearing people, although they also mark that they use to share their viewing time with other Deaf colleagues.

Table 9. Who do they watch TV with?[6]

How do you usually watch TV with?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
On my own	20	7	40	10	37	8
Deaf friends/family	0	0	16	4	58	12
Hearing friends/family	80	28	64	16	100	21

News, films and TV series are the main examples of programmes selected by the three groups of viewers. In the case of sports, nevertheless, these programmes are mainly watched by Hearing users, whereas documentaries are only watched by viewers with hearing loss. This disctinction may be influenced by the educational profile of the documentary genre.

Table 10. Types of programmes watched on TV

Programme type	H		HoH		D	
	%	Nº	%	Nº	%	Nº
News	80	28	100	25	100	21
Talk shows	77	27	40	10	84	18
Films and TV series	77	27	100	25	100	21
Documentaries	0	0	88	22	84	18
Sports	86	30	40	10	37	8

Further questions revealed that 100% of the respondents with hearing loss watches news programmes and films for between one and two hours a day in the late afternoon (17:00-21:00), whereas Hearers spend an average of three hours a day on later grids (21:00-01:00).

Significantly, all the Deaf respondents choose the programmes they watch on the basis of whether they include SDH, which is only the case for 20% of the Hard-of-Hearing participants. Although the scarce presence of Sign Language on TV means that SDH is often the only access tool at hand, 75% of the Deaf chooses the former over the latter. As will be seen in further chapters, Spain is the only country in which the Deaf favour Sign Language over SDH as a means to access contents on TV.

Surprinsingly enough, and following the distorted perception of the self reception process commented in previous lines, most Deaf respondents (67%) declare that they use SDH to help them understand the dialogue rather than as their only way to access it. Nevertheless, multiple options were also marked, showing the dubious consistency of the responses provided by the users. The Hard-of-Hearing, however less limited by their hearing restrictions, do admit more openly their dependance on SDH (64%).

Table 11. Reasons for watching subtitles

What do you use subtitles for?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
They help me understand	46	16	64	16	67	14
They are my only way to have access to the dialogue	0	0	64	16	44	9
I use them for language learning	40	14	0	0	23	5
Other	0	0	0	0	0	0

When subtitles are not available, respondents with hearing loss tend to switch channels and look for other programmes with SDH.

Table 12. What if there are no subtitles?

When a programme doesn't offer subtitles, I...	H		HoH		D	
	%	Nº	%	Nº	%	Nº
Switch off the TV	0	0	0	0	0	0
Flick the channels and look for a subtitled programme	0	0	80	20	81	17
Lip-read	0	0	16	4	0	0
Someone translates for me	0	0	0	0	0	0
Put the volume up	0	0	24	6	0	0
Guess by the context	0	0	0	0	0	0

Subtitling

Most of the Hearing Impaired participants (80%) are aware of the existence of a National Standard for Subtitling for the Deaf and Hard-of-Hearing in Spain but only 1 (2.2%) is familiar with its contents. Among the Hearing, 7 have heard about the standards but none of them knows its title or contents.

When it comes to the general opinion about current subtitling practices, results differ significantly among the three groups of users. Hearers, not traditionally used to SDH either on TV or DVD, do not have a strong opinion on their quality, and could not provide an answer to some of the questions on subtitling. Deaf and Hard-of-Hearing users, on their side, reveal an interesting contrast. Whereas most Deaf users (62%) consider "correct" the quality of the subtitles provided by TV stations, 63% among the Hard-of-Hearing disagree, regretting the lack of programs and contents (37% of them consider current SDH as "better than nothing at all").

Table 13. Opinion on current subtitling practices

What do you think about current SDH services on TV?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
They are OK	17	6	37	9	62	13
They are not OK	0	0	26	7	0	0
They are better than nothing at all	0	0	37	9	24	5
Other	6	2	0	0	0	0

More than 60% of the users in all groups showed their preference for the SDH provided by RTVE, the public national station. Although 40% among the Hearers choose Antena 3 as their preferred station, only one out of the 46 Deaf and Hard-of-Hearing participants marked this station as a second choice (after RTVE). Among the commercial stations, Telecinco is the best considered one by Hearing Impaired

audiences. It is important to point out that these public (RTVE) and commercial (Telecinco) stations are providing the highest number of subtitled contents, what may influence the opinion of target users on SDH. Similarly, a high percentage of Hard-of-Hearing users -only in Catalonia- show their preference for the services provided by the Catalan TV station TV3.

Table 14. SDH practices preferred per TV stations

Programme type	H		HoH		D	
	%	Nº	%	Nº	%	Nº
RTVE	60	21	60	15	62	13
Antena 3	40	14	0	0	0	0
Telecinco	0	0	14	3	11	4
La Sexta	0	0	0	0	0	0
Autonomous TV stations (TV3)	0	0	26	7	0	0

But beyond their demand for more subtitled contents, participants were asked about their opinion on possible improvements to current SDH practices. At this stage opinions do differ between both groups of Hearing Impaired. Deaf users focus mainly on the possibility of introducing Sign Language interpreters (14%), edited contents (22%) and more subtitled programs (22%). Hard-of-Hearing users, on the contrary, focus on the legibility of subtitles. Together with the need for more subtitled programs (26%), this group of users highlights the relevance of aesthetic aspects: placement (to avoid obscuring important information) (14%), font type and size (14%), etc.

Although most users -both Hearers and Hearing-Impaired- consider the average subtitle speed to be correct on live and pre-recorded TV and DVD programs, the percentage of Deaf users that consider this speed to be too high is significant: more than 50% of the Deaf consider DVD subtitles too fast for a correct comprehension. Contrary to this results, Hard-of-Hearing users do not complain about subtitle speeds either on TV or DVD formats.

Table 15. Opinion on the speed of TV subtitles

What do you think about the speed of TV subtitles?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
They are OK	40	14	37	9	47	10
They are too fast	0	0	0	0	47	10
They are too slow	0	0	0	0	6	1

Table 16. Opinion on the speed of DVD subtitles

What do you think about the speed of DVD subtitles?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
They are OK	40	14	37	9	44	9
They are too fast	0	0	0	0	56	12
They are too slow	0	0	0	0	0	0

Surprisingly, the speed of live subtitles, often considered to be inadequate due to the technical limitations that restrict the stylistic and linguistic edition of contents, only draws negative results in 36% among the Deaf, with a 21% even considering subtitles to be too slow.

Table 17. Opinion on the speed of live subtitles

What do you think about the speed of live subtitles?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
They are OK	20	7	26	7	44	9
They are too fast	0	0	0	0	36	7
They are too slow	20	7	13	1	21	4

Interestingly, when asked about the improvements to be made on SDH, 75% of the Deaf would like subtitling speeds to be reduced. This aspect is not mentioned by any of the Hard-of-Hearing respondents, who instead ask for an increase on the number of programmes providing SDH.

Subtitling styles

The majority of the respondents consider character identification as the most necessary element in SDH, with the exception of dialogue. Following the tradition marked by the Spanish SDH standards, there is consensus among the Hearing Impaired about the use of colours for this purpose, while the Hearing seem to favour name tags and a combination of colours and speaker-dependent placement. The latter are rarely used in the Spanish audiovisual context, which may indicate that these viewers may have a higher exposure to foreign subtitled products and videogame subtitling.

