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Identifying parameters for creating Easy to Read subtitles¹

Abstract

Access services that provide audiences with cognitively accessible audiovisual content are less studied than those which target sensory barriers (e.g., intralingual subtitles, audio descriptions). One factor that limits said development is the lack of evidence-based parameters for production. This exploratory study aims establish parameters for Easy to Read subtitles by comparing the Easy to Read (E2R) guidelines by Inclusion Europe and the Spanish standard for subtitling for the Deaf and Hard-of-Hearing (SDH). The comparison yielded a set of 16 parameters for production that are mentioned in both guidelines as well as 3 parameters that emerged from the E2R guidelines.

Keywords: *cognitive accessibility, easy access services, easy-to-read audiovisual content, Easy to Read subtitles.*

1. Introduction

Access services such as audio descriptions and intralingual subtitles provide accessible audiovisual content to audiences with sensory disabilities (ORERO 2004; MATAMALA and ORERO 2013; GRECO 2016). The applied branch of Translation Studies demands that translators use evidence-based tools for creation (RABADÁN 2010; TOURY 1995, 2012). An example of such, taken from the field of subtitling for the Deaf and Hard-of-Hearing (SDH), are the guidelines proposed by NEVES (2005) in her descriptive research. The parameters studied with eye-tracking technology by ARNÁIZ-UZQUIZA (2012b) also fall into this category as do the quantitative and qualitative data about viewers' preferences provided by ROMERO-FRESCO (2015) in the volume dedicated to the quality of subtitles. Lastly, another evidence-based tool is the Spanish Standard for SDH, UNE 153010:2012, (AENOR 2012).

¹The authors would like to thank Pilar Orero. This work has been carried out within the framework of the Doctoral Programme of the Autonomous University of Barcelona.

The lack of empirically-based tools for producing Easy to Read subtitles requires that translators resort to experience-based ones such as the guidelines published by Inclusion Europe in 2009. Entitled *Information for All*, the guidelines are an output from the European project Pathways which aimed to foster life-long learning for people with intellectual disabilities. The resulting European guidelines are in English with translations into 15 other languages, and are available at <https://easy-to-read.eu/european-standards/>.

This exploratory research draws upon the proposal by BERNABÉ and ORERO (2019) that 'easy'² access services can be developed by merging guidelines from the world of Audiovisual Translation and Easy to Read. The aim is to describe to what extent Easy to Read and SDH parameters overlap and can interbreed. Though such "marriage(s) of convenience" (MATAMALA and ORERO 2013: 1) already exist, there are also constraints as identified by scholars in the fields of interlingual and intralingual real-time subtitles (DÍAZ CINTAS and REMAEL 2007; EUGENI 2008; ROMERO-FRESCO 2009; SZARKOWSKA 2013). The authors point out that each modality needs its own applied parameters to be able to satisfy the needs of a specific targeted audience within specific contexts.

The next section describes the compared documents and the methodology followed.

2 Methodology

The structure set out in this study is based on a two-stage workflow to produce E2R subtitles proposed by the authors. The first stage focuses on creation by using parameters that consider end-users' needs, while the second focuses on validation by involving end-users as recommended by scholars and current professional practice in E2R (SHARDLOW 2014; SAGGION 2017; PLENA INCLUSIÓN MADRID 2018; INCLUSION EUROPE 2009; IFLA 2010). The figure below illustrates the two stages.

²Derived from the use of Easy to Read.

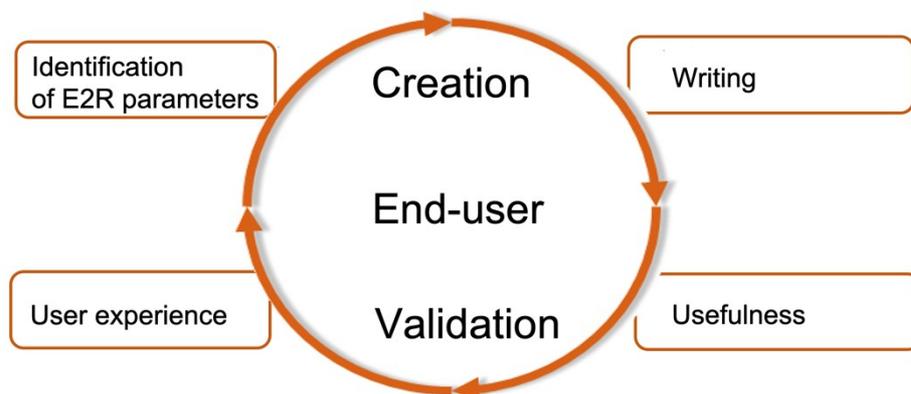


Figure 1: User-centric workflow for producing E2R subtitles

This study focused on the first stage and, more specifically, on the identification of subtitling parameters. The next sections provide an overview of the identified parameters as well as recommendations from the comparison of the Easy to Read guidelines *Information for All* and the Spanish standard for Subtitling for the Deaf and Hard-of-Hearing.

