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A Contrastive, Quantitative Analysis of Deletion in German and Spanish Subtitles for the Deaf and Hard-of-Hearing

Análisis contrastivo y cuantitativo de la omisión en los subtítulos para sordos en alemán y español

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ABSTRACT: Accessibility plays a more and more important role in Translation Studies. A major issue of accessible communication is subtitling for the deaf and hard-of-hearing. Despite the interest in SDH, few studies have considered in depth the application of technical, spatial, and temporal requirements in combination with deletion, especially as provided by modern streaming platforms. This paper presents a contrastive analysis of SDH in recent Spanish and German Netflix series with respect to the amount of deletion and simultaneous violation of guidelines. In summary, adhering to the guidelines and retention are often mutually exclusive, i.e., guidelines can be met when deleting more of the original soundtrack, and verbatim subtitles often require to violate guidelines. The results of this study highlight that more recipient studies are needed to adapt the guidelines accordingly and make the best decision between the opposing options.

KEYWORDS: SDH; corpus analysis; deletion; guidelines; quantitative analysis.

RESUMEN: La accesibilidad desempeña un papel cada vez más importante en los estudios de traducción. Uno de los principales problemas de la comunicación accesible es el subtítulo para personas sordas. A pesar del interés que suscita, pocos estudios han considerado en profundidad la aplicación de requerimientos técnicos, espaciales y temporales en combinación con la omisión, especialmente tal y como la ofrecen las modernas plataformas de *streaming*. Este artículo presenta un análisis contrastivo de los SpS en series españolas y alemanas recientes de Netflix con respecto a la cantidad de omisiones y la violación simultánea de las directrices. En resumen, su cumplimiento y la

retención son muchas veces mutuamente excluyentes, es decir, las directrices pueden cumplirse cuando se elimina más de la banda sonora original y los subtítulos literales requieren a menudo incumplir las directrices. Los resultados de este estudio resaltan que se necesitan más estudios sobre la recepción para adaptar las directrices adecuadamente y tomar la mejor decisión entre las opciones opuestas.

PALABRAS CLAVE: subtítulos para personas sordas; análisis de corpus; omisión; directrices; análisis cuantitativo.

1. INTRODUCTION

The area of accessible communication is attracting growing attention because existing laws are increasingly implemented in the signatory states. Since 2003, access to information is considered a human right in the European Union (Díaz Cintas et al. 2007, 12). In 2008, the United Nations Convention on the Rights of Persons with Disabilities entered into force. Since then, the traditional media have expanded their offer in terms of accessibility, but also the rather new video-on-demand services have driven the accessibility turn to an impressive degree. Despite the interest in accessible media, comparatively few studies have considered subtitles or SDH, to be more precise (Romero Fresco 2022).

This work provides insight into the current practice of subtitling for the deaf and hard-of-hearing on a quantitative basis. It explores the correlation between spatial and temporal restrictions and the amount of changes regarding the original soundtrack and the respective subtitles, with a focus on deletion. Data were collected from four recent German and Spanish Netflix series. The findings prove that guidelines are violated continuously, but thereby allow for almost verbatim subtitles.

2. SUBTITLES FOR THE DEAF AND HARD-OF-HEARING

Subtitles for the deaf and hard-of-hearing are a form of intralingual translation because the original soundtrack of a particular language is encoded in written form in the same language in the subtitles so that deaf and hard-of-hearing persons with residual hearing capacity have an alternative access to the audio channel (Jüngst 2010, 123). More precisely, the uttered words (audio-verbal signs) and sounds (audio-nonverbal signs) are added to the original film as visual-verbal signs (writing). All other existing nonvisual-verbal signs (such as images) remain. The following considers the target group, type of translation, and SDH guidelines in more detail.

