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Languages on the screen: Is film comprehension related to the viewers' fluency level and to the language in the subtitles?

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This research aimed at studying the role of subtitling in film comprehension. It focused on the languages in which the subtitles are written and on the participants' fluency levels in the languages presented in the film. In a preliminary part of the study, the most salient visual and dialogue elements of a short sequence of an English film were extracted by the means of a free recall task after showing two versions of the film (first a silent, then a dubbed-into-French version) to native French speakers. This visual and dialogue information was used in the setting of a questionnaire concerning the understanding of the film presented in the main part of the study, in which other French native speakers with beginner, intermediate, or advanced fluency levels in English were shown one of three versions of the film used in the preliminary part. Respectively, these versions had no subtitles or they included either English or French subtitles. The results indicate a global interaction between all three factors in this study: For the beginners, visual processing dropped from the version without subtitles to that with English subtitles, and even more so if French subtitles were provided, whereas the effect of film version on dialogue comprehension was the reverse. The advanced participants achieved higher comprehension for both types of information with the version without subtitles, and dialogue information processing was always better than visual information processing. The intermediate group similarly processed dialogues in a better way than visual information, but was not affected by film version. These results imply that, depending on the viewers' fluency levels, the language of subtitles can have different effects on movie information processing.

Keywords: Film comprehension; Intralingual subtitles; Interlingual subtitles; Language fluency; Audiovisual information processing.

Cette recherche vise à étudier le rôle des sous-titres dans la compréhension d'un film. Elle porte sur la langue dans laquelle les sous-titres sont écrits et sur les niveaux de compréhension des participants dans la langue parlée dans le film. Dans une phase préliminaire de l'étude, les éléments les plus saillants des images et des dialogues ont été extraits, au moyen d'une tâche de rappel libre, d'une séquence de film anglophone, montrée à des francophones dans deux versions successives (d'abord une version silencieuse, puis une version doublée en français). Ces informations visuelles et des dialogues ont été utilisées pour la construction d'un questionnaire portant sur la compréhension du film présenté dans la phase principale de l'étude. Pour cette seconde phase, d'autres francophones d'origine, ayant soit un niveau débutant, intermédiaire ou avancé de compréhension de l'anglais, ont visionné une des trois versions du même extrait de film que celui utilisé dans la phase préliminaire. Une version ne comportait pas de sous-titres, tandis que les deux autres incluaient soit des sous-titres en français ou des sous-titres en anglais. Les résultats ont indiqué une interaction globale entre les trois facteurs examinés dans l'étude. Plus précisément, pour les débutants, le traitement des informations visuelles diminuait entre la version sans sous-titres et la version avec sous-titres anglais et encore plus lorsque les sous-titres étaient en français, tandis qu'on observe un effet inverse de la version du film sur la compréhension des dialogues. Pour leur part, les participants avancés ont atteint une compréhension supérieure pour les deux types d'informations avec la version sans sous-titre tandis que le traitement des dialogues était toujours meilleur que le traitement des informations visuelles. De la même manière, le groupe intermédiaire a mieux traité les informations du dialogue

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comparativement aux informations visuelles, mais n'était pas affecté par la version du film. Ces résultats suggèrent que, en fonction du niveau de compréhension de la langue parlée, la langue des sous-titres peut avoir différents effets sur le traitement de l'ensemble des informations du film.

Esta investigación tuvo como objetivo estudiar el papel de la subtitulación en la comprensión de las películas. Se centró en los idiomas en que los subtítulos estaban escritos y en los niveles de fluidez de los participantes en los idiomas presentados en la película. En una parte preliminar del estudio, los elementos visuales y de diálogo más destacados de una breve secuencia de una película en inglés fueron extraídos por medio de una tarea de recuerdo libre después de mostrar dos versiones de la película (la primera era muda y la otra era una versión doblada al francés) a personas de lengua materna francesa. Esta información visual y de diálogo se utilizó en la elaboración de un cuestionario sobre la comprensión de la película que se presentó en la parte principal del estudio. Para la siguiente parte, se les mostró una de las tres versiones de la película utilizada en la parte preliminar a otros participantes francófonos, ya fuera que tuvieran un nivel principiante, intermedio o avanzado de fluidez en Inglés. De estas tres versiones una no tenía subtítulos y en las otras dos se habían incluido subtítulos en inglés o francés, respectivamente. Los resultados indican una interacción global entre los tres factores de este estudio: para los principiantes, el procesamiento visual bajó cuando se presentó la versión con subtítulos en Inglés en comparación con la versión sin subtítulos, y bajó más aún cuando se proporcionaron subtítulos en francés; mientras que se dio el patrón inverso para el efecto de la versión de la película sobre la comprensión del diálogo. Los participantes con un nivel avanzado de inglés lograron una mayor comprensión de los dos tipos de información en la versión sin subtítulos y el procesamiento de la información de diálogo fue siempre mejor que el procesamiento de información visual. El grupo intermedio mostró un patrón similar, procesando mejor los diálogos que la información visual, sin embargo no mostró ningún efecto de las distintas versiones de la película. Estos resultados implican que, dependiendo de los niveles de fluidez de los espectadores, el idioma de los subtítulos puede tener distintos efectos en el procesamiento de información de la película.