3 Results

The order of comparison followed the classification used in the Spanish SDH standard (UNE 153010:2012):

- visual (section 4)
- temporal (section 5)
- speaker identification (section 6)
- sounds effects (section 7)
- contextual information and off-screen voice (section 8)
- music and songs (section 9)
- editorial criteria (section 10)

For each section, comparison data revealed parameters and recommendations that were:

- **shared**, which expressed shared recommendations by E2R and SDH,
- **non-shared**, which brought to light contrary recommendations,
- **only E2R**, which derive from E2R and are not included in the SDH standard, and
- **only SDH**, which lack a corresponding E2R recommendation.

The comparison yielded a total of 53 parameters: 16 were found in both documents, while 34 were exclusively in the SDH standard and only 3 in the Easy to Read guidelines. Table 1 provides an overview of the distribution.

Table 1: Overview of the results

Section	Parameters in both documents:		Parameters in one document		Total
	shared recommendations	non-shared recommendations	SDH	E2R	
Visual	6	-.	4	3	12
Temporal	1	1	1		3
Speaker identification	1	-.	8	-.	9
Sounds effects	-.	-.	7	-.	7
Contextual information	-.	-.	6	-.	6
Music and songs	-.		5	-.	5
Editorial criteria	4	3	3	-.	10
Total	12	4	34	3	53

The overview shows that 18 parameters are found in both documents, which accounts for a 34,5% overlap. However, a closer look reveals that only 20% of the recommendations are shared. The following sections present the results ordered by section.

3.1 Visual presentation

Section 4 of the SDH standard includes parameters regarding how subtitles should be presented visually on-screen. A total of 13 parameters were identified: 10 from the SDH standard and 3 from the E2R guidelines. Out of the 10 parameters from the SDH standard, 6 are also found in the E2R guidelines.

Table 2: Comparison of visual aspects

	Parameter	SDH recommendation	E2R recommendation
1.	On-screen placement: all subtitles except	<ul style="list-style-type: none"> • Centred • Lower bottom of the screen, 	<ul style="list-style-type: none"> • Bottom of the screen • Subtitles should be in the same

	Parameter	SDH recommendation	E2R recommendation
	sound information	except if they relevant information is covered.	position on the screen throughout the whole video.
2.	On-screen placement: sound information	Whenever possible: on the upper righthand corner of the screen	.-.
3.	Number of subtitling lines	<ul style="list-style-type: none"> • Maximum two lines • In exceptional cases, three lines 	Try not to use too many layers of subtitles
4.	Static text lines	Static	.-.
5.	Line per speaker	New line per speaker	.-.
6.	Sentences per line		Always start a new sentence on a new line.
7.	Characters per line	Maximum 37 characters per line	.-.
8.	Minimum font size	Legible according to the size of the screen	<ul style="list-style-type: none"> • Check that you can also read them on a small screen. • Always use large writing. You should use writing which is at least the size of Arial 14.
9.	Maximum font size	The maximum size should allow for the display of a 37-character subtitle	Subtitles should be easy to read. For example, use larger writing than usual writing in a movie subtitle.
10.	Font-type	Use a font-type with the greatest legibility	<ul style="list-style-type: none"> • Try to use only 1 type of writing in your text. • Never use a special writing design. • Never use serif fonts. • Never use writing that is too close together.
11.	Contrast: box and text	4.5 minimum	<ul style="list-style-type: none"> • There must be a strong contrast between subtitles and the background. <p>This can be difficult because the background of a video is changing. One way is to have a dark line at the bottom on which the subtitles appear. But this line should be transparent so you can still see the film.</p>

	Parameter	SDH recommendation	E2R recommendation
			<ul style="list-style-type: none"> • If there is not enough contrast between the background and the subtitles, change the font colour, not the position.
12.	Text alignment	.-	<ul style="list-style-type: none"> • Align your text to the left of the page. • Never justify your text.
13.	Customisation options: (Personalisation)	.-	It should be possible for the viewer to hide the subtitles at any time.