2.1. *Recipients of SDH*

The primary target group of SDH are deaf and hard-of-hearing persons. The hearing loss may be mild, moderate, moderately severe, severe, or profound (Mälzer et al. 2019). Consequently, some hard-of-hearing persons are able to partially understand and listen to the film dialogue, music, and sounds, while others do not even consider verbal language their mother tongue but sign language. Furthermore, hearing loss may be congenital, pre-

lingual, peri-lingual, or post-lingual, with a high, increasing amount of age-related hearing loss (Kaul 2006; Leonhardt 2010). Additionally, hard-of-hearing persons may use hearing aids or have cochlea implants to improve their residual hearing capacity. For these reasons, the ability of hearing verbal language and the competence of understanding it in oral and/or written form differ immensely from person to person. The target group is therefore described as extremely heterogeneous. Still, there is usually only one version of SDH available to fit all.

SDH are asked to be readable, complete, and as close to the audio as possible, since persons with residual hearing can match the audio with the subtitles (Neves 2018; Mälzer et al. 2019). Thus, deletion and other changes in the subtitles should be limited, but are sometimes necessary due to text-type-specific constraints concerning time and space.

2.2. *SDH as a Type of Translation*

As sketched above, subtitling for the deaf and hard-of-hearing is considered a type of intralingual translation (Jüngst 2010, 123). It is intersemiotic at the same time (Mälzer et al. 2019, 332f.): The audio channel is translated into the visual channel by writing down what is said or what sounds and music can be heard. The subtitles should be displayed synchronically to the soundtrack, and its spotting reflect the rhythm of the movie (Díaz Cintas 2020, 154ff.). Problems involve fast, overlapping dialogue exchanges and multiple shot changes.

As SDH aims at persons with residual hearing, among others, the subtitles should be literally close and semantically adequate to what can be heard because these people can compare both channels. However, speaking takes two thirds of the time that it needs to read the same message (De Linde and Kay 1999, as cited in Tamayo 2016, 276). Therefore, reduction is seen as a necessary imperative if one does not want to watch a movie at a slower pace (offered by some providers). A reduction of one third is regarded as necessary and acceptable if the movie itself does not allow for verbatim subtitles. There may of course be genre-specific differences in the amount of audio information able to be subtitled. This is part of the temporal restrictions that SDH underlie and goes hand in hand with the time that viewers should have to watch the images. This so-called display rate is measured in words per minute (wpm) and characters per second (cps) (Díaz Cintas 2020, 156ff.). Table 1 shows that 150 wpm correspond to a balanced ratio between reading (here: interlingual) subtitles and watching the images.

| viewing speed | | | +- time spent on subtitles vs. image (in %) | |
|---------------|---|-----|---|-------|
| cps | ≈ | wpm | subtitles | image |
| 10 | ≈ | 120 | 40 | 60 |
| 12,5 | ≈ | 150 | 50 | 50 |
| 15 | ≈ | 180 | 60-70 | 40-30 |
| 16,7 | ≈ | 200 | 80 | 20 |

Table 1. Time spent by viewers on interlingual subtitles and images depending on the display rate (as cited in Romero Fresco 2022)

The display rate for recent movies and series is usually higher (around 180 wpm and above, see Romero Fresco (2016, 68) for respoken subtitles) leaving less time to watch the film. This is due to the amount of characters per second that broadcasters and streaming platforms usually refer to in their guidelines and which exceed the respective 12.5 cps (see section 2.3.). Though the numbers presented here refer to interlingual subtitles and not to SDH, it seems reasonable to expect similar ratios for the respective target group. Another restriction is that words per minute are based on the average length of words in English (5 characters plus a blank space, Díaz Cintas 2020, 157) so that other languages, like Spanish and German, may have a different cps-wpm-relation. Also, some researchers give other cps-wpm-correlations as for example Díaz Cintas (2020, 157f.) who aligns 12 cps to 130 wpm, 15 cps to 160 wpm, and 17 cps to 180 wpm (cf. Tamayo 2016, 278f.). This is a fundamental area to be explored further. For the time being, the values given in Table 1 will serve as the basis for analysis. Apart from such values and restrictions made by guidelines, one should always keep in mind that enjoyment is usually a fundamental function of films.

