THE INFLUENCE OF ENGLISH LANGUAGE AND SPANISH LANGUAGE CAPTIONS ON FOREIGN LANGUAGE LISTENING/READING COMPREHENSION

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ABSTRACT
The purpose of this study was to investigate the effects of using Spanish captions, English captions, or no captions with a Spanish language soundtrack on intermediate university-level Spanish as a Foreign Language students’ listening/reading comprehension. A total of 213 intermediate (fourth semester) students participated as intact groups in the study. The passage material consisted of a DVD episode (seven minutes) presenting information concerning preparation for the Apollo 13 NASA space exploration mission. The students viewed only one of three passage treatment conditions: Spanish captions, English captions, or no captions. The Spanish language dependent measure consisted of a 20-item multiple-choice listening comprehension test. The statistically significant results revealed that the English captions group performed at a considerably higher level than the Spanish captions group which in turn performed at a substantially higher level than the no captions group on the listening test. The article concludes with a discussion of the pedagogical implications of using multilingual captions in a variety of ways to enhance second language listening and reading comprehension.

INTRODUCTION
The history of using captions to facilitate the comprehension of video material is as old as the picture industry [1]. The silent movies that entertained people in the early 1900s depended greatly on captions to support audience comprehension of
scenes in which dialog was taking place between actors. The deaf community utilized captions to understand modern video material with soundtracks essentially for the same reason that motivated the silent movie aficionados [1]. Hence, in the 1970s many deaf people began to purchase closed caption decoders to enable them to comprehend what was otherwise silent television programming.

Considerable research supports the value of using captions for facilitating the reading comprehension of hearing first language students [2]. Captions provide reading input to augment the pictorial and audio input supplied by various forms of commonly used video technology. For example, in the first language context, Koskinen, Wilson, and Jensma found that the availability of captions improved the reading word knowledge of elementary-school first language readers [3]. Goldman and Goldman observed that captions improved the general reading comprehension of first language readers in elementary and secondary level settings [2].

A brief review of the second language literature of the early 1990s further supports the utility of the caption technology. Garza determined that university-level ESL students learning English and native English speakers learning Russian improved their reading/listening comprehension with caption availability [4]. Neuman and Koskinen established that middle school-level ESL students dramatically enhanced their English language reading vocabulary knowledge after lengthy exposure to target language captions [5]. Koskinen et al. found that captioned videos substantially improved the incidental reading vocabulary knowledge of adult non-native English-speaking correctional facility residents [6].

More recently, Markham demonstrated that caption availability significantly improved university-level ESL students’ listening word recognition of English-language video material regardless of the level of pictorial support of the video [7]. Koolstra and Beentjes observed that elementary-age, Dutch-speaking students improved their reading vocabulary knowledge by watching a substantial number of Dutch-subtitled English language television programs in the home [8]. Subsequently, Huang and Eskey reported that captions improved university-level ESL students’ general comprehension, vocabulary acquisition, and listening comprehension [9]. Finally, Markham, Peter, and McCarthy determined that university-level students learning Spanish as a Foreign Language improved their general comprehension of Spanish-language DVD video via the aid of either English captions or Spanish captions as opposed to viewing the same DVD material without captions [10].

For the purposes of this research, it is necessary to mention the distinction between *subtitles* and *captions*. *Subtitles* refer to on-screen text in the native language of the viewers that accompany the second language soundtrack of the video material. *Captions* refer to on-screen text in a given language combined with a soundtrack in the same language. In this investigation, the term *captions* will be used throughout in order to avoid repetitive, confusing label changes. However, it should be noted that the soundtrack is always presented
in Spanish in this study, and that the elements that vary are the availability and language of the captions.