The six parameters found in both document shared recommendations regard on-screen placement, number of subtitling lines, minimum and maximum font size, font type, and contrast. Concerning on-screen placement, recommendations agree on a lower-bottom position, which should be maintained throughout the show. The SDH standard specifically advises to use a centred position and to change it only if a subtitle line is covering relevant information. As for the number of subtitle lines, E2R advises not to use too many layers of subtitles, while SDH sets a limit of 2 lines or a maximum of 3, to be used in exceptional cases.

With regards to font-type and contrast, the reviewed documents recommend fonts that support legibility. E2R recommendations are specific and warn about the use of special designs, different font-types and sans-serif or condensed fonts. Both recommendations also agree on the need for good contrast. While SDH refers to the 4.5 minimum as recommended by WCAG guidelines (W3C 2016), E2R provides guidelines for implementation.

With regards to font size, the recommendations agree that subtitles should adapt to the size of the screen. However, a closer look shows that E2R recommends using a large font of at least Arial 14 and larger than usual writing in movie subtitles. The fulfilment of this requirement may contradict the abovementioned recommendation of avoiding many layers of subtitles.

The four parameters classified as Only SDH were: on-screen placement of sound information; static lines; line per speaker; and (d) characters per line. The absence of E2R recommendations may be grounded on the fact that E2R guidelines have been less studied in audiovisual contexts as already mentioned above.

Lastly, comparison brought to light three parameters deriving from E2R: (a) ‘Customisation’, (b) ‘Text alignment’ and (c) ‘Sentences per line’. As for the first, E2R recommendations outline the need for personalisation of the service and ask for customisable subtitles that can be turned off/on at any time during viewing.

The parameter ‘Text alignment’ calls for left-alignment to support readability and states to never justify texts. While this recommendation is not included in the Spanish standard, empirical data collected by ARNÁIZ (2012b) showed that reading speed of all groups, and especially of SDH participants, was greater with left-aligned texts as compared to centred texts. Lastly, the E2R recommendation ‘New line per sentence’ is partially shared with other SDH recommendations concerning how to present utterances from dialogues (KARAMITROGLOU 1998; BBC 2019).

3.2 Presentation of subtitles: temporal aspects

Section 5 of the SDH standard includes three parameters pertaining to time-based aspects about the temporal display of subtitles. These are on-screen time of subtitles, synchrony, and latency in the case of real-time subtitling. The comparison yielded a total of 3 parameters: 2 found in both documents, 1 new parameter from E2R, and 1 mentioned exclusively in the SDH standard. Table 3 shows the results.

Table 3: Temporal aspects

ID	Parameter	SDH recommendation	E2R recommendation
14.	On-screen time	<ul style="list-style-type: none"> • Follows the rhythm of the source • Supports reading • Usually 15 characters per second (cps). 	Viewers should have enough time to read the subtitles.
15.	Synchrony	Subtitles should match lip movements, cuts, speech, and sound information	Subtitles should be on the screen as long as possible.
16.	Latency in real-time subtitling	<ul style="list-style-type: none"> • As little as possible • Less than 8 seconds is recommended 	.-.

Temporal aspects are closely related to how a person reads and how she/he performs in terms of comprehension. SDH research in this field is extensive and has evidence-based rules such as the use of 35-37 characters per line and on-screen times from 1 to 6 seconds (DÍAZ CINTAS 2003, ROMERO-FRESCO 2010, ARNÁIZ-UZQUIZA 2012a).

Comparative data show that the E2R recommendations are vague in this regard, which points to a lack of knowledge about how persons with reading difficulties read subtitles and how they perform in terms of comprehension. SHANAHAN (2019: 1) explains that the study of habits and skills in struggling readers should take into consideration key factors beyond speed rates such as the ability "to decode easily and continuously and to maintain their concentration" during reading.

Lastly, recommendations seem to disagree with regards to synchrony. While SDH advocates for synchrony with the spoken word, E2R advises that subtitles should be on screen as long as possible, which could affect synchrony and rhythm as defined in SDH.

3.3 Parameters for speaker identification

Section 6 of the standard includes nine parameters regarding how to identify speakers on and off the screen. The comparison did not yield any parameters from E2R. While three parameters were found to overlap, only one recommendation was shared.

Table 4: Speaker identification

ID	Parameter	SDH recommendation	E2R recommendation
17.	Technique	Recommended techniques by order of priority: <ul style="list-style-type: none"> • Colours • Labels • Dashes 	.-.
18.	Colours: changes in colour assignation	None, unless the plot requires it.	.-.
19.	Colours: difference between colours	Minimum value: 255	.-.