2.3. *Guidelines*

The Netflix guidelines (Netflix 2023a; Netflix 2023b) that apply in this study are formulated with respect to semantic content in equally broad terms as guidelines by other providers. With regard to temporal and spatial restrictions, they determine explicitly that the maximum display rate of SDH is 20 cps (17 cps for hearing viewers). A subtitle should be displayed minimally for five sixth of a second and maximally up to seven seconds. The maximum number of subtitle lines is two with a maximum of 42 characters each. According to Table 1, this coincides with more than 200 wpm and almost no time left to watch the images, even if taking the values by Díaz Cintas (2020) as a basis. The values are however not completely transferable to intralingual subtitles, and deaf and hard-of-hearing viewers may have highly diverse reading abilities (Díaz Cintas 2020, 156). Therefore, Burnham et al. (2008, 401f.) recommend an average display rate of 130 wpm to accommodate both good and poor readers of the target group, which differs greatly from the previous specifications. So, it seems to remain unclear what values fit the target group best, but these differences reflect the general situation of subtitling very well. As stated by Díaz Cintas (2020, 151), a «considerable range of styles has developed over time affecting [...] their display rates, [...] among others».

Other such styles concern the pauses in between subtitles. Ivarsson and Carroll (1998) put forward a pause of four frames in order to allow the eye to realize that a new subtitle is on screen and has replaced the previous one. Other researchers argue that it needs six frames, but recently, some scientists have spoken out in favor of two frames (cf. Tamayo 2016, 280). At least as long as the subtitles following each other are distinct enough in their form and length, the eye is also able to realize a subtitle replacement in a shorter amount of time.

3. CORPUS ANALYSIS

Data were collected from two German and two Spanish Netflix series, namely *Dark* (Bo Odar 2017-2020) and *How to sell drugs online (fast)* (Montag, 2019) from Germany and *El vecino* (Vigalondo 2019; Caballero 2019) and *Élite* (Montero and Madrona 2018-2023) from Spain. The original film dialogue of each three episodes was transcribed and the respective SDH downloaded from Netflix. Table 2 shows the overall length of the three episodes, the number of subtitles and characters in the film dialogue vs. the subtitles as well as the quantity of reduction, and subtitles with SDH explanations regarding music and sounds.

| | Dark | How to sell drugs online (fast) | El vecino | Élite |
|---|-------------|--|------------------|--------------|
| episodes | 3 | 3 | 3 | 3 |
| length (h:mm) | 2:11 | 1:29 | 1:28 | 2:17 |
| subtitles (nr.) | 1181 | 1494 | 1466 | 2205 |
| characters (film dialogue) | 34448 | 50347 | 46687 | 58397 |
| characters (dialogue in subtitles) | 30327 | 45885 | 43380 | 58009 |
| subtitles / film dialogue | 88 % | 91 % | 93 % | 99 % |
| subtitles with SDH explanations | 36 % | 29 % | 19 % | 31 % |

Table 2. Overview of the SDH corpus

The table illustrates that each two series were comparable in length (*Dark* and *Élite* as well as *How to sell drugs online (fast)* and *El vecino*), but while *How to sell drugs online (fast)* and *El vecino* also reveal a comparable amount of subtitles within this amount of time, *Élite* shows almost the double amount of subtitles in the same time as *Dark*. All four series have a totally distinct amount of characters in the film dialogue, but *Élite* is the only one that hardly reduces this amount in the subtitles (dialogue only, disregarding target group specific explanations). It is striking that the subtitles in *Élite* contain almost the whole film dialogue (99 %), and even exceed the 100 %-mark taking into account additional information for the deaf and hard-of-hearing concerning music and sound that was not transcribed as part of the film dialogue. The other three series are comparable in their reduction rates, but do not achieve the reduction of one third regarding speaking-reading time (see section 2.2.).