Table 18. Character identification

When characters need to be identified, what system do you prefer?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
Only colours	0	0	76	19	67	14
Only positioning subtitles next to characters	0	0	24	6	24	5
Combining colours and positioning	40	14	0	0	0	0
Only name tags	40	14	0	0	0	0

Regarding the traditional use of colours in Spanish SDH, there is less agreement. For many Hearing Impaired users this practice sometimes gives away information of the plot that has not yet been revealed by the soundtrack. Nevertheless, most users still defend this use to identify characters. However, due to the fact that the Spanish standards only accepts 4 colours, asked about the need to add extra colours, 60% of the Hard-of-Hearing users considered the existing ones to be sufficient, whereas most Deaf participants (62%) would rather have a wider choice.

Table 19. Number of colours in SDH

The number of colours used is...	H		HoH		D	
	%	Nº	%	Nº	%	Nº
Sufficient	40	14	60	15	0	0
We could do with a wider range	40	14	40	10	62	13
Too many	0	0	0	0	0	0

Responses on placement showed significant agreement among the groups in preliminary questionnaires. Although 100% of the Deaf preferred all the subtitles (dialogues+sound information) to be displayed at the bottom of the screen (as it is currently done in DVD and cinema subtitling), 60% of the Hard-of-Hearing would want this information to be displayed in the top right corner of the screen, in a mixed positioning, following UNE-153010 standards.

Placement showed significant agreement among the groups in preliminary questionnaires. All the Deaf preferred the subtitles (dialogues+sound information) to be displayed at the bottom of the screen (as it is currently done in DVD and cinema subtitling). In contrast to this, only 60% among the Hard-of-Hearing would also choose this position, whereas 20% would go for a mixed one, following TV standards.

Table 20. Subtitle placement

Where do you prefer subtitles to be shown?	H	HoH	D
At the bottom of the screen	60%	60%	100%
Both at the top and bottom of the screen	18%	20%	0%
At the top of the screen	0%	0%	0%
Next to the character who speaks	0%	20%	0%

However, when confronted to SDH practices after the eye-tracking session, Deaf users, who were 100% for bottom placement according to pre-test questionnaires, were now 50% for mixed positioning, with sound information displayed at the top right corner. Also in this case, this could be conditioned by tradition and habit, as mixed placement is the standard adopted for TV subtitling, following the UNE-153010 standards.

It is representative the fact that in preliminary questionnaires some hearing users also preferred a mixed position (18%). The participants that marked this option had relatives with different degrees of Hearing Impairment and were aware of the current subtitling practices. No other Hearing participant marked this answer, as most Hearers would go for the common bottom subtitling. The help of the soundtrack would give response to this fact, as most hearers do not read sound information displayed in mixed positioning (See Chapter II)

Top positioning, currently provided in specific audiovisual products -sports, documentaries and conferences- was not marked by any of the respondents either in preliminary questionnaires or after the test.

As with speaker identification, 75% of the Deaf taking part in the test would prefer subtitles to adopt a similar placement in all audiovisual products. However, only 25 % of the Hard-of-Hearing defend this standardised use, and 50% would be against it.

Partly related to SDH placement, participants were also asked about justification or text alignment. It is important to note that current subtitling practices such as live subtitling by respeaking or stenotype are normally left justified in Spain, which means that both styles may be combined in the same program. Subtitling alignment in Spanish SDH has always been centred, so all the Hearing Impaired and 80% of the Hearing respondents support this practice.

Another aesthetic feature of SDH the questionnaire focused on was background boxes. The use of background boxes has been a long imposition on Spanish TV due to the technical restrictions derived from the use of analogue teletext. DVD subtitling, on the contrary, is not limited by this technology. Preferences in this regard differ among the three groups. Hearing respondents, used to standard (not teletext)

subtitling on TV and DVD, prefer subtitles without boxes (80%). Among the Hearing Impaired, Hard-of-Hearing viewers show a balanced preference for both methods while the Deaf support the use of boxes in 60% of their responses. It must be said, however, that new digital subtitles allow users to enable/disable boxes and modify the subtitle layout. Although many participants couldn't show their stylistic preference, they admitted being used to modifying these elements with their remote controls.

But it may be the analysis of sound representation in SDH one of the most enlightening parts of the DTV4All project. The representation of context and paralinguistic information in SDH reveals important differences between the three groups. The aim of the present study was not only to test the current options available in the market but also innovative solutions, such as the use of icons, which is now a possibility in digital TV (Civera & Orero, 2010). Once again, habit or exposure to subtitles played a significant role, making a clear distinction between 'trained' (Hard-of-Hearing and Deaf) and 'non-trained' (Hearing) users. Sound location ('explaining where the sound comes from') is the favourite option for 60% of the Hard-of-Hearing and 40% of the Deaf participants, while the Hearing respondents prefer a description of what the sound is like or, even better, words reproducing the sound. The latter option, namely onomatopoeic representations, is included in the Spanish Standard but it is hardly ever used, mainly limited to younger audiences. These younger viewers are also the only ones that support the use of icons (24%). Their familiarity to new audiovisual products such as videogames could explain their preference for these innovative alternatives.

Table 21. Description of sounds

How do you prefers sounds to be reflected on the subtitles?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
Explaining where the sound comes from	0	0	60	15	41	9
Using words reproduding the sound	46	16	16	4	35	7
Describing what the sound is like	37	13	24	6	0	0
Pictograms/Icons	0	0	0	0	24	5

It is worth noting here that, although all respondents selected one of the options, 40% of the Deaf and Hard-of-Hearing participants indicated that sound information was not an essential element and that it does not need to be included in SDH. Some Hearing respondents also considered this information redundant, which in their case is less surprising, as they have full access to the soundtrack.

Another interesting piece of data obtained in this section about sound description is that while many users could remember the sound information reproduced in the subtitles, they were usually not able to remember the words that represented the sounds. This may mean that

aural and visual perception follow different paths as far as memory is concerned, and points to an interesting area for future research.

Concerning the placement of sound information in the subtitles, most Hearing Impaired participants favour the top right corner, in line with the Spanish practice (and unlike any other country). Both the Hearing group and a significant number of Hard-of-Hearing respondents would also like to have the sound displaced to its source, a technique that is hardly ever used on Spanish TV.

Table 22. Placement of sound information

Where do you prefer sound information to be displayed?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
Top-right side of the screen	17	6	68	17	81	17
Bottom of the screen	26	9	0	0	19	4
Next to the source of the sound	57	20	32	8	0	0

The results obtained from the questions about the description of paralinguistic information reveal a heterogeneous picture. While the majority of Deaf respondents prefer not to have any description at all, most Hearers and Hard-of-Hearing would rather have this paralinguistic information conveyed in the subtitles, be it through an explanation in brackets (Hearers and Hard-of-Hearing) or through the use of emoticons/smileys (Hard-of-Hearing, to a lesser extent).

Table 23. Describing emotions

How do you prefer to mood information to be conveyed?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
Smileys	0	0	26	7	0	0
Explanatios in brackets	62	22	37	9	24	5
Nothing	17	6	37	9	76	16

It is surprising to see how the Deaf group, which theoretically needs paralinguistic information the most, does not consider it essential for the understanding of a programme. Deaf users explain that this information can easily be inferred from the images: context, faces, body language, etc. In any case, the second part of the DTV4ALL study in Spain, which includes both an eye-tracking test and a further questionnaire (see Chapter II), will show how the respondents' preferences regarding this and other questions shift significantly once they have been exposed to specific subtitled scenes.