ID	Parameter	SDH recommendation	E2R recommendation
20.	Labels: use of labels for speaker identification	Use only to support clarity and when the use of colours is not possible or does not support clarity.	-.-
21.	Labels: position	Labels should precede the subtitle	-.-
22.	Labels: editing	<ul style="list-style-type: none"> • Labels should: • include the name of the speaker, a shortcut, or an objective characteristic of the speaker • use capital letters • use brackets 	-.-
23.	Labels: use of abbreviations	Abbreviation may be used in the labels to identify characters	-.-
24.	Dashes: use in dialogs	Use only to support clarity when the other two techniques, colours and labels, cannot be used	-.-
25.	Off-screen voice: speaker identification	Use the same technique as that used for speaker identification	<ul style="list-style-type: none"> • A background voice should only be speaking about things that people can see on the screen. • If you use a background voice, it can be helpful to present the person first before he or she starts talking in the background.

The comparison shows that both documents agree on the need for a parameter to signal a voice speaking in the background (ID 25: Off-screen voice). However, the underlying motivations differ. While SDH recommendations focus on providing a visual mark for a voice in off, E2R focuses on providing viewers with information about what a background voice is and what type of information a background voice should provide.

Lastly, SDH recommendations in this section advise to use colours and abbreviations for identification purposes, neither of which are recommended in the E2R guidelines used in this study. However, validation practice in E2R has shown that the use of colours in headings and sub-headings supports E2R readers (REAL PATRONATO SOBRE LA DISCAPACIDAD 2015). The Spanish standard on Easy to Read (UNE 153101 EX) also supports this view and includes the use of colour as a technique to visually separate headings from the content in section 7.1.

3.4 Sound effects

Section 7 of the SDH standard lists seven parameters pertaining to the description of sound effects in subtitles. The comparison did not yield parameters arising from the E2R guidelines. Table 5 show that the E2R guidelines do not consider such parameters and only general recommendations may be linked to them.

Table 5: Sound effects

ID	Parameter	SDH recommendation	E2R recommendation
26.	Recorded subtitles: description of sound effects	Describe sound effects in the subtitles if it is necessary to follow the plot	<ul style="list-style-type: none"> • Always make sure you give people all the information they need. • Do not give people more information than they need to understand your point. • Only give them the important information.
27.	Real-time and semi-recorded subtitles: description of sound effects	If possible, use subtitles for describing sound effects.	<ul style="list-style-type: none"> • Always make sure you give people all the information they need. • Do not give people more information than they need to understand your point. • Only give them the important information.
28.	Rhythm and synchrony of sound effects	Adjust subtitles to the rhythm of sound and keep synchrony in order to convey the same message as that in the sound information.	-.-
29.	Format:	<ul style="list-style-type: none"> • Place the information in brackets. • Use capitals for the first letter. 	-.-
30.	Avoid redundancy	When the information is also conveyed visually, the sound	-.-

ID	Parameter	SDH recommendation	E2R recommendation
		effect should not be described.	
31.	Nominalisation	Uses nominalisation to describe sound effects.	.-
32.	Information conveyed	The subtitle should describe the source of the sound.	.-

These results tend to segue into a discussion about whether rendering this type of information is necessary; if it supports understanding or if on the contrary it leads to overload. The only references found in the E2R guidelines are general and warn about the risks of providing too much or too little information: "Do not give people more information than they need to understand your point", "Always make sure you give people all the information they need", and "Only give them the important information" (INCLUSION EUROPE 2009: 17).

3.5 Contextual information and off-screen voice

Section 8 of the SDH standard includes six parameters. Contextual information is provided in SDH subtitles in order to render non-verbal elements conveying linguistic and paralinguistic information. Non-verbal linguistic information is part of the linguistic information communicated in a situation and includes, for instance, pitch, accent, and intonation. In turn, non-verbal paralinguistic information refers, for instance, to speakers' attitudes and emotions (LLISTERRI 2019).

The comparison shows that the E2R guidelines do not consider these parameters. As in the previous section, only general recommendations apply.

Table 6: Contextual information and background voice effects

ID	Parameter	SDH recommendation	E2R recommendation
33.	Pre-recorded subtitles	Provide subtitles with contextual information ³ .	<ul style="list-style-type: none"> • Always make sure you give people all the information they need. • Do not give people more information than

³Example: (IRONICALLY) How nice he is.