As technology continues to evolve, the DVD option has added a dimension of flexibility that makes it particularly useful in the second language setting. Offering both multilingual captions and multilingual soundtracks, DVD technology allows for various combinations of oral and written language. Previous research has established the value of using English language captions to enhance ESL students’ listening comprehension [7, 9]. However, based on a thorough review of related literature, there has been no reported prior research concerning the use of both native language and target language captions with the same foreign-language student population as a means to improve listening comprehension.

**Purpose of the Study and Research Questions**

The purpose of this study was to examine the effects of using Spanish captions, English captions, or no captions with a Spanish language soundtrack on intermediate university-level Spanish as a Foreign Language students’ listening/reading comprehension of a DVD video episode as measured by a Spanish-language listening/reading comprehension test.

The three following research questions were addressed in this study:

1. How does Spanish-language DVD soundtrack material with Spanish-language captions affect Spanish as a Foreign Language students’ listening/reading comprehension?
2. How does Spanish-language DVD soundtrack material with English-language captions affect Spanish as a Foreign Language students’ listening/reading comprehension?
3. How does Spanish-language DVD soundtrack material without captions affect Spanish as a Foreign Language students’ listening/reading comprehension?

**METHOD**

**Participants**

A total 213 intermediate, university-level Spanish as a Foreign Language students participated in the study. The students were enrolled in nine independent sections of an intermediate level (fourth semester) Spanish course and participated as intact groups. The students were placed in this fourth semester course either by progressing through the normal university course sequence or by taking a placement exam. The Spanish Department’s placement exam is administered on-line and takes approximately 45 minutes to complete. The exam content includes items addressing reading, writing, listening, vocabulary, and grammar.
In the demographic background section of the research materials, 144 of the students self-reported being females and 69 were males. One hundred and fourteen of the students were freshmen or sophomores and 99 were juniors, seniors, or graduate students. No student self-reported being a native Spanish speaker, but nine students indicated that they had immediate family members who spoke Spanish somewhat fluently. A total of 89 students self-reported traveling or studying in a Spanish speaking country, but an overwhelming majority of these students (94 percent) had spent less than six months abroad. The findings concerning these and a number of other demographic variables are reported on more extensively in the Results section.

Materials

The listening passage consisted of a DVD episode (seven minutes) presenting information concerning preparation for the Apollo 13 NASA space exploration mission. The audio portion of the episode was always presented in Spanish. The students viewed one of three treatment conditions: English captions, Spanish captions, or no captions. One might reasonably challenge the value of including the English-language caption option in this investigation. However, most foreign language films in this country provide English-language subtitles and there is, therefore, good reason to explore the extent to which this popular option actually affects the comprehension of intermediate level foreign language students.

Both the English- and Spanish-captioned versions presented a highly synchronized, meaningful paraphrase of the soundtrack. The difficulty level of both the English- and Spanish-captioned conditions was very similar based on caption speed (125 to 135 words per minute) and the syntactic complexity of the captions which consisted mostly of main clauses with limited subordination. Based on text analysis facilitated by repeatedly pausing the DVD, the English-captioned version consisted of 71 percent main clauses without any subordinate clause attachments, and the Spanish captions contained 68 percent main clauses without any subordination. A total of 48 (23 percent) of the students reported having very little or no prior knowledge of the Apollo 13 mission. Fortunately, the students with no prior knowledge of the topic were quite evenly distributed across the three treatment conditions: English captions \( (N = 14) \), Spanish captions \( (N = 18) \), and no captions \( (N = 16) \). The captioned DVD episode presented a high audio/video correlation in which the pictorial images corresponded fairly closely to the content of the soundtrack and the captions [4].

The dependent measure involved a 20-item Spanish-language multiple-choice test that was developed based on the DVD passage material. The Spanish-language multiple-choice test (stems and alternatives) included words and structures that were used in the DVD episode. In other words, the vocabulary and the structures of the Spanish-language multiple-choice items directly reflected the difficulty level of the Spanish-language passage material itself. The rationale
for constructing multiple-choice items based directly on vocabulary and structures from the DVD passage was to make certain that the difficulty of the test language would be equivalent to the difficulty of the language of the passage as much as possible. The stem of each item presented a pure Spanish-language listening task with four Spanish-language reading task alternatives. Hence, with the exception of the target language being Spanish, the test format was similar to that of the listening sections of standardized second language multiple-choice tests such as the Test of English as a Foreign Language (TOEFL) or the Test of English for International Communication (TOEIC) based on the test literature [11, 12].