Finally, the issue of subtitling speed and its ramification on the choice between edited and verbatim subtitles is as controversial in Spain as it is in the other countries taking part in the DTV4ALL

project. In the questionnaire, all the Hard-of-Hearing respondents opted for the verbatim option, thus demanding more information in the subtitles. Some of them proved to be aware of the technical implications involved in this choice (faster subtitling speeds) and the risk of not being able to process all the information. Even so, they stated that all the information should be present in the subtitles. As will be seen in Chapter II, when exposed to verbatim subtitles, many of the Hard-of-Hearing respondents changed their minds regarding this point. The Deaf users, with reading skills traditionally lower than those of Hearing and Hard-of-Hearing individuals, were largely in favour of edited subtitles, although their views also changed after watching actual examples of these subtitles in the second part of the study.

Like the Deaf respondents, the Hearers were also in favour of edited subtitles (80%). This may seem counterintuitive at first, as Hearing viewers should be expected to cope with high reading speeds. Yet, their lack of practice reading subtitles may pose difficulties when splitting their attention between the text and the images on screen. In this sense, the idea of obtaining a 'summary' through the subtitles may sound appealing, as it provides extra-time to devote to the visual elements on the screen.

Table 24. Subtitle Speed

You prefer subtitles to be...?	H		HoH		D	
	%	Nº	%	Nº	%	Nº
Verbatim	20	7	100	25	19	4
Adapted	80	28	0	0	62	13
Standard	0	0	0	0	19	4

Conclusions

It seems evident that Spanish viewers, influenced by the current practices they are exposed to, seem reluctant to accept any innovative alternative in subtitling -i.e. use of icons-. However habit-induced, many elements currently applied to SDH practices are questioned by the target users, although responses lack of consistency when confronting results from preliminary questionnaires to the ones passed after the eye-tracking sessions.

The oscillatory opinions collected in the present study depict an interesting profile of the Deaf. Their perception of the self communicative skills proves to be sometimes distorted. 76% among the Deaf consider themselves bilingual (SSL – oral Spanish), however most Deaf users would prefer an interpreter to access information, as they consider SDH no more than a secondary form of information. Surprisingly, only a 50% admits being dependent on SDH to understand dialogues and audiovisual contents, although an 86% has difficulties in reading subtitles. The Hard-of-Hearing, though, admit in many cases needing SDH to obtain a satisfactory comprehension.

These oscillatory opinions are most significant among Deaf participants: whereas pre-test questionnaires do show preferences often confronted to current practices, after the exposure to different variables in the eye-tracking sessions participants generally select the predominant styles on TV, mainly in the most representative parameters -speaker identification, descriptions of paralinguistic information and background boxes- of obligatory use with the former teletext subtitling. This coincidence with the current subtitling practices is especially significant among the Hearing Impaired, showing all users similar responses, in contrast to Hearing participants, being these less exposed to SDH styles.

The loose character of the UNE-153010 standards -still prevailing on its 2012 version- that accept a number of quite different styles for a single parameter, should still be revisited according to user preferences. Some lesser used practices -i.e. tag identification or bottom placement- should be more present, or even dominant styles. At this stage it was surprising to find out that up to 50% of Hard-of-Hearing users would reject the introduction of sound descriptions in subtitles. The reading skills of the Hard-of-Hearing, higher than those of the Deaf, together with their varying hearing remains, could somehow explain this point.

Finally, one of the most controversial aspects in SDH, subtitling speed, summarises the great differences encountered among the three groups. Questioned on the improvements to be made on SDH, 75% among the Deaf would ask for reducing subtitling speeds, whereas none of the Hard-of-Hearing would question this aspect, but would ask for an increase on the number of programmes providing SDH. However, although all the Hard-of-Hearing participants were massively for verbatim subtitling, when it came to reading practices, standard subtitles seemed to be a good option in terms of comprehension, dropping verbatim to a merely 50%, whereas Deaf users, however, would reject their use and prefer edited subtitles in 75% of the cases.

Notes

1. Data extracted from the website of the National Statistics Institute (INE): http://www.ine.es. The information published was collected in 2008. No updated information has been released up to date.

2. This law follows a draft bill from 2005 that established SDH quotas of 60% by 2010 and 100% by 2015.

3. Data from 2011 had not been made publich in July 2012.

4. A revision of the UNE-153010 standard was released in May 2012. The new version updates some aspects of the former text. Some modifications are based on the results obtained from the DTV4All project.

5. The Spanish associations that kindfully contributed with this study were '*Mira lo que te Digo-Aransbur*' (*Asociación de Familias de Personas Sordas de Burgos*) from Burgos, *Arabako-Gorrak* fromVitoria-Gasteiz, *Confederación Española de Familias de Personas Sordas* (Fiapas) from Madrid, and *Centro Cultural de Personas Sordas de Palencia* from Palencia.

6. Participants could select several options in some of the questions. Multiple responses were frequent among the hearing impaired participants. In some questions participants in all groups didn't know how to respond and gave no answer.

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BIONOTE

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10.6.3

‘Viewers' Perception of SDH in Spain: An Eye-Tracking Study’, in Romero-Fresco, Pablo (Ed.) *The Reception of Subtitles for the Deaf and Hard-of-Hearing in Europe*, Bern: Peter Lang. (forthcoming)

• CHAPTER II •

Viewers' Perception of SDH in Spain: An Eye-tracking Study

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This chapter will present the main results from the second part of the DTV4All project in Spain, based on the analysis of perception processes undergoing SDH reading and obtained using eye-tracking technologies. Together with the information extracted in the first part of the project, also presented in this volume, this study tries to shed light on the effect different subtitling styles have on reading patterns and their related comprehension.

Eyetracking tests in Spain

The complicated multi-phase structure of the DTV4All project made it necessary to carry out a series of pilot tests in order to check the adequacy not only of the materials used, but also of the structure and procedure of the experiment. Based on the common work of the research team, a series of two pilot tests were run in Spain. Their results enriched the common arrangements for the eye-tracking part of the study.

Pilot tests

No previous literature on eye-tracking research on SDH (De Linde & Kay, 1999; Jensema, 2000, 2000b, 2003; Gulliver & Guinea, 2003; Chapdelaine et al., 2007; Lee, Fels & Udo, 2007; Chapdelaine et al. 2008) gave an insight into basic issues such as how to build up correct stimuli or the number of users to take part in eye-tracking experiments

on SDH. For this reason different pilot tests were carried out in order to identify weak areas in the research.

The first pilot test enrolled a total number of 37 users -19 Hearing, nine Hard-of-Hearing and nine Deaf users- with ages ranging from 19 to 49 years old. One of the premises for the development of the video stimuli for the project was the use of identical excerpts dubbed into each of the mother tongues included in the project[1]. The hypothesis was that Deaf participants may be tempted to lip-read, thus altering the nature of the experiment. Taking into account that only films aimed at children audiences are dubbed into all languages, the film *Stuart Little 2* (Minkoff, 1999) was selected for such a test. Then, a series of four clips of different lengths -1:30 to 4:30 minutes- were selected.

As a result of this first pilot test, it was agreed to use 1:30-minute clips, for the longer clips showed a drop in attention patterns among all the participants, and poor quality data on the eye-tracking session. At the same time, the degree of familiarity with the stimuli to which users were exposed proved to be an unexpected variable, as some users would have a further background knowledge on the material used, which could influence comprehension processes.