The evolution of technology and the global extension of the Internet network allow a flowing exchange of information throughout the world, and a great part of this information is of an audiovisual nature. Given the worldwide scale of the transmitting means, it is easy to understand how they have an influence on populations in terms of "opening up" to languages. In 1983, Wade predicted that by the year 2000, live television satellites would have made "audiovisual frontiers" disappear for good. In a way, this prediction has come true, at least on a European scale and as far as languages are concerned. Statistics show an increasing proportion of Europeans speaking more than one language fluently, a fact partly induced by the relatively new use of digital formats that diminish the costs of film subtitling (Gambier, 2007).

Audiovisual messages can take on different forms and are made up of several types of information (Rigas & Memery, 2002; Roskos-Ewoldsen, Roskos-Ewoldsen, Yang, & Lee, 2007) such as nonlinguistic information provided by moving images, music, or background sounds, as well as the dramatic effect created by the filmmaker. As Zacks and Magliano (2010, p. 1) pointed out, "comprehending a film is an amazing feat of neural and cognitive processing," as the viewer must integrate a flow of images and sounds into a situation resembling a real-life experience.

Another type of film information consists of linguistic or verbal elements that can be presented either in an auditory mode (dialogues/song lyrics) or in a visual one (written text), and sometimes both modes at the same time. Bubel (2008) explains that the cognitive processes enabling one to understand a film dialogue are similar to those used by "overhearers" in everyday situations: Viewers use their everyday experience of overhearing other people's conversations in order to understand film dialogues by making conjectures about what they hear. Therefore, contextual information derived from the linguistic and the nonlinguistic input, added to a certain amount of the viewers' own knowledge, must also be taken into account (Bairstow & Lavaur, 2009; Magliano, Miller & Zwaan, 2001).

In a film, the linguistic input can become problematic when the viewer does not understand the spoken language of the message. In that case, one of the translation techniques available is subtitling. According to Legros and Crinon (2002), multimodality makes sensory information accessible in diverse semiotic codes and offers the opportunity to process data through different channels, enhancing a viewer's chances of understanding a given situation. Furthermore, viewers may integrate these different inputs by using their everyday real-life experience of multimodality: although our lives are obviously not subtitled, through all our sensory receptors we constantly

receive information from our surroundings that needs to be integrated into a coherent comprehension of the environment in which we evolve (Granström, House, & Karlsson, 2002). This reasoning suggests a positive effect of subtitles on film comprehension through helping to understand dialogues or multiplying information sources for the viewer to combine.

The downside of subtitles is that they can cause a certain amount of information loss: The constraint of using no more than two-line subtitles, with a maximum of 40 characters per line (Ivarsson & Carroll, 1998), often entails a condensation of verbal information. Furthermore, as subtitles can attract a viewer's attention, they can distract him or her from attending to the images, as shown by Koolstra, Peeters, and Spinhof (2002); even when subtitles are not necessary to comprehension, an automatic reading behaviour generally occurs. Guichon and McLornan (2002) also pointed out these downsides, adding that the additional demands on attention imposed by multimodality make it necessary to direct attention in a constructive manner. Finally, reading subtitles is very different from "normal" reading for three main reasons: The reading time is limited (imposed rhythm); subtitles occupy a particular spatial position (two lines maximum centered at the bottom of the screen); and while one is reading, many events can be happening on-screen (Diaz-Cintas & Remael, 2007).