The multiple-choice test format seemed to be particularly appropriate in this case because the intermediate-level students clearly did not have highly developed Spanish language writing ability at this point in their study of the target language. Moreover, an English language writing task could have been utilized but eleven of the participants, fairly evenly distributed across treatment conditions, self-reported being neither native English nor native Spanish speakers. In addition, realistically speaking, at least some of the total number of participants might not be particularly adept at writing in English or any other language. Hence, the multiple-choice format offered the advantage of no productive skill interference based on somewhat limited writing ability.

The DVD passage and the 20-item multiple-choice test were pilot-tested with a small group of intermediate-level Spanish as a Foreign Language students (n = 26) to determine their suitability for the intended audience. The pilot-test findings revealed that the passage and item difficulty levels were appropriate (instructional level) for these participants based on their ability to view the DVD passage and select the correct multiple-choice alternatives at least 51 percent of the time at the midpoint of the test performance range. An item analysis was conducted for each of the pilot-tested multiple-choice items. Any items that did not perform at an acceptable level were altered or eliminated prior to the main data collection effort. This finding was important because the pilot-test participants viewed the DVD episode in what was considered to be a moderately challenging format including the Spanish soundtrack with Spanish captions. Thus, the pilot-test results indicated that the passage difficulty was in keeping with the students’ Spanish language proficiency.

Data Collection

In order to minimize disruption of the cooperating teachers’ classroom schedules, the data collection process took place during the regularly scheduled class periods in the normally assigned classrooms. The researchers used a standard DVD player with a digital image display projector and external speakers. With the projector technology, the resulting visual image was approximately three feet high and slightly over three feet wide. Given this option, captions were clearly visible from the back of the classroom. External speakers also permitted increased
volume with greater sound quality than would normally be attainable with standard internal speakers. The test booklets contained brief instructions for participating in the research project, and a short list of background information questions. Each classroom group saw the DVD episode only once. To be specific, each group viewed the Spanish language DVD episode concerning the Apollo 13 mission one time, in only one of the three passage conditions: English captions, Spanish captions, or no captions.

After each group viewed the DVD episode, the researchers distributed the multiple-choice questions and answer sheets to the participants. Each of the 20 multiple-choice item stems was read aloud twice in succession, and then the students were given 45 seconds to select an answer to each of the multiple-choice reading task items. All five of the teachers who read aloud were native Spanish-speakers except for one. The one native English-speaking teacher was, however, highly fluent in Spanish (level 3 oral proficiency test equivalency required by the department for teaching assistants). It was decided to use the teachers as readers because the students were already very familiar with the teachers’ voices after eight weeks of prior instruction, and the listening items were easily readable and required no special preparation. The researchers collected the multiple-choice questions and the answer sheets promptly after each group finished the task in order to ensure that no group had extra time to select answers.

Contingent upon the teachers’ permission to include their classes in the study, a reasonable sample of students participated in each of the three treatment conditions (65 English captions, 85 Spanish captions, and 63 no captions) in the nine classroom groups. The students were informed in advance that their participation in this research project was strictly voluntary and that their performance on the test was totally unrelated to their course grades.

**Scoring and Data Analysis**

The scoring system for the multiple-choice test format was very straightforward. One point was awarded for each correct answer. The Spanish-language multiple-choice format proved to be a dependable measure of the students’ listening comprehension of the item stems. Based on the pilot-study evidence, the researchers concluded that 20 items would adequately reflect the content of the relatively short DVD passage content (seven minutes) without requiring an unacceptable amount of classroom time.