Considering the results obtained from the first pilot test, a new test was outlined, adjusting differences in video length and on the nature of the material. In this case the American sitcom, *Friends* (Kauffman & Crane, 1994-2004) was selected. Although materials dubbed into all languages should be used for the final test, taking into account the lack of footage for stimuli extraction, the second pilot was run only in Spain. This second test helped us analyse the length of the questionnaires, users' profiles and users' reactions. In contrast to the four videos used in the first pilot experience, nine different videos built up the body of the second test, trying to reproduce the necessary conditions for the final experiment. This new pilot counted on eight Hearing, seven Hard-of-Hearing and five Deaf volunteers. As a result of this new test it was possible to determine that the original questionnaires outlined, which included 10 questions per clip -three on visual information, three on subtitled information, three on general content and an alternating final question- were too long. Shorter versions would be used in the final experiment. As expected, some Deaf users, when faced with the dubbed stimuli tried to lip-read, bringing abnormal results into the eye-tracking data. Taking this into account, which confirmed the original idea of using audiovisual material dubbed into all languages, it was agreed to work with animation. Although lip-synch is highly achieved in this genre, most Deaf users are not yet aware of this element and do not try to obtain information in such a form.

Eyetracking tests for Spain

Final test

Once the characteristics of the final materials were determined, it was time to undertake the final test. Two research approaches were considered. On the one hand, a quantitative study would require a high number of participants that would be exposed to part of the experiment in order to obtain data for an inter-individual analysis. On the other hand, a qualitative approach would engage a more limited number of participants and would enable both an intra-individual and an inter-individual analysis. Considering the heterogeneity of the Deaf community in Spain (See Chapter I) and taking into account the study of Caffrey (2009:138), who points the vast amount of data to be analysed in eye-tracking research, a qualitative approach was finally adopted.

The selection of parameters and variables for the study was based on the results obtained from a preliminary survey on the SDH practices in use, not only in the countries included in the DTV4All project, but also in other European countries, together with the results derived from the 'Comparative Subtitling Project' carried out by ESIST[2] in the year 2000.

	UK	Denmark	Belgium	France	Germany	Italy	Spain	Poland
General								
Is there SDH?	Y	Y	Y	Y	Y	Y	Y	Y
Are there standards?	Y	Y	Y	Y	Y	Y	Y	Y
Do they apply?	Y	Y	Y	Y	Y	Part	Part	Y
Extralinguistic info.								
Character ID								
Is there ID?	Y	N	Y	Y	Y	Y	Y	Y
How?	Col. Tags Plac.		Col.	Col. Box	Col. Tags Plac.	Col.	Col.	Col. Place.
Sound info.								
Is it marked?	Y	Y	Y	N	Y	Y	Y	Y
How?	Up. case Col. Plac.	( )	Up. case	Col.	Box ( )	( ) Plac.	Up. case	Up. case
Pragmatics								
Different users?	Y	N	N	N	Y	N	Y	N
Different styles?	Y	N	N	N		N	N	N

Aesthetics								
Typography								
Font?	Arial Nar.	Ttx.		Ttx.	Ttx.			Ttx.
Size?								
Upper/lower case?	Low.	Low.	Low.	Low.	Low.	Low.	Low.	Low.
Lines?	2 (3/4)	2	2 (3)	2	2	2 (3)	2 (3)	2 (3)
Spacing?	1	1	1	1	1	1		1
Box?	Y	Y	No	Y	Y	Y	N/Y	Y
Carac. /line?	42	37	37	36	36	35-40		
Placement								
Where?	Bot.	Bot.	Bot.	Bot.	Bot.	Bot.	Bot.	Bot.
Sound info.?	Plac.	Bot.	Bot.	Bot.	Bot.	Bot.	Top/ Bot.	Bot.
Justification								
How?	Cen	Cent	Cent	Plac.	Cent	Left.	Cent	Left.
Speed								
Cpm.?	140-180	10	10-12		12-13		19 (15)	12

Figure 1: Results derived from the preliminary survey carried out within the DTV4All project.

The triangulation of these data drew a series of elements -parameters and sub-parameters- where the most significant differences could be identified. Differences were not only restricted to SDH-specific aspects -extralinguistic parameters (Arnaiz-Uzquiza, 2012) but also to aesthetic and aesthetic-technical parameters. Consequently, the categories that constituted the basis for the eye-tracking part of the study were: typography -boxes, borders and shadows-, placement, justification, character identification, sound information, mood -paralinguistic information- and subtitle speed.

On the side of the final stimuli, it was agreed to work with animation. Due to fact that 23 different variables were to be analysed, and one video clip was to be designed for each example, it was necessary to use lengthy footage to extract the excerpts for the experiment. In order to follow the patterns identified during the pilot tests -length, questionnaires, etc.-, the final titles selected were the series *Shrek* from Dreamworks: *Shrek* (Andrew Adamson & Vicky Jenson, 2001), *Shrek 2* (Andrew Adamson, Kelly Asbury & Conrad Vernon, 2004) and *Shrek The Third* (Chris Miller & Raman Hui, 2007). The 276 minutes provided by the films altogether, were suitable material for the extraction of the final stimuli, a set of 23 videos[3].

PARÁMETER	VARIABLE	FILM	MINUTE	LENGTH
Background Boxes	No Box	Shrek	54:34	00:58
	Box	Shrek	48:04	00:58
Borders	No Border	Shrek 3	37:00	01:05

	Border	Shrek 3	22:25	01:03
Shadows	No Shadow	Shrek 2	04:53	00:55
Placement	Top	Shrek	32:30	01:02
	Bottom	Shrek 2	47:04	01:00
	Mixed	Shrek 3	17:15	01:22
Justification	Left	Shrek	43:15	00:55
	Centered	Shrek	41:50	01:03
	Shadow	Shrek	01:01:10	00:58
Identification	Colour	Shrek 2	01:05:35	00:59
	Tags	Shrek 2	20:24	01:00
	Placement	Shrek 2	13:02	01:02
Sound Information	None	Shrek	33:32	01:12
	Description	Shrek 2	32:13	01:01
	Icons	Shrek 2	21:25	01:05
Mood	None	Shrek	58:35	01:27
	Description	Shrek 3	26:23	01:04
	Emoticons	Shrek 2	01:13:50	01:13
Subtitle Speed	Adapted	Shrek 3	57:40	01:32
	Standard	Shrek 3	07:52	01:20
	Verbatim	Shrek 2	30:25	02:05

Figure 2: List of video-clips with their origin and length.

In order to control any non-desired variables, all the clips selected included information of similar characteristics: 25-35 subtitles per clip, similar dialogue loads, similar visual contents, etc.

Given that eye-tracking does only provide information on eye-movements, but does not get a deeper insight into the mental processes behind, a series of comprehension questionnaires were disseminated after each variable tested. Each questionnaire included three different questions: one on visual information, another question on subtitle information, and a third question on the general content of the clip. As in the case of clip selection, comprehension questions were selected by judges in order to validate the test.

At the same time, a brief questionnaire was handed out in order to collect further information on preferences after the eye-tracking sessions. This second questionnaire on preferences was used to determine whether users' responses could be stable and reliable from a scientific point of view.

Once the final experiment was designed, in order to control secondary variables on user's profile, a set number of users of a controlled age group (25-45 years old), education (higher education), and geographical background (members of the association MQD-Aransbur, in Burgos) were chosen. The classification of the Hearing Impaired was based on their communication skills rather than on their

hearing capacities. Whereas the Hard-of-Hearing were deaf participants with some hearing remains -in most cases- using any sort of hearing aid, and who would communicate in oral language, the Deaf were a group of users with/without hearing remains who would mainly communicate in Spanish Sign Language (SSL). Most participants in this Deaf group, also using for the most part different hearing aids, would consider themselves 'bilingual'. However, their responses in preliminary tests would reveal grammar and syntactic structures common to SSL users, rather than oral forms.