Subtitles can involve different language combinations. When subtitles and dialogue are in different languages (*interlingual* situation), subtitles are useful to viewers who do not understand (sufficiently) the language spoken in the dialogue. When subtitles and dialogue are in the same language (*intralingual* situation), subtitles are mainly useful to hearing-impaired viewers, but they may also assist language learning and provide additional information concerning the situation (Diaz-Cintas & Remael, 2007).

Studies in the field of psychology have investigated the effects of interlingual or intralingual subtitles separately. D'Ydewalle, Praet, Verfaillie and Van Rensbergen (1991) have reported that the automatic reading of intralingual subtitles was not influenced by extensive experience in subtitle reading. However, their results also showed that reading subtitles was in fact a strategy adopted by the viewer due to its efficiency for understanding the movie. This finding was recently confirmed by Marian (2009, p. 53), who suggested that "listeners are adept at perceiving visual input during language processing, and integrate it with auditorily perceived input." This would mean that the presence of visual input is beneficial for the viewer since it adds to the meaning already gained through the auditory input.

Apart from perception-guided research, cognitive studies have looked into many aspects of subtitled film comprehension, such as language acquisition (Danan, 1992), literacy development (Kothari, 2008), or even inference and situation model production (Roskos-Ewoldsen et al., 2007). Using intralingual subtitles, Lavaur & Nava (2008) observed a global deterioration in visual information processing, compared to both a soundless film and a version dubbed in the viewer's own language. In comparison to a similarly dubbed film, Grignon, Lavaur, and Blanc (2007) demonstrated a deterioration of visual information processing in the presence of interlingual subtitles. Moreover, among viewers with a low fluency level in the film's language, they found better linguistic information processing with these subtitles than with a nonsubtitled version. Overall, subtitles appear to exert a detrimental effect on visual information processing but a facilitating one on linguistic information processing.

Similar results have been obtained by Bairstow and Lavaur (2009), who compared the comprehension of fluent and nonfluent viewers in a situation using interlingual subtitles. Indeed, these results showed a global facilitation (at both the visual and linguistic levels) among the nonfluent participants as opposed to a global deterioration among the fluent viewers.

However, all the abovementioned evidence has been drawn from settings that respectively involve only one kind of subtitle. What's more, previous research mainly examined populations with either a high or a low knowledge of the on-screen languages, hence disregarding intermediate levels. In order to reach more informative conclusions, we set up a research design aiming at measuring the effect of the type of subtitle (interlingual or intralingual) on the comprehension of visual and dialogue data by (French-speaking) viewers whose fluency level in the language (English) used for the dialogue was low (beginners), intermediate, or advanced.

It can be predicted that intralingual and interlingual subtitles have different effects on comprehension depending on the viewer's knowledge of the on-screen languages. Indeed, the beginner participants need subtitles since their English level is too poor for a proper understanding of the original, nonsubtitled version. Thus, these viewers' comprehension at a global level (but particularly for dialogue) should be higher when

subtitles are on-screen, and more so when they are of the interlingual type.

Participants with an intermediate fluency level should have a lesser need for subtitles, their knowledge being sufficient to extract a global understanding of the situation. The addition of subtitles, however, should produce contradictory effects: Subtitles should provide these viewers with a more in-depth comprehension, but as they will be compelled to read the subtitles, they will also be distracted.

Finally, the original version should be perfectly comprehensible to the advanced participants. Therefore, for them the very presence of subtitles will have a distracting effect, especially for visual comprehension, which should be accentuated with interlingual subtitles since the two known languages will be on-screen simultaneously.

PRELIMINARY STUDY

The preliminary study aimed at gathering data that could be used in the main part of the study. By showing a film extract, first in a silent version and then in their native language, we expected the viewers to recall visual and linguistic information that can be considered as the most important for the comprehension of the film. These data can then be used in the making of a comprehension questionnaire for the experimental part of the study.

METHOD

An extract from *North by Northwest* (1959) by Alfred Hitchcock, lasting 8 min, 40 s, was shown to 12 native French high-school students aged 16 to 18 years ($M = 16.83$, $SD = .72$). After viewing the sequence in a soundless version, the pupils had 10 min to write down all the visual information they could recall on a blank sheet of paper. Next, they saw a version of the same film dubbed into French and had 10 min to recall all the dialogue-based information they could.

RESULTS

Table 1 reports the mean numbers of information elements recalled according to the type of information and the film version. After elimination of both wrong and inferential information, the visual and dialogue information was analyzed. Information recalled by over 50% of the participants was used in preparing items for a comprehension questionnaire to be completed in the following main study.