			<p>they need to understand your point.</p> <ul style="list-style-type: none"> • Only give them the important information.
34.	Real-time and semi-recorded subtitles	Provide subtitles with contextual information, where possible.	<ul style="list-style-type: none"> • Always make sure you give people all the information they need. • Do not give people more information than they need to understand your point. • Only give them the important information.
35.	Format	<ul style="list-style-type: none"> • Use brackets to display contextual information. • Use capitals for all letters. 	-.-
36.	Position	Place contextual information before the subtitled information.	-.-
37.	Synchrony	Words and subtitles should be synchronous	-.-
38.	Off-screen voice	Use italics, if possible	-.-

The E2R guidelines do not mention parameters to convey contextual information. Only general E2R recommendations seem to apply, which outline the need to explore what information needs to be made explicit, when, and how.

The use of capital letters and italics (ID 35 and 38) are not shared by the E2R recommendations, which warn specifically about their use.

3.6. Music and songs

Section 9 of the SDH standard lists five parameters regarding how to subtitle music and songs. As in sections 7 and 8, Sound effects and Contextual information, no parameters were found in the E2R guidelines.

Table 7: Music and songs

ID	Parameter	SDH recommendation	E2R recommendation
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39.	Music	<ul style="list-style-type: none"> • Provide subtitles when it is relevant for understanding the plot. • Provide at least one of these topics: <ul style="list-style-type: none"> ○ type of music ○ sensation/feeling conveyed ○ identification data (author, title, etc.) 	<ul style="list-style-type: none"> • Always make sure you give people all the information they need. • Do not give people more information than they need to understand your point. • Only give them the important information.
40.	Format	Follow the format of the sound provided	--
41.	Songs	Provide subtitles when it is relevant for understanding the plot.	<ul style="list-style-type: none"> • Always make sure you give people all the information they need. • Do not give people more information than they need to understand your point. • Only give them the important information.
42.	Songs: tagging	<ul style="list-style-type: none"> • Begin each subtitle with the note symbol or a hashtag. • Add another note symbol or a hashtag to the end of the last subtitle 	--
43.	Songs: singer identification	Use the same technique as for character identification	--

As in the previous sections, only E2R recommendations may apply. In addition, in this section the recommended use of special characters to tag songs (ID 43) goes against the E2R guidelines, which warn about the use of special characters.

3.7. Editorial criteria

Section 10 of the SDH standard covers ten parameters concerning language usage, grammar, punctuation, and style guidelines. The comparison shows that seven parameters overlap, but that recommendations are not always shared.

Table 8: Editorial criteria

ID	Parameter	SDH recommendation	E2R recommendation
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44.	Line breaks	<ul style="list-style-type: none"> • Use narrative pauses and silence. • Use grammatical pauses and punctuation. • Write conjunctions and nexus in the bottom line. • Do not separate verbal, nominal or prepositional syntagma. 	<ul style="list-style-type: none"> • If you have to write 1 sentence on 2 lines, cut the sentence where people would pause when reading out loud. • Where possible, 1 sentence should fit on 1 line. • Always start a new sentence on a new line.
45.	Hyphenation	Do not use hyphenation	Never split 1 word over 2 lines. This means never use a hyphen (-).
46.	Suspension points	<ul style="list-style-type: none"> • Do not use to divide one sentence in two different subtitles • Use suspension points according to the grammatical rules. 	<ul style="list-style-type: none"> • Avoid all special characters where possible.
47.	Grammatical rules and punctuation	Follow grammatical and punctuation rules.	Keep the punctuation simple.
48.	Official language	Follow the applicable criteria	.-
49.	Speakers and speech	Use correct grammar and spelling unless they are used to convey information which is necessary to understand the plot.	Do not use dialects.
50.	Abbreviations and symbols	Write out abbreviations and symbols that cannot be transcribed in the subtitle	<ul style="list-style-type: none"> • Avoid abbreviations • Avoid all special characters where possible.
51.	Numbering	<ul style="list-style-type: none"> • Write out numbers from one to ten. • Do not write numbers accompanying abbreviations, signs, or symbols. • Do not write out dates, hours, negative numbers or decimals 	<ul style="list-style-type: none"> • Write numbers as digits, not as words. • Never use Roman numerals. • Where possible, write dates out in full.
52.	Verbatim	Use verbatim subtitles where possible	.-
53.	Real-time subtitles	Try to reach the highest accuracy possible	.-

The reviewed documents share a high number of editorial parameters. With regards to E2R, its recommendations are specific enough for creation and validation. Furthermore, the comparison identified a lack of parameters and recommendations for real-time contexts.