Taking all these data into account, it was possible to count on a group of eight Hearers, seven Hard-of-Hearing and seven Deaf. It is necessary to point out that any subtle variation during the eye-tracking process results in a loss of information. This is the reason why, even though the intended figure for the test was five users per group[4], it was recommended to record some additional tests in order to ensure the minimum number of complete recordings per group for the analysis.

Eyetracking results per parameter

As some aspects that would later be studied -i.e. the number of fixations and/or the time spent on subtitles and images- needed a contrast basis for their analysis, previous studies on rough subtitled programs were used to extract this information[5]. One of the most important elements of this previous study was the number of characters included in a fixation in the case of Spanish users.

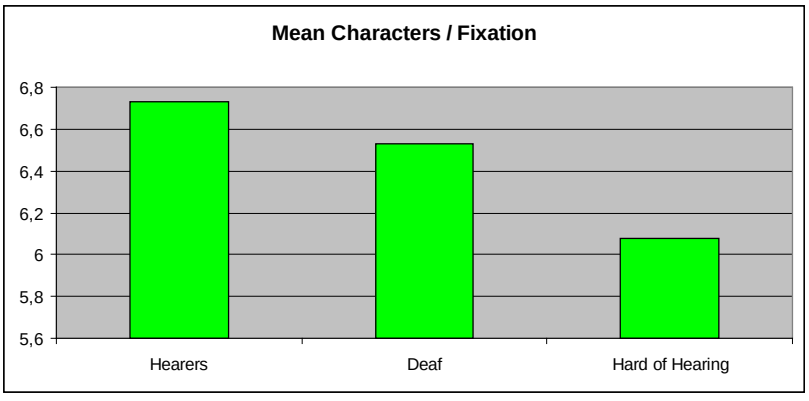

Figure 3: Average number of characters per fixation and group.

It was surprising to find that Deaf users go throw more characters per fixation than Hard-of-Hearing users. The reason for this is that in most cases Deaf viewers scan the scene without reading the subtitle -see results in comprehension tests. Hard-of-Hearing viewers, on the contrary, do make bigger reading efforts, with higher number of

fixations and lower number of characters per fixation, but achieving better results in comprehension tests.

This same contrastive pattern was adopted for the extraction of further 'standard information' -average number of fixations, fixation length, scanpaths, etc.- that would later be adopted as contrastive data for the study of the parameters identified.

Typography

Due to its aesthetic nature, 'Typography' is one of the most visible parameters, and the one that gathers the biggest number of sub-parameters (Arnaiz-Uzquiza, 2012). According to the 'Comparative Subtitling Project' the main differences that could be identified among subtitling practices derive from the font type and font size, the use of borders and shadows and the use of background boxes.

Figure 4: Examples of different subtitling styles extracted from the 'Comparative Subtitling Project' (ESIST, 2000).

Although font type and size were also identified during the first steps of the DTV4All project, previous research indicated the lack of consistency of its incorporation into the study (Arnaiz-Uzquiza, 2010). The new possibilities provided by digital TV enable users to modify this typographic features regardless the original configuration of the subtitle. Thus, these elements were removed from the main study.

Boxes

The use of boxes has been left aside when it comes to establishing subtitling styles for many years. Imposed by analogue teletext

technologies, its use was forced for analogue TV -and so was considered in the original UNE-153010 standards-, but was never included on DVD subtitling. Considering its optional use nowadays, and its alternate presence in the Spanish audiovisual landscape (with some TV broadcasters using opaque boxes, whereas others do not use background boxes at all), both variables were tested.

Checking the reaction time, Hearers showed slower 'Times to First Fixation' than the other groups, but all three groups showed faster reactions when boxes were used, the Deaf being the group with the fastest reaction: 0.18004 sec. Significantly enough, these times rose by 33% when no boxes were used, whereas Hearers and Hard-of-Hearing users showed times that only rose by 12-15%.

The faster reaction by Deaf users when reading subtitles in boxes was also accompanied by a longer first fixation length. This implies that Deaf users stop for a longer time once the eye has reached the final position after a saccadic movement. The 'Mean Reading Time' of this same group showed that it took users longer to read subtitles in boxes.

This reaction, however, was not similar in the other two groups - Hearers and Hard-of-Hearing- as 'No boxes' forced longer first fixations, with longer reading times, especially among the latter. However, the reading time invested by Hearers in subtitles with boxes was longer, as it happens with Deaf viewers.

Nevertheless, the 'Mean Reading Time' does not explain the underlying comprehension process. Although the fixation length and the longer time spent in reading the subtitle could lead to a better understanding, results showed that subtitles with no box achieve a better textual comprehension -77%- than 'Box' subtitles -60%-, together with similar or shorter fixation times.

It could then be considered that 'No Box' reading results in a more efficient reading process. However, conflict arises when user preferences come into scene. Although users did not really defend the use of boxes before the test, when it came to practice, their responses varied: the Hard-of-Hearing, who were only 40% for the use of boxes, moved to a 75%, and so did the Deaf. Hearers, in turn, less exposed to SDH practices, did not show a preference for this option, but a 60% defended the consistent use of either option in all audiovisual products. The Hearing Impaired, on the contrary, influenced by the changing scenario where SDH is currently broadcast, consider unimportant such a consistent representation.

Borders

This sub-parameter, traditionally ignored in most subtitling standards, has long been subject to the technological restrictions of analogue teletext. The innovative optional use of boxes has led to a choice of further typographical elements, as font configuration. This is the reason why the use of font borders and shadows was tested.

Asked about the preference on both aspects, users could not make a deliberate choice on their use, and that was the reason why eyetracking tests could shed some light on the best stylistic option in terms of reading.

Surprisingly, both Hearers and Hard-of-Hearing viewers had longer reaction times in subtitles with borders than in subtitles without them, although differences vanish among Deaf users. However, when it comes to the reading time all users invest longer time in reading subtitles with no borders -especially Deaf viewers, 4% longer-. Comprehension patterns linked to these viewing processes showed that users with some hearing capacities (Hearers, Hard-of-Hearing) do have a better text comprehension reading texts with borders, in contrast to Deaf users, who showed the opposite tendency. In this respect, due to the short number of participants in the text, further research would be necessary for this specific variable.

Shadows

Similarly to the use of 'Borders', and also limited by analogue teletext, 'Shadows' is not included in the Spanish standards and viewers are hardly ever aware of its use. As on the typographical features included in the project, the variables tested considered the use or absence of the given element.

Given the slight perceptual difference between both styles, it is remarkable the fact that users could not tell the difference between both variables, which prompted random answers in the questions on preferences. However, as in the previous example, minor -but unexpected- differences could be identified in the analysis with the eye-tracker. It was possible to find, for example, that subtitles with no shadows caused longer reaction times in users with hearing impairments -specially among Hard-of-Hearing viewers, although the 'Mean Reading Time' pattern was inverted for this group, having longer reading times for texts with shadows.

Identification

This extralinguistic parameter was one of the most representative aspects due to the differences that could be found in the contrastive analysis of SDH styles.

The three different variables selected for identification tests –'Colours', 'Tags', 'Displacement'- were present in the Spanish UNE-153010 subtitling standards[6]. Although colour identification is the most extended method both on TV and DVD subtitling, the use of tags and displaced subtitles is also accepted, although scarcely used.