TABLE 1
Mean numbers of information elements (*SD*) recalled according to type of information and film version

Version	*Visual elements*	*Dialogue elements*	*Errors/ inferences*
Silent	17.42 (2.64)	–	4.00 (2.73)
French (dubbed)	–	9.50 (2.71)	3.17 (1.75)

MAIN STUDY

Method

Participants

Ninety French speaking participants aged 15 to 18 years ($M = 16.1$; $SD = 1.16$), of which 46% were male, were selected in a high school: 30 of these pupils had no English classes (but were taught other languages); 30 were from regular classes in which English was taught 3 hours per week; and 30 were from international classes where more than 50% of all lessons were taught in English. The international classes were open to all pupils with a good English level who wished to enrol regardless of their achievement in other subjects. These three groups were respectively deemed to have beginner, intermediate, and advanced fluency levels in the target language (English).

Materials

A comprehension questionnaire included 21 questions related to images and 21 related to dialogue. These items dealt with information distributed throughout the film extract used in the preliminary study. The order of presentation in the questionnaire followed the order of appearance of the information in the movie.

Three versions of the film extract were prepared: the original English version (without subtitles) and the original version with either English subtitles (intralingual) or French subtitles (interlingual). In the last two versions, it was ensured that the subtitles corresponded exactly with what was said orally, meaning that oral and written information concurred, although the phrasing had to be adapted at times to obey the rules of subtitling (see Ivarsson & Carroll, 1998).

Language fluency was evaluated in a task asking for the translation of 30 words (15 from

French to English, and 15 from English to French). For half of these words, the translation was estimated to be easy, whereas advanced knowledge of English was required for the other half. An autoevaluation task included in a personal data questionnaire asked participants to evaluate their language proficiency on a scale from 1 (not at all fluent) to 10 (perfectly fluent).

Design

The first two independent variables were between-subject factors: One was the English fluency level of the participants (beginners, intermediate, advanced); the second was the version of the film (without subtitles, OV; intralingual subtitles, OVintra; interlingual subtitles, OVinter). Type of information in the film (images, dialogue) was a within-subject factor. By crossing the language fluency and film version factors, 9 groups of 10 participants each were obtained. All participants answered the questions pertaining to both image and dialogue information.

Procedure

Before viewing the film extract, each participant was individually asked to perform the translation test and to fill in the personal information questionnaire including the autoevaluation task. The participants within each fluency level were then randomly assigned to one of the film versions. Each participant saw the film on a laptop computer screen using Media Player Classic®. He or she was then asked to answer the film comprehension questionnaire on the same computer, using Sphinx Lexica® software. The experiment lasted approximately 40 min. The instructions given to each participant were: "Please complete the translation task as best you can, then fill in this short questionnaire. [After this] You will now see a short film extract in English subtitled in French (for this example), please watch with attention but no more than when you usually watch a film. [After the film] You will now fill in this questionnaire in which you can choose only one answer per question."

Results

The .05 level of significance was adopted throughout all statistical analyses. Table 2 reports the mean scores for each of the translation and autoevaluation tasks according to the viewers' fluency level. The scores obtained in the translation task were analyzed in a one-way analysis of variance (ANOVA) with fluency level as a between-subject factor. A significant fluency effect was obtained, $F(2, 87) = 545.03$, $\eta^2 = .926$. Post-hoc Tukey tests revealed that beginners had lower scores than intermediate-level participants, who were themselves outperformed by advanced viewers. In addition, at each fluency level a positive correlation was found between the autoevaluation and the translation scores, as indicated in Table 2.

TABLE 2
For each fluency level, mean scores (*SD*) in each of the translation and autoevaluation tasks and correlation coefficients (Pearson) between scores in the two tasks

	Translation task		*Autoevaluation task*		
Fluency level	*Mean*	*SD*	*Mean*	*SD*	*Correlation Group*
Beginners	4.97	2.25	3.57	1.36	.76
Intermediate	14.30	2.15	6.00	1.05	.59
Advanced	25.17	2.67	7.77	0.97	.61

Translation task, maximum score = 30. Autoevaluation task, maximum score = 10.

Table 3 presents the mean comprehension scores for each fluency group according to type of information and film version. A 3 (language fluency) × 3 (film version) × 2 (information type) ANOVA with repeated measures on the last factor was conducted on the comprehension scores.