3.8 Parameters for Easy to Read subtitles

The table presents the 16 shared parameters and the 3 from the E2R guidelines. Only the E2R recommendations have been included. This table is for informative purposes only.

Table 8: Overview of shared parameters

Visual aspects		
1.	On-screen placement: all subtitles except sound information	<ul style="list-style-type: none"> • Lower bottom of the screen, except if they cover relevant information. • Subtitles should be in the same position on the screen throughout the whole video.
2.	Number of subtitling lines	Try not to use too many layers of subtitles.
3.	Sentences per line	Always start a new sentence on a new line.
4.	Minimum font size	Legible according to the size of the screen <ul style="list-style-type: none"> • Check that you can also read them on a small screen. • Always use large writing. You should use writing which is at least the size of Arial 14.
5.	Maximum font size	Subtitles should be easy to read. For example, use larger than usual writing in movie subtitles.
6.	Font type	Use a font-type with the greatest legibility <ul style="list-style-type: none"> • Try to use only 1 type of writing in your text. • Never use a special writing design. • Never use serif fonts. • Never use writing that is too close together.
7.	Contrast: box and text	<ul style="list-style-type: none"> • There must be a strong contrast between subtitles and the background: One way is to have a dark line at the bottom on which the subtitles appear. But this line should be transparent so you can still see the film. • If there is not enough contrast between the background and the subtitles, change the font colour, not the position.
8.	Text alignment	<ul style="list-style-type: none"> • Align your text to the left.

Visual aspects		
		<ul style="list-style-type: none"> • Never justify your text.
9.	Customisation options: (Personalisation)	It should be possible for the viewer to hide the subtitles at any time.
Temporal aspects		
10.	On-screen time	Viewers should have enough time to read the subtitles.
11.	Synchrony	Subtitles should be on the screen as long as possible.
Speaker identification		
12.	Off-screen voice: speaker identification	<ul style="list-style-type: none"> • A background voice should only be speaking about things that people can see on the screen. • If you use a background voice, it can be helpful to present the person first before he or she starts talking in the background.
Editorial criteria		
13.	Line breaks	<ul style="list-style-type: none"> • If you have to write 1 sentence on 2 lines, cut the sentence where people would pause when reading out loud. • Where possible, 1 sentence should fit on 1 line.
14.	Hyphenation	Never split 1 word over 2 lines. This means never use a hyphen (-).
15.	Suspension points	<ul style="list-style-type: none"> • Avoid all special characters where possible.
16.	Grammatical rules and punctuation	Keep the punctuation simple.
17.	Speakers and speech	<ul style="list-style-type: none"> • Use correct grammar and spelling unless they are used to convey information which is necessary to understand the plot. • Do not use dialects.
18.	Abbreviations and symbols	<ul style="list-style-type: none"> • Avoid abbreviations • Avoid all special characters where possible.
19.	Numbering	<ul style="list-style-type: none"> • Write numbers as digits, not as words. • Never use Roman numerals. • Where possible, write dates out in full.

4. Conclusions

The comparison has shown that the reviewed documents refer to similar parameters with regards to visual and temporal aspects, editorial criteria, and speaker identification. The classification of

the parameters also brought to light that the E2R guidelines report less on how to convey music, sound, and contextual information. In addition, specific E2R parameters were found.

Overall, the outcome supports the initial statement that access services can benefit from knowledge from related services but will still inevitably retain their own characteristics. This is evident especially when comparing specific recommendations. While the reviewed guidelines often agree about the type of parameter, the exact recommendations within differ so as to meet the needs of the targeted audience, in this case, persons with reading and learning difficulties.

The study has also highlighted the need for further research in order to clarify several remaining problem areas. One of these is, for instance, to what extent the need for bigger fonts may lead to more than two subtitling lines. Regarding sound, music and contextual information, it would be useful to study how redundant information is received by E2R audiences, who usually perceive information iso-semiotically, meaning through the same channels as the original.

With regards to synchrony with images, there is a need to understand to what extent the E2R recommendation "Subtitles should be on the screen as long as possible" differs from current subtitling practices. Another unresolved question concerns reading speeds. Additionally, E2R editorial recommendations for written documents such as avoiding italics, writing out numbers and dates and avoiding special characters and colours should be explicitly studied for subtitles.

Lastly, the E2R recommendation to "Always make sure you give people all the information they need" brings up the question as to whether E2R subtitles and access service should have a more informative function. One example is the recommendation [...] "to present the background voice before they start talking on the background".

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