The subtitles were, first, checked for exceeding the maximum amount of lines and characters per line. All episodes adhere to these restrictions, but fully utilize the given space. The following addresses the amount and kind of deletion, the pauses in between subtitles, and the display rates (cps, wpm).

3.1. Deletion

As Table 2 above has shown, deletion was one of the strategies used in subtitling the four series and is in focus of this analysis. The annotation of the SDH corpus regarded the deletion of discourse markers (cf. Chaume 2004), colloquial language use, and contextual references, up to the deletion of phrases and whole sentences. *Figure 1*

illustrates the frequency of deletion in the four series. *How to sell drugs online (fast)* with the second most characters in the film dialogue reveals the greatest number of subtitles in which some information has been deleted, followed by *El vecino* and *Dark*. *Élite* has the fewest subtitles containing deletion, although it has the most extensive film dialogue in the audio channel.

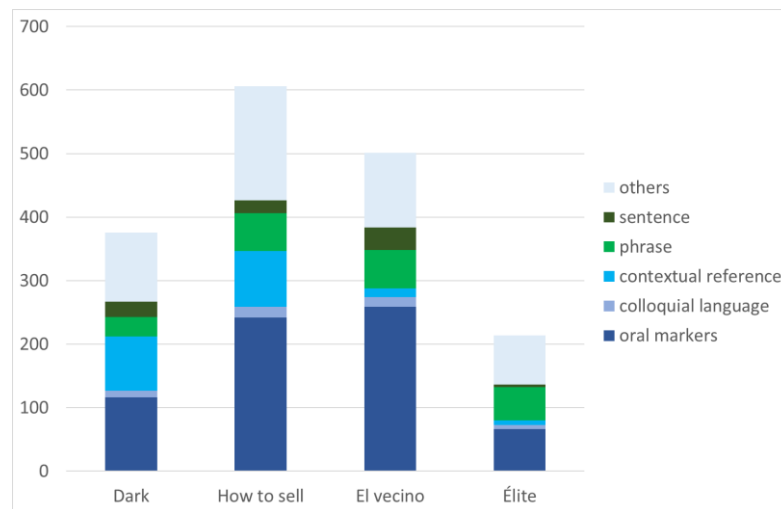


Figure 1. Frequency of deletion in the four series with regard to the type of content deleted

Figure 1 also shows the frequency of deletion of each of the mentioned categories. Overall, there seem to be cross-linguistic similarities, i.e. oral markers and phrases are deleted rather often and colloquial language and sentences more seldom. Contextual reference, which involves intradiegetic references to persons, time, and space, were deleted more often in German, and rarely in Spanish. It remains to be investigated whether such references are generally rarer in the Spanish soundtracks, or whether this is particular for the German SDH. Moreover, future studies should aim to figure out whether these results in general are language-specific.

3.2. Pauses between Subtitles

Figure 2 shows how often the pauses in between subtitles were only one, two or three frames long, or four frames and longer. In all series, most pauses applied to the traditional value of four frames and very few to three frames. What is striking is that the proportion of pauses with only two frames almost reaches the 50 %-mark in *How to sell drugs online (fast)* and *Élite*, and that these two series also reveal a small proportion of pauses with only one frame in between subtitles, whereas *Dark* and *El vecino* have no such fast subtitle changes and only have around 30 % of their pauses with only two frames.