A significant fluency × version × type interaction was obtained, $F(4, 81) = 28.84$, $\eta^2 = .587$. In order to analyze this interaction, a 3 (film version) × 2 (information type) ANOVA with repeated measures on the last factor was carried out at each level of the fluency factor.

Beginners

The film version × information type interaction was significant, $F(2, 54) = 102.22$, $\eta^2 = .791$. Post-hoc contrasts (Tukey) applied to the interaction table of the ANOVA were performed following Cicchetti's (1972) method. When looking at each type of information, this showed a significantly lower mean number of correct visual answers with OVinter than with OVintra, the best score being obtained with OV. Concerning dialogue information, significant differences were also found, but in the opposite direction (highest score for OVinter, then OVintra, and finally OV). As far as the different versions are concerned, visual data were better processed than dialogue data while watching

TABLE 3
Mean comprehension scores (*SD*) for each fluency group (beginners, intermediate, and advanced) depending on the type of information (visual and dialogue) and the version of the film

Version	*Beginners*		*Intermediate*		*Advanced*	
	Visual	*Dialogue*	*Visual*	*Dialogue*	*Visual*	*Dialogue*
Original	13.7 (1.06)	4.8 (1.69)	10 (1.33)	11.5 (1.27)	13.9 (2.13)	18 (1.49)
Intralingual	11.4 (0.97)	6.9 (1.20)	11 (2.21)	11.7 (1.34)	12 (1.33)	15.7 (0.95)
Interlingual	9.3 (1.16)	14.5 (2.72)	10.6 (1.35)	12.3 (0.92)	10.7 (1.42)	15.6 (0.97)

OV and OVintra, whereas the opposite occurred with OVinter.

Intermediate

There was no significant main effect of version of the film, but there was a significant main effect of the type of question, $F(1, 54) = 11.34$, $\eta^2 = .174$: dialogue based questions got more correct answers than visual ones. There were no other significant effects.

Advanced

A significant main effect of the film version was found, $F(2, 54) = 20.57$, $\eta^2 = .432$. Post-hoc tests indicated that comprehension scores were higher with OV than with either OVintra or OVinter. A main effect was also found for the type of question, $F(1, 54) = 130.19$, $\eta^2 = .707$, with the questions on dialogues eliciting more correct answers than those on visual elements. The interaction was not significant.

DISCUSSION

This study aimed at investigating the effects of two kinds of subtitles on film comprehension, depending on the viewers' fluency in the on-screen languages. Subtitles were either in English, as in the film dialogue, or in French, the native language of the viewers. Our main hypothesis was that the effects of subtitling would be closely linked to the participants' knowledge of the on-screen languages, spoken and written, affecting both image and dialogue processing.

An analysis of global comprehension scores showed a significant interaction between fluency, film version, and type of information. This result confirms what had been previously shown, although by using different investigation techniques. For instance, d'Ydewalle et al. (1991) used eye-movement measures to show that the addition of subtitles automatically diverted the viewers' attention. On the other hand, Grignon et al. (2007) found, using a questionnaire, that subtitles presented in the viewer's language helped dialogue information processing considerably when the participant did not master the spoken language. Referring to Paivio's dual coding theory and visual–verbal redundancy effects, Reese (1984) explains that if the audio track refers to the visual one, cognitive resources are saved for higher order processing and deeper elaboration of the messages. Furthermore, the opposite also seems to be true, with a more superficial processing when redundancy is absent. In our case, two different types of information are transmitted through the same visual channel (images and subtitles), leading to a competition for cognitive resources. In addition, the subtitles more or less match what is transmitted through the audio channel (dialogue) and it is the simultaneous presentation of these three types of information that generates interferences, due to a strong semantic link between subtitles and dialogue and a much weaker link between images and (1) subtitles and (2) dialogue. This insight into the cognitive processes at play during subtitled film viewing can explain the better processing of dialogue-based information compared to visual data. Hence, based on a design that incorporates the main variables involved, our results overall confirm previous findings (e.g., d'Ydewalle et al., 1991; Grignon et al., 2007) including only some values of these variables.