The researchers examined the three different passage conditions (English captions, Spanish captions, or no captions) with the multiple-choice test as the dependent measure. A one-way ANOVA procedure was conducted to analyze the data. Post-hoc analyses were performed to determine if any of the demographic variables affected student performance to a statistically significant extent. In order to account for some of the potentially relevant background characteristics of the participants, the following demographic data were examined: year in school,
current GPA, last grade received in Spanish class, number of years of Spanish study in junior high or high school, native language, Spanish language spoken at home by at least one family member, time spent in a Spanish speaking country, and prior knowledge of the topic.

RESULTS

The ANOVA procedures yielded highly significant results across the three treatment conditions as demonstrated by Table 1. Regarding the results of the first research question, the participants who had access to Spanish-language captions performed at a statistically higher level than their peers in the no captions group on the multiple-choice dependent measure (Tables 1 and 2), but did not perform at a higher level than their peers in the English-language captions group. Concerning the second research question, the participants in the English-language captions group outperformed their counterparts in the Spanish-language captions group and dramatically outperformed their peers in the no captions group on the multiple-choice test (Tables 1 and 2).

Finally, the results regarding the third research question revealed that students who viewed the passage material without captions demonstrated significantly lower listening/reading comprehension scores as measured by the multiple-choice test (Tables 1 and 2). When captions were not available, the participants clearly

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were not able to select as many of the correct answers to the multiple-choice items as their peers in the English-language captions group. In addition, the no-captions group participants also performed at a considerably lower level than their peers in the Spanish-language captions group.

Two of the student demographic variables analyzed via Pearson Correlations proved to be statistically significant in this study. First, freshmen and sophomores somewhat unexpectedly performed statistically better \((p < .01)\) than the juniors, seniors, and graduate students on the dependent measure. No readily apparent explanation for this finding can be suggested based on the available self-report evidence.

Second, the students’ last course grade in Spanish proved to be a significant predictor of success on the multiple-choice task \((p < .01)\). This result could be viewed as being generally supportive of the suitability of this research task for the level of the students. One would expect such an outcome if the students’ course grades represent a reasonably valid indication of the students’ actual Spanish language proficiency. As no other demographic variables generated significant outcomes, one can reasonably conclude that the other student background factors played no major role in the present study.

**DISCUSSION**

In this investigation, the English captions group performed at a significantly higher level than the Spanish captions group which, in turn, performed at a significantly higher level than the no captions group. These findings indicate that intermediate-level foreign language students’ listening comprehension/reading comprehension can be substantially enhanced via the use of captions in English or Spanish. This outcome augments the Markham study that established the value of English captions for improving ESL students’ listening word recognition, and the work of Huang and Eskey which demonstrated that English captions improved ESL students’ general comprehension, vocabulary acquisition, and listening comprehension \([7, 9]\). Specifically, the present study established that English captions and Spanish captions can enhance intermediate-level foreign language students’ listening comprehension/reading comprehension as measured by a commonly used listening stem, multiple-choice test format presented in the target language.

These findings are valuable because one might reasonably assume that captions would improve foreign language students’ general comprehension of challenging target language material, but one would not necessarily assume that the students’ listening comprehension, in specific, would be improved by caption availability. Continuing this line of thought, some teachers might speculate that caption availability would actually hinder students’ progress in developing target language listening comprehension because students could simply ignore the listening input and read the captions if they so desired. These findings seem to be, at least in part, contrary to this “common sense” assumption. The foreign language students
in this study evidently paid close attention to the interaction of the captions and the audio material. Otherwise, the students who had access to captions would not necessarily have understood the pure listening item stems better than their counterparts in the classroom groups without caption availability. In addition, it is possible to rule out the influence of pictorial support for comprehension because students in all three of the different groups were exposed to the exact same visual images on the DVD episode. Hence, based on the present findings, foreign language students’ listening comprehension, in specific, appears to be somewhat enhanced by caption availability.

