



Journal of Applied Sciences

ISSN 1812-5654

science
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Facilitating Textually Assisted Listening Comprehension

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Abstract: The impact of written texts, as a form of visual support, on foreign language learners' listening comprehension has received special attention in recent years. This study investigated the role of written texts as a form of support in comprehending audio materials. The main objective was to examine the effect of texts on audio-based listening. A linguistically homogeneous groups of second language learners listened to audio texts under different conditions of (1) texts before listening to audio materials (2) texts during listening to audio materials and (3) text-free listening. According to results, from pair-wise comparisons, listeners' scores varied significantly across the three test formats ($p < 0.001$), with 78, 74 and 60 (out of 100) for the text-before, texts-during and texts-free listening respectively. Listeners' better performance in the two text-included formats indicated the significance of textual support in enhancing second language listening comprehension, while their supremacy in the text-before condition, over the text-during format, indicated the importance of the order of presenting such support.

Key words: Visual aids, audio materials, presentation order, textual support, listening comprehension

INTRODUCTION

Listening comprehension is a significant skill in foreign language teaching without which effective communication is not possible (Jones, 2004; Verdugo and Belmonte, 2007); the skill can be enhanced by coupling the verbal information (i.e., audio materials) with the non-verbal information such as texts, graphs and tables (Mayer, 2001). Verbal explanations, when presented jointly with non-verbal stimuli such as written texts, can improve comprehension (Mayer, 2001). As such, in recent years, second language (L2) researchers have examined the effects of non-verbal materials, such as written texts and picture annotations on students' comprehension (Chun and Plass, 1996; Jones, 2004; Jones and Plass, 2002; Kaivanpanah and Zandi, 2009; Kashani *et al.*, 2011). According to the results, the inclusion of such materials can affect students' listening, reading comprehension and their vocabulary acquisition.

Such studies on multimedia annotations, though immensely informative, have not sufficiently investigated students' listening achievements under different conditions in EFL environments yet. Accordingly, the need for further research to find better ways of using

visual aids-such as text and written materials-to enhance various aspects of language learning, including listening comprehension, is yet to be fulfilled (Salaberry, 2001; Kashani *et al.*, 2011).

In response to such need, this study specifically investigated the role of written texts in different listening conditions. It intended to investigate the way a written text (the transcript of the listening passage) functions to support listening comprehension, by specifically examining learners' performance under different listening comprehension conditions: with texts presented before or during their audio materials, and with no texts present. In line with such objectives, the following questions were addressed:

- Is EFL learners' listening comprehension under a text-included condition better than their comprehension under a text-free condition if they are exposed to the texts before their accompanying audio-cassettes?
- Is EFL learners' listening comprehension under a text-included condition better than their comprehension under a text-free condition if they are subjected to both the texts and their audio materials simultaneously?

- When texts are read in advance is comprehension better or worse than when they are read at the same time as the text is spoken?

Based on the research questions, the following hypotheses were formulated: (1) EFL learners' listening comprehension under a text-included format will be better than their comprehension under a text-free format if they are exposed to the texts before their accompanying audio-cassettes; (2) EFL learners' listening comprehension under a text-included format will be better than their comprehension under a text-free condition if they are subjected to both the texts and their audio materials simultaneously and (3) EFL learners' listening comprehension will be similar in the text-before listening format and text-during listening format. The main objective was to examine the role of texts as a form of support in comprehending audio materials and to investigate the effect of presentation order in utilizing the texts.

MATERIALS AND METHODS

The materials used in this study included an objective placement test and a number of audio recordings with their accompanying texts.

Placement test: The placement test designed by Lesley *et al.* (2005) was to identify 42 subjects with similar levels of English proficiency. All parts of the test were based on the objectives, content, and language of different levels of Interchange Third Edition and Passages (Lesley *et al.*, 2005). The reason for the selection of this version of the placement test was that (1) the institution, where the subjects came from, used the Interchange Third Edition as their source materials to teach and practice English; (2) among numerous options, this version proved to be more convenient for the participants, as was indicated in a piloting scheme and (3) it was recommended by EFL teachers and test developers who were familiar with the research objectives and subject selection procedure.

Audio recordings: The audio recordings served as the study's data elicitation technique. The audio materials were subjected to a piloting scheme, prior to the main experiment, to make sure of the appropriateness of the listening texts, their recordings and their comprehension questions.

The listening materials were composed of six rather long conversations, each with seven to nine multiple-choice questions, with four options per question.

To account for practice effect and subjects' tiredness, the order of presenting the listening conversations to the subjects was counterbalanced, by presenting the audio materials to the subjects under different test conditions (Kashani *et al.*, 2011). The six listening texts formed three sets of listening comprehension materials, each with two audio texts that were used in three experimental formats of (1) texts before listening, (2) texts simultaneously with listening and (3) text-free listening. As such, in each of the three test formats, the participants heard a set of two stories with 15 or 16 questions (7 or 8 questions per story) viz.: 16 questions in set 1, 16 in set 2 and 15 in set 3, respectively.