Next, we showed that when viewing the original version, beginners obtain more information from visual aspects than dialogue. When subtitles are in English, they gain some dialogue comprehension (compared to when there are no subtitles), although their language skills are minimal, but visual aspects remain their principal source of data. Finally, with French subtitles their comprehension is better for dialogue than for visual information. This decrease in reliance on visual information and increase in reliance on dialogue as more information is provided indicates that visual

data are critical for low-proficiency students when attempting to comprehend a movie in another language. This confirms our initial prediction that beginners would rely on the subtitles for comprehension, at the expense of visual information. Regarding language learning through films, the finding concerning intralingual subtitles is worth stressing when one considers Kothari's (2008) conclusions on literacy increase, something we will come back to below.

It is necessary to look into the curious absence of effect of subtitles for the intermediate group. As predicted, subtitles seem to have contradictory effects on comprehension for this group: The only significant effect showed a slightly higher level of dialogue comprehension compared to visual items, but the mean scores for both types of question were always middle range. Whichever version was viewed, these participants did not achieve high-level comprehension. A possible explanation could be that these viewers' fluency level enabled them to partly understand what was said in the original version, but only if their attention was highly concentrated on auditory information, and much less so on visual details (see Fernandes & Moscovitch, 2000, on divided attention). When subtitles were on-screen, the same phenomenon might have occurred: Indeed, as participants were told that the experiment bore on both language and film comprehension, it is possible that they wanted to prove the extent of their knowledge by listening to dialogue rather than reading subtitles (participants being high school students, they may have taken the study more as a game than as a real test). This possibility could be tested in a study using eye-movement measures or at least a post-viewing interview asking each participant what strategy he or she used.

Concerning the advanced participants, although they achieved the highest comprehension level, the results showed the predicted distracting effect of subtitles. However, this effect occurred whatever the language used in the subtitles, as if it mattered little. Furthermore, dialogue-based information was always processed better than visual data, even in the nonsubtitled version. These results imply that when subtitles are unnecessary to comprehension, they can disturb the processing of both types of information. One could assume that combining multimodality (audio and visual) with multilingualism requires more attention to achieve a given level of linguistic information comprehension than when only one (redundant) language is used, but that the cost of this is lower attention. This is probably due to an automatic reading behaviour and is independent of the viewer's will (D'Ydewalle et al., 1991). What is more, this could lead the viewer to comparing what is said with what is written (requiring more attention when the written text is a translation), thus leaving less time to analyze the images. It is in fact very difficult to estimate which of these factors can best explain the distracting effect measured for the advanced group, but depending on the purpose of the message, the choice of the format used to pass it on should be made in the light of these findings, since important information could be lost for a certain part of the population, cancelling the intended impact of the message.

This study has some limitations. Not only does the technique employed not permit us to look into the viewers' perception processes in detail, but the two specific languages used may have influenced the results as their similarity may have facilitated a certain matching between the orthographical forms of words (cognates) in French and in English. Nevertheless, our results enable a better understanding of how the presence of subtitles can influence film comprehension in connection with the fluency level of the viewer population. An important point is the benefit that subtitles provide for the global comprehension of those viewers with low mastery of the language of the film. Indeed, although visual data processing diminishes when subtitles are on-screen, this is largely compensated by the gain in dialogue processing. Such facilitation leads us to think that subtitles might be used to produce some incidental learning of the film language: Even intralingual subtitles seem to help in the understanding of linguistic information, implying that the viewers with low fluency not only pay attention to foreign language subtitles but also manage to extract some sense out of them, maybe deducing the words' meaning based on the visual and contextual information from the film (see Kothari's, 2008, findings on same-language subtitling and literacy increase). In this way, the phonological unit of a foreign word and its orthographic unit in the subtitles can be mapped (Yuksel & Tanriverdi, 2009): Orthographical and phonological information is activated at the same time and converges in the same semantic information. Moreover, promising research bearing on language acquisition uses "reversed" subtitling, with the viewer's mother tongue in dialogue and the to-be-learned language in subtitles (D'Ydewalle and Pavakanun, 1992). Notably, Bachetti (2003) showed that this method was effective in second language learning, in interaction with the viewer's language learning strategies. Therefore, one could consider putting such a

procedure to use in foreign language teaching at school, as suggested by Danan (1992).

In conclusion, research bearing on the role of subtitles in film perception and comprehension should take an important place among general audiovisual information processing studies which are rapidly developing in various fields of psychology. These studies exploit eye-movement tracking techniques and event-related potential measures during subtitle reading. By looking further into the processes at play during this unusual type of reading, we may discover the extent to which subtitles can lead to better comprehension, memorization, and even learning of the information contained in the audiovisual document.

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