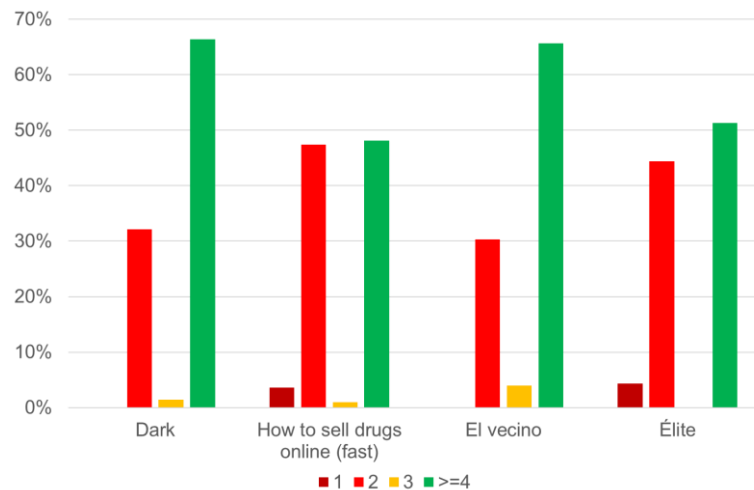


Figure 2. Proportion of pauses with one, two, three, or four frames and more in between subtitles

The figure visualizes the recent trend of decreasing the time slot between subtitle displays. However, what is noticeable here is that the pauses even decrease to only one frame in some cases, which makes it difficult for the eye to realize that a new subtitle is displayed (Díaz Cintas 2020, 158). In the following section, these findings are supplemented by the cps- and wpm-values.

3.3. Characters per Second (cps) and Words per Minute (wpm)

Figure 3 shows the proportion of subtitles displayed with less than 17 cps, which is slower than the Netflix guidelines state for hearing viewers, more than 20 cps, which violates the guidelines, and in between these values, which is in line with the display rate for deaf and hard-of-hearing viewers.

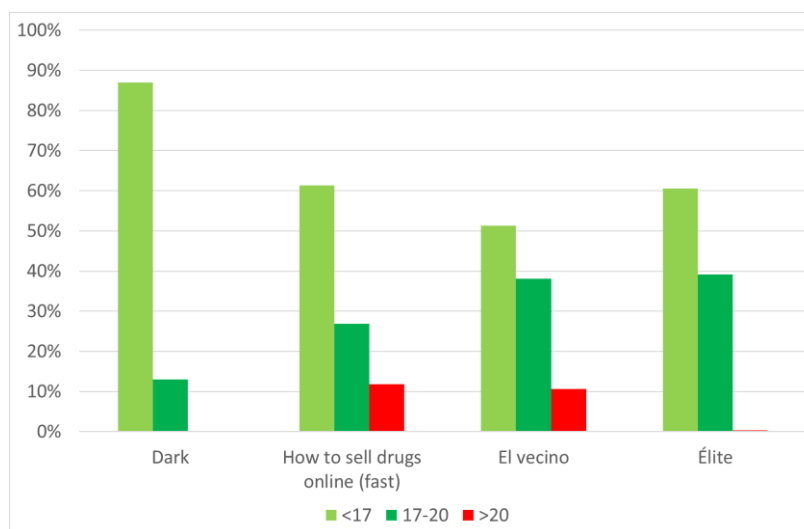


Figure 3. Proportion of subtitles displayed at a rate of less than 17 cps, more than 20 cps, or in between

The figure shows quite clearly that *Dark* and *Élite* are in line with the Netflix guidelines with respect to cps. *Élite* only reveals one subtitle with a display rate of more

than 20 cps. Contrary, slightly more than 10 % of the subtitles in *How to sell drugs online (fast)* and *El vecino* are displayed at more than 20 cps. The cps-value allows for interlingual comparison; however, it is not linked to semantic units. Therefore, Figure 4 illustrates the frequency of distinct amounts of words per minute in the subtitles in line with the numbers given in Table 1 in order to evaluate the time left to spend on viewing the images of the series.