Differences in subtitle positioning on screen –'Displacement' versus 'Colours' or 'Tags'- were expected to be found in the analysis of reaction times –'Times to First Fixation'- among the three groups. However, results obtained revealed that displaced subtitles draw shorter times among all the groups, being the Deaf and the Hard-of-Hearing the ones with faster reaction times. In contrast to these data, it was possible to find that the reading patterns of all groups when tag identification is used differ with regard to the ordinary reading scheme for subtitling: users skip the information in tags and only come back to it once the subtitle has been read, or as regressions during the reading process.

Table 1. Mean Reading Time: Identification

	Colours	Tags	Displacement
Deaf	63.6%	70.8%	74.6%
Hard-of-Hearing	54.7%	66%	70.3%
Hearing	44%	57.2%	70.4%

Similarly, longer reading times were also thought to be relevant, considering that the increased number of characters of tag identification could entail longer reading times. However, it was displaced subtitles the ones that made users invest longer times (70-74% of the viewing time), before 'Tags' (57-70%) or 'Colours' (44-63%). Furthermore, this prolonged reading did not guarantee an enhanced comprehension, as this variable showed the poorest comprehension results, hardly reaching a 30% of the total text comprehension.

Colour identification, on the contrary, obtained the shortest reading processes (44-63%) and best comprehension results, both among Hearers and Hard-of-Hearing users. It is to be remarked that Deaf users compensate 'Comprehension Instances', and so although textual meaning obtained is poor -non-existent- for all variables, visual -image- and general meaning obtain better data, still with very poor scores.

Placement

Although the placement of subtitles has rarely been questioned, the analysis of the different possibilities existing in Europe brought this aspect into the project. The predominance of 'Bottom' subtitling for all DVD versions providing SDH in Spain coexists with a combined option –'Mixed'- where sound -context- information is displayed at the top right corner of the screen[7]. This display mode, which seems specific to the Spanish audiovisual market within Europe, can also be found in different versions in various audiovisual contexts -i.e. sound information displayed in a top centred position in the United States (DCMP, 2009). The Spanish use is recommended by the UNE-153010 standards -former and current versions- and thus, widely present on TV subtitling. The third stylistic option tested, 'Top' subtitling, is only present in some live events and some internet products, although it is hardly ever present on TV broadcasts and DVD releases.

'Top' subtitles obtain faster reaction times than 'Mixed' and 'Bottom' subtitles for all groups. Just in the case of Hearers differences are barely remarkable -2% slower than 'Bottom'. 'Mixed' subtitles -the most extended style in Spain- are the slowest variable in terms of reaction time –'Time to First Fixation'. However, when it comes to analysing 'Mean Reading Times', viewers invest less time in mixed subtitles than in the other two styles, with the extra value of higher comprehension results among Hard-of-Hearing users. Nevertheless, Deaf users, who spend 25% less time reading mixed subtitles, do achieve better comprehension results with bottom subtitling, whereas bottom subtitles -of extended use in the Spanish DVD market- force reading times ranging from 53% to 61% longer.

The use of 'Top' subtitles, although the quickest style in terms of reaction times, does show poor results among Deaf users in terms of text comprehension, although Hearers and the Hard-of-Hearing perform better. Taking into account the three comprehension instances -text, visuals, sense-, and the viewing performance during the reading process, the general average would suggest the use of bottom subtitles as the most adequate format for all viewers.

In this case, user preferences do match the results derived from the eye-tracking analysis, with 100% of the Hard-of-Hearing supporting subtitles in a bottom displacement. However, also in this case, only 25% of the users would go for a generalised bottom placement, following current practices where TV stations are the only ones providing a mixed placement of SDH.

Justification

In close relation with placement, and also within the group of aesthetic parameters, 'Justification' is one of the parameters that also changes among the different countries. Sometimes conditioned by historical traditions in certain countries, in Spain centred positioning is widely used for any pre-recorded material, whether on TV, DVD or cinema exhibitions. Nevertheless, first limited by technological restrictions, and then habit-induced, most live subtitles, in any format, are left-justified.

Test results reveal that all groups have faster reaction times with centred subtitles than with left justified texts, being differences specially relevant among Deaf (0.2655 sec. for centred and 0.3519 for left-aligned subtitles) and Hard-of-Hearing users (0.2989 sec. for centred and 0.4198 sec. for left-aligned). Although reading may be slightly delayed, the average time invested in the reading process is less with left-aligned subtitles, especially in the case of Hearing Impaired users, who spend 8% longer with centred texts.

However, although the longer time spent could be interpreted as a positive sign in terms of comprehension, results do not support this idea. Comprehension instances demonstrate that centred subtitles are better read -in terms of comprehension- by Hearers and Deaf users, whereas only the Hard-of-Hearing get better results with left aligned texts, though the time invested in subtitle reading is also higher than for centred subtitles.

Mood

Together with speaker identification, the representation of paralinguistic information for mood content and sound information are the most specific elements of SDH. Following the open guidelines in use in Spain, the three variables tested –'Description', 'Emoticons' and 'None'- would be accepted according the national standards[1]. Although descriptions are the most extended practice, the use of emoticons can also be found for some broadcasters. The third variable, which implies a lack of representation, is also of extended use, as many DVDs in the market provide SDH that only differ from ordinary subtitles in the use of colours for speaker identification. It is extremely representative that 50% of the Deaf users questioned would reject any representation of mood information at all, regardless of the information conveyed by these subtitles.

Table 2. Time to first fixation: emotions

	Description	Emoticons	None
Deaf	0.39787 sec.	0.39422 sec.	0.14334 sec.

Hard-of-Hearing	0.44563 sec.	0.86106 sec.	0.15337 sec.
Hearing	0.46821 sec.	0.66398 sec.	0.20417 sec.

Even though both in 'Description' and 'Emoticons' further information is provided, 'Emoticons' seem to be the most time-consuming option. This is conditioned by the fact that the information of both options –'Description' and 'Emoticons' -as it happened with 'Identification: Tags' is only processed as part of regressions, or once the subtitle has been read.

It is also necessary to remark that the information provided through emoticons is only 'seen' in 39/30/25 % of the occasions for the three groups -Hearers/Deaf/Hard-of-Hearing -, making it difficult to examine comprehension results in this part. In most cases the presence of an underlying reading process was never achieved, as the target object was not even perceived. On the other hand, descriptions were 'seen' in 88% (H) to 94 % (Hard-of-Hearing, Deaf) of the occasions. These figures cannot justify the existence of an underlying reading process on their own, but the conditions are set to enable a reading process.

Taking into account the 'Mean Reading Time', but not ignoring previous data, results reveal that most hearing impaired users spend longer time -from 67% to 75% of - reading subtitles with no context information -'None'. In contrast to this, 'Mood: Emoticons' is the variable that takes users -mainly the Deaf- the shortest time to read (48% of the observation time).

However, when it comes to comprehension, results highlight the need to take all previous data into consideration: results drawn by comprehension tests show that Hearers achieve a perfect comprehension when subtitles do not provide further information -'None'. This could be explained by the additional information provided by the soundtrack, also available for them. In contrast to this, Deaf and Hard-of-Hearing users reach a very poor -non-existent- text comprehension (0% for both).

Given that little information could be retrieved with the eyetracker in the 'Mood: Emoticon' video due to specific reading habits - less than 30% of the information was perceived, which should trigger further research in this area-, it is necessary to handle the following data with care. While Hard-of-Hearing users would obtain very high comprehension results -close to 100%-, Deaf users would process information in a similar way to 'Description'. Nevertheless, it would be necessary to analyse why Hearers' comprehension is far poorer (40%) than in the other two examples.