An interesting complication arises given that the English captions group significantly outperformed both the Spanish captions group and the no captions group. This finding would indicate that the English language reading input is obviously a powerful contributor to general comprehension if the participants are literate. In addition, one could also argue that the participants’ Spanish language reading comprehension also contributed somewhat to the general comprehension of these students, and that this element contributed to better listening comprehension scores as manifested by the improved performance of the Spanish captions group versus the performance of the no captions group. It is, therefore, not completely possible to rule out the benefit of the reading input provided by the captions as a factor in enhancing the participants’ listening comprehension test scores.

The advantages of using captions to improve the second language reading and listening comprehension of university students have been fairly well documented [8, 10]. Projecting the implications of the present study, one could also reasonably expect that secondary-level foreign language students would derive similar benefits from the same caption availability options that were utilized in the present study with university students. This supposition is based on comparable student characteristics. Specifically, the secondary students would need to possess the following traits: intermediate-level proficiency in the target language, literacy in their native language, and their target-language reading ability would need to be better than their listening comprehension.

In addition, a possible developmental sequence arises from the present study based on the superior performance of the English captions group, followed by the somewhat lower performance of the Spanish captions group, and finally by the substantially lower performance of the no captions group. Although this research did not directly test a developmental progression by exposing the same group of students to the three different captioning conditions, certainly a specific developmental progression can be predicted based on the results. Given particularly challenging target-language video material, literate adult or secondary-level foreign language students would likely demonstrate improved listening comprehension by being exposed to native-language captions first. Subsequently, their emerging foreign language literacy skills would allow them to comprehend difficult material with target-language captions, and finally they could view and understand challenging video material without captions. This sequence seems
plausible because intermediate- and lower-level students typically have a great
deal of trouble understanding rapid, authentic native speaker oral discourse in a
movie or video until they have had considerable exposure to the target language.
This hypothetical outcome assumes, of course, that the students are learning most
of the foreign language in a more heavily reading-dependent classroom setting,
as opposed to acquiring the language orally in an informal setting outside the
classroom in which reading is given little emphasis.

Future research is clearly needed concerning the utilization of caption tech-
nology for a variety of educational purposes in various instructional settings. The
pedagogical value of captions as documented in the literature should continue to
be strengthened by the availability of DVD technology. Various multilingual
audio and multilingual caption options need to be investigated more intensively
in order to understand the full range of possible interactions.

Helping students develop a high level of listening and reading comprehension
ability in the target language constitutes an ongoing challenge to the teachers’
instructional repertoire and creativity. Based on anecdotal feedback, the teachers
and students in this study responded very favorably to the DVD technology. DVD
multilingual audio and multilingual caption technology presents yet another useful
tool to teachers who are assisting students with the arduous task of second
language acquisition.

REFERENCES
2. M. Goldman and S. Goldman, Reading with Closed-Captioned TV, *Journal of
3. P. Koskinen, R. Wilson, and C. Jensema, Closed-Captioned Television: A New Tool
4. T. Garza, Evaluating the Use of Captioned Video Materials in Advanced Foreign
5. S. Neuman and P. Koskinen, Captioned Television as Comprehensible Input: Effects
of Incidental Word Learning in Context for Language Minority Students, *Reading
6. P. Koskinen, J. Knable, P. Markham, C. Jensema, and K. Kane, Captioned Television
and the Vocabulary Acquisition of Adult Second Language Correctional Facility
7. P. Markham, Captioned Videotapes and Second Language Listening Word Recogn-
8. C. Koolstra and W. Beentjes, Children’s Vocabulary Acquisition in a Foreign
Language through Watching Subtitled Television at Home, *Educational Technology,
9. H. Huang and D. Eskey, The Effects of Closed-Captioned Television on the Listening
Comprehension of Intermediate English as a Second Language Students, *Educational


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