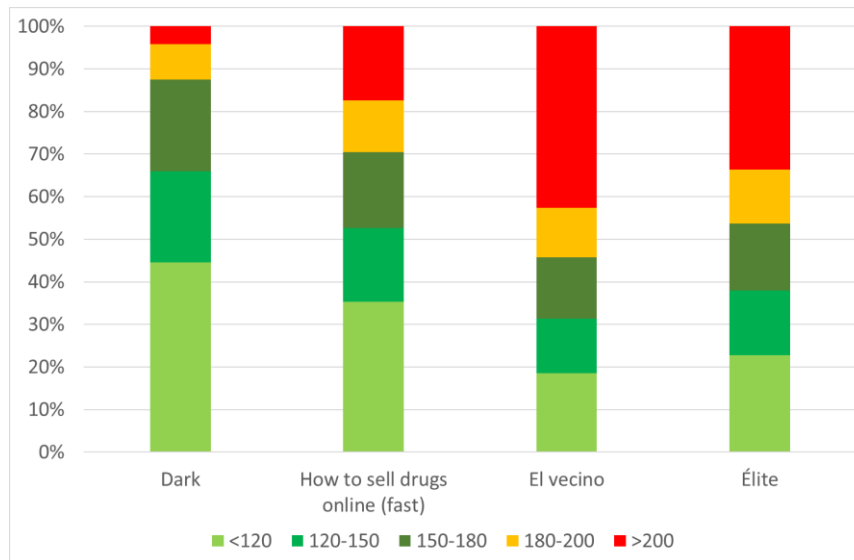


Figure 4. Percentage of subtitles within the respective wpm-values given in Table 1

The figure shows that many subtitles leave a good or reasonable amount of time to watch the images (<180 wpm). Especially, *Dark* exceeds this value in only slightly more than 10 % of the subtitles. However, *El vecino* displays its subtitles at more than 180 wpm in more than 50 % of the cases, and also *Élite* is close to 50 %. Based on Table 1, this would give viewers only very few time to watch the images, and so coincides more with reading the film than watching it, and being able to enjoy it. Although the underlying wpm-values are calculated on the basis of the English language, it is still very probable that the German and Spanish viewers here are given little time to watch the images.

4. CONCLUSIONS

This paper has provided recent data concerning SDH and analyzed the amount and necessity of deletion in four German and Spanish series. Taken together, the findings suggest that deletion is a prominent strategy to make the original audio channel fit into the written form and meet general and guideline restrictions in terms of cps, wpm, and pauses. The case of *Dark* shows that this way, compliance with guidelines can succeed to a large extent. In contrast, *How to sell drugs online (fast)* and *El vecino* indicate that a more extensive film dialogue may sometimes require to violate the guidelines in order to reach a similar reduction rate. By this, the series managed to subtitle around 90 % of the original soundtrack, which exceeds the expected two thirds based on the difference between speaking time and reading time. Interestingly, *Élite* subtitled 99 % of the film dialogue. This is a remarkable result that associations for the deaf and hard-of-hearing

people request for. However, additional information about sounds and music for the target group were excluded here. These were not transcribed from the soundtrack but are usually part of the subtitles so that the target group actually would have to read more than the hearing audience needs to listen to. Therefore, these subtitles might be considered more than verbatim. As it seems, *Élite* managed to create these with a small amount of minimal pauses of two frames in between subtitles and a rather huge proportion of high wpm-rates. These were placed in twice as many subtitles as in *Dark*, being the two series comparable in their external factors (episodes, length). As a consequence, viewers presumably do not have much time to watch the images of the film but are busy reading the subtitles (see Table 1).

In summary, these results show that it is possible to subtitle in an almost verbatim way by reducing the pauses between subtitles to a minimum and exhaust the cps and/or wpm maximum continuously. The findings highlight that more recipient studies are necessary in order to decide what is more important: readability and enjoyment while watching a film, or completeness and literality of the soundtrack. However, the current paper was limited to the analysis of pauses in between subtitles, characters per second and cross-lingual words per minute. Future studies should also take the duration of subtitles and language-specific words per minute into account as well as analyze in more detail the amount of additional music and sound information in the subtitles. Hence, the results may specify more precisely particular ways how to subtitle in an almost verbatim way without overloading the viewers. Despite these limitations, the present findings add to our understanding of how subtitling for the deaf and hard-of-hearing is at the moment and help us question and rethink current tendencies that could profit from scientific research.

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