In the post-test questionnaires, 'Description' was chosen as the preferred option for all three groups (85% H, 75% HoH, 75% D). This technique is traditionally used in Spanish SDH to convey paralinguistic information, although it is only a secondary choice in pre-test questionnaires. Albeit it already was for Hearers, it was not for the hearing impaired participants. What is more, post-test questionnaires reveal that both Deaf and Hard-of-Hearing participants would prefer this technique to be used in 75% of situations.

These move in preferences is especially representative, because they show, once again, how preferences are affected by habit: although emoticons are accepted and included in the UNE-153010[8], users are not as familiar with them, as many users cannot identify the meaning of the iconic representations used. Furthermore, Deaf users cannot always infer the emotional meaning of a given subtitle without a description, no matter how much information can be obtained from scene.

In any case, taking into account the real data obtained in the present test, subtitles with description would be the most adequate option in terms of perception and related comprehension.

Sound

Along with the opinion on paralinguistic information for mood, sound information is one of the key elements of SDH for Deaf and Hard-of-Hearing users as it provides data on sound information otherwise missing for these groups of viewers (only 20% of the Deaf reject its use). In contrast to all the other parameters and variables in the project, innovation was introduced to test the potential acceptance of its use, already suggested by some authors (Chapdelaine *et al.,* 2007, 2008; Civera & Orero, 2010) and already in use even for identification purposes.

To the current descriptive representation of sound, in use on TV, DVD and officially included in the national standards, the lack of sound representation -'None'- was also added as the other practice existing in SDH subtitling in Spain. Many SDH examples only include speaker identification as part of the requirements to this subtitling modality. Finally, the third option adopted takes a glimpse on some new proposals in the field of innovative techniques for SDH, including iconic representations -bitmap based- of sound information.

Figure 5: Example of iconic representation for character ID ('*Caiga quien Caiga'*, La Sexta)

Having a look at 'Time to First Fixation', the time elapsed is always shorter when no additional information is provided, whereas when descriptions or icons are used, reaction times may be delayed 62 to 86% against the 'None' option -especially in the case of 'Icons'. In contrast with previous tendencies, Deaf viewers have longer reaction times than the other two groups in the special case of 'Icons'. Interestingly enough, only 50% of the icons presented were satisfactorily 'seen' by these users, whereas 53% among the Hearers and 68% among the Hard-of-Hearing went through this information.

Table 3. Time to First Fixation: Icons

	Description	Icons	Nothing
Deaf	0.42912 sec.	0.8025 sec.	0.10534 sec.
Hard-of-Hearing	0.47600 sec.	0.60925 sec.	0.22639 sec.
Hearing	0.46699 sec.	0.69167 sec.	0.22724 sec.

In the case of 'Descriptions' all the groups went through the sound information in 80-100% of the cases, although the first fixation length is much longer for all groups, being the Deaf participants' results almost 50% longer. This could be explained by the fact that the information provided in this format comes in the form of text -subtitle-, nevertheless, as in the example of 'Mood: Emoticons', further research should be carried out on this issue.

Although the comprehension instances analysed for previous parameters did not draw significant results for visual comprehension and overall meaning, all comprehension instances -text, image and sense- reveal important data in this case.

Considering overall comprehension, although not accepted in pre-preference questionnaires, subtitles including icons achieve a better comprehension in all groups, and mainly among Hearing Impaired users. Surprisingly, even subtitles with no context/sound information –

'None'- provide better comprehension results in all groups than subtitles with 'Description'.

As it happens with 'Mood: None', Hearers achieve better comprehension levels reading subtitles with no additional information than reading subtitles with description or iconic representation. The answer to this could come in the fact that context/sound information not provided by the subtitle/icon is conveyed through the soundtrack.

If we analyse the three comprehension instances separately, the data obtained highlight the differences existing among groups in data extraction from the three sources of information tested. In the case of text information, 'Description' obtains the best comprehension results, being Hearers the group with higher scores (80%). It is also representative the fact that only the groups with hearing remains -Hearers/Hard-of-Hearing- achieve comprehension at some extent, whereas Deaf viewers got a 0% comprehension.

When it comes to visual information -Image- results vary more significantly. As it happened with paralinguistic information, Hearers achieve their better understanding with iconic representation or no representation at all (80%), whereas the Hard-of-Hearing would prefer 'Description' (70%), and Deaf users, however, seem to obtain a better visual understanding when no context information is provided (80%).

Finally, for the third source of information analysed -'Sense'-, co-occurring results show that 'Sound: None' provide better comprehension data among users with some hearing -Hearers (100%) and Hard-of-Hearing (100%)-. Maybe the possibility of relying partially on sound provides the extra information required. However, further research should be carried out at this stage to confirm this hypothesis.

All in all, the best average comprehension for all groups is achieved with the 'Sound: Icon' format (80%), possibly relying on the 'Comprehension balance' already mentioned. However, it is important to highlight that only 50 to 68% of the iconic information represented through 'Icons' was perceived by the final users.

Speed

As already described in Chapter I, 100% of the Hard-of-Hearing would choose 'Verbatim' subtitling as their preferred speed, even if this style may not be technically viable.

The linguistic component of SDH has been present in the UNE standards since its origins, and has also been studied by various authors in Spain (See Chapter I). The UNE-153010 standards in use depict

national practices limited by the spatiotemporal restrictions in subtitling: 37 characters per line, a subtitling speed of 19 characters per second and a maximum display time of 6 seconds per subtitle[9]. These standards, that support verbatim subtitling when the previous conditions can be respected, do also mention a specific category – 'Subtitling for people with reading/writing disabilities'. This secondary form of subtitling respects almost the same patterns of the SDH standards, but drops reading speed to 12 characters per second. Nevertheless, this subtitling style is not present either on TV or on any other audiovisual format.

With 'Verbatim' subtitles the 'Time to First Fixation' is considerably shorter for Deaf and Hard-of-Hearing users (0.20801 sec.), especially when compared to 'Edited' (0.24731 sec.) or even 'Standard' subtitles (0.24016 sec.). The reason could lie in the reading process developed for every modality: the speed at which subtitles are passed forces readers to adopt faster eye movements and reading times (D'Ydewalle, 1991). However, it is also significant that standard subtitles show similar reaction times both among Deaf (0.24349 sec.) and Hard-of-Hearing participants (0.24016 sec.), whereas edited subtitles reveal longer reaction times among Hearing (0.38765 sec.) and Deaf (0.31645 sec.) participants. The results among this specific group are particularly surprising, and, as in previous examples, would require further research.

But the 'Mean Reading Time' is the part of the study that draws more important data to support the nature of every modality: 'Verbatim' subtitles require 55 – 70% of the reading time, leaving a 45-30% of the viewing time to the rest of the scene -visuals. 'Edited' subtitles are the modality that requires less reading time -38-49% of the viewing time- by users with hearing remains. On the contrary, the Deaf invest the longest reading times in processing this modality of subtitles. However, comprehension rates are extraordinary low for all the groups: a 40% (H), 50% (D) and 25% (HoH). Although the levels reached by Deaf viewers are the highest ones for this subtitling format among the three groups, the mean text comprehension rate is the lowest one from the three subtitling speeds -38.3%.

Table 4. Mean reading time: Speed

	Standard	Edited	Verbatim
Deaf	47.9%	55.4%	70.95%
Hard-of-Hearing	48.5%	38.08%	60%
Hearers	51.3%	49.1%	55.8%

On the other hand, although 'Verbatim' requires longer fixation and reading times than edited and standard subtitles, comprehension does not improve, not even in those cases in which the reading time

rises, with comprehension rates than only reach a 60% in the case of Hearers.

Confronting users with speed preferences after the test, only 50% among the Hearers insisted on their preference for 'Verbatim', whereas the other 50% would prefer standard subtitles. As for the Hard-of-Hearing, 50% would support 'Standard' -against the 60% who would support edited subtitles before the test. Further research is still necessary in order to modify visual contents and word-rates to confront these results.

Comprehension

Although the analysis of comprehension has been present at every different step of the study, the final results are worth including a specific analysis. As expected, Hearers were the group with the best comprehension scores (1.57 out of 2), with a better comprehension in general content (1.66), then textual information (1.53) and, finally, visual information (1.51).

Both hearing impaired groups -Deaf and Hard-of-Hearing showed similar comprehension deviations, with their best comprehension performance in visual contents -1.39 among the Hard-of-Hearing and 1.48 among the Deaf- and their worst comprehension results obtained in subtitle processing -1.18 for the Hard-of-Hearing and 0.94 for the Deaf.

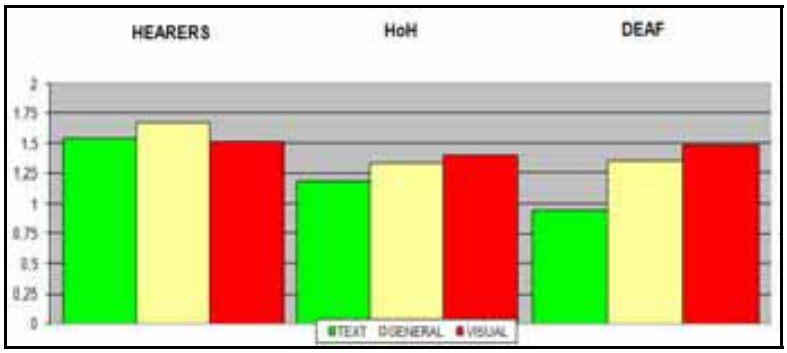

Figure 6: General results for comprehension per groups and instances.

As can be seen the average comprehension among the Deaf are still very poor, hardly obtaining 1.25 out of 2. The Hard-of-Hearing, although more skilled in reading tasks due to their familiarity with spoken Spanish and with some hearing remains, do not obtain significantly better results (1.30). Although differences among comprehension instances are not as significant as in the case of the Deaf, textual comprehension remains very poor.

These data provide an accurate overview of the benefits viewers are obtaining from SDH nowadays. Future research should concentrate both on the aesthetic and technical aspects of the subtitles, as well as on their linguistic component in order to increase comprehension results.

Conclusions

The present study has shed some light into some of the current SDH practices in Spain as well as on the comprehension processes viewers undergo. As it has been shown, many of the subtitling standards currently in use are really meeting the needs of the final audiences, whereas some could be improved by adopting more accurate practices.

Considering all the parameters individually, and taking into account the different variables studied for every parameter, the best subtitling styles could be a combination of these:

From a typographical perspective, the options 'Border' and 'Shadow' seem to get better results than the 'No Border'/'No Shadow' variables among Hearers and Hard-of-Hearing participants. In contrast to this, the Deaf invest longer time reading subtitles without borders and shadows, but their comprehension results are better.

The use of 'No Box' -generalised practise in DVD subtitling in Spain- has proved to be the most beneficial option for comprehension purposes for all groups. However, even if it may entail longer reading processes among Hard-of-Hearing participants, image comprehension seems to be improved by not using background boxes.

Results derived from the analysis of the aesthetic parameter 'Placement' reveal that although 'Mixed' subtitles have good comprehension results for Hard-of-Hearing viewers, Deaf and Hearing participants showed poorer comprehension data. Thus, 'Bottom' subtitling, currently in use only in DVD subtitling, is the most performing style in terms of viewing time and related comprehension.

Very much related to placement, 'Justification' points into two different directions: 'Centred' subtitles -as recommended by the UNE-153010- do obtain better viewing and comprehension results among Hearers and Deaf participant, whereas the Hard-of-Hearing have better comprehension results with left-aligned texts.

'Colour' has proved to be the best identification technique in terms of comprehension for all groups, as both 'Tags' and 'Displacement' require longer reading times and do not show better

comprehension. User preferences, influenced by the Spanish SDH tradition, are in line with this result.

In the analysis of the representation of the extralinguistic information, here called 'Mood' -paralinguistic information- and 'Sound' –sound/context information-, the results obtained reveal that the use of 'Emoticons' and 'Icons' could improve reading comprehension and reduce the mean reading time among hearing impaired viewers. However, given that only 30% to 50% of the info was perceived among these groups, 'Description' is the option that best meets comprehension levels for both parameters in current practises.

All in all, among the nine parameters tested in the DTV4All project, the most striking results came from the analysis of 'Subtitle Speeds' –'Standard', 'Edited', 'Verbatim'. Whereas hearing impaired users -mainly the Hard-of-Hearing- claim for a verbatim reproduction of dialogues, the results drawn from the study reveal that this speed does not benefit comprehension in any case. Adapted subtitles, often recommended by scholars, do not obtain the most successful results in terms of comprehension, not even among Deaf participants. These results support the use of 'Standard Subtitles' as the option that best meets the needs of all three groups in terms of comprehension.

According to the results drawn by the global analysis, the "Perfect" subtitling standards would include the following parameters:

	ID	Place.	Justi.	Box	Border	Shad.	Emot.	Icons	Speed
H	Colour	Top	Centre	N	Border	Shad.	Descr.	Descr.	Stand.
D	Colour	Bottom	Centre	N	N	N	Descr./ (Emot.)	Descr.	Stand.
H o H	Colour	Mixed	Left	N	Border	Shad.	(Emot.)	Descr.	Stand.

Figure 7: Comparative results of the DTV4All project in Spain per groups.

As can be seen in the above table, there does not seem to be a single format that meets the need of all subtitle users. Further research would need to focus on whether the combination of these parameters would really improve the current subtitling practices.

Notes

1. The languages taking part in the DTV4All project were Danish, English, German, Italian, Polish, French and Spanish.

2. The European Association for Studies in Screen Translation (ESIST), collected data on standard subtitling practices throughout the world in the year 2000.

3. A selection of clips was made and the final selection of 23 excerpts was made by a group of judges. A similar practice was adopted for the ellaboration of comprehension questionnaires.

4. Some participants taking part in the eye-tracking pilot tests did not finish the session. Some were tired and left before the end, others were not concentrated and their data showed non-valid recordings. In other cases the colour of their eyes -light eyes- did not draw valid data, etc.

5. 'Rough subtitled programmes' refer to the subtitled clips used for the pilot tests, where no parameters were tested and a 'standard' reading pattern was identified.

6. At the time of submitting this article the standards still in use were the UNE-153010 standards issued in 2003. This included three different alternatives for character identification, being colour identification the only one traditionally applied. The 2012 version of the standards, released in May 2012, also includes three eliminatory alternatives -colour, tags, and hyphens. Displacement is no longer considered an acceptable variable.

7. The lack of consistency in the representation of extralinguistic information in Spanish SDH make it possible to find paralinguistic information represented in the top right corner of the scene.

8. The new version of the UNE-153010 does no longer include the representation of emoticons for paralinguistic information. Nevertheless, they are still being used by TV broadcasters.

9. The UNE-153010 standard issued in 2003 marked a SDH speed of 19 characters per second. The new version issued in 2012 has reduced this speed to 15 characters per second. However, as the new version was still under revision when the project was carried out, the parameters of the former edition were used.

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10.6.4

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