Participants: The EFL learners serving as the subjects of the research studied English at a language institute in Tehran. They were at upper intermediate classes during the administration of the study. Nonetheless, to make sure that they were homogeneous in their English proficiency and that they matched a true upper intermediate level, they were asked to sit for a placement test, designed by Lesley *et al.* (2005). Then, among a total of 120 participants, 42 linguistically homogeneous subjects were selected. The reason for going for subjects with upper intermediate knowledge of English was that, according to our piloting results, students with elementary or lower intermediate command of English were unable to follow the listening comprehension stories properly.

Administration order: The order of administering the experiment was counterbalanced. Accordingly, the 42 subjects were randomly divided into six smaller groups each with 7 participants, who were assigned randomly to one of the administration orders. Each consecutive format with two audio texts was separated by two minutes break, which was used to avoid making the experimental session boring. The need for two-minutes break was decided upon during the piloting phase carried out few days before the actual experiment.

Altogether it took six sessions to collect the data from all subjects. Before each session, arrangements were made with seven students to attend. The reason for administering the procedure in more than one session was (1) to offer more options to fit the participants' free time, (2) to exert better control over the administration procedure by limiting the number of participants per session and (3) to account for practice and fatigue effects.

Procedure: Subjects listened to the six audio recordings (serving as the study's data elicitation technique) and answered the accompanying questions under different formats of (1) texts before listening to audio cassettes,

(2) texts simultaneous to listening to audio cassettes and (3) text-free listening. They received the questions 15 sec before the listening components in order that they could have a look at the questions before the experimenter started up the audio cassette. In the first format, the test takers first looked at the written texts belonging to the listening materials and then, putting the texts aside, they listened to the relevant audio cassettes. In the second format, the test takers looked at the texts and listened to the audio cassettes simultaneously. In the text-free format, the test takers merely listened to the audio cassettes in their conventional form.

Subjects in each of the three listening comprehension formats had to listen to two passages (with or without texts) and then answer the comprehension questions related to each passage. The audio materials for each format were composed of two listening comprehension stories, altogether making six stories read aloud by a native speaker of English. Having listened to the audio cassettes, the subjects answered the accompanying questions in multiple-choice formats. The formats and the listening tests were counterbalanced in the presentation, using the administration order.

In texts-before format, subjects first looked at the accompanying texts individually taking their own time. There was no time limit in looking at the texts and therefore, the time spent was not the same for all the subjects. They were given the texts to look at right before listening to the audio materials and had to return the texts back to the researcher before listening to the audio texts. The audio texts were then played out after all the participants indicated their readiness for listening to the audiotape, by returning the texts back to the researcher. Then, having returned the texts, they received the accompanying questions that they had to answer.

In texts-during format (i.e., texts simultaneously with listening to the audio cassettes), participants had the texts in front of them while they were listening to the

audio broadcasting. In texts-free format, a rather conventional form of listening comprehension was followed. That is, 15 seconds after distributing the questions, the experimenter told the listeners to be ready for the audio materials while he started up the audio cassette. Then at the end of each listening, like the other conditions, they were told to take their time to answer the questions.

Statistical analysis: A number of statistical computations were carried out to analyze the data as follows: (1) the scores were standardized by converting them to percent, (2) descriptive statistics including means, standard deviations and standard Error Mean of the scores were calculated to report the results, (3) One-Sample Kolmogorov-Smirnov test was then used to check the normality of variables, (4) Mauchly's test of sphericity was adopted to find out if the application of univariate test was appropriate, (5) the effect of presentation order was calculated to make sure the administration order of the test formats had not biased the results and (6) repeated measure ANOVA (test of within-subjects effects) was used to test the significance of averages between tests and (7) post hoc tests were also administered to identify significant contrasts. The p-value <0.05 was considered statistically significant.

RESULTS

The Mean±SD scores for variables of text-before, text-during and text-free formats were 78.04 (SD = 16.13), 73.67 (SD = 16.53) and 60.33 (SD = 19.96) (out of 100), respectively (Table 1). The assumption of normality of variables, according to one-sample Kolmogorov-Smirnov test, was met (Table 2). According to this test, the p values for variables of text-before, text-during and text-free were 0.916, 0.602 and 0.468 respectively, justifying the application of further computations (Table 2). According to Mauchly's test of sphericity (Table 3), the

Table 1: Descriptive statistics of different conditions of listening

Conditions	N	Mean	SE	SD	CI (95%)	
					Lower boundary	Upper boundary
Before	40	78.04	2.55	16.13	72.87	83.19
During	40	73.67	2.61	16.53	68.37	78.95
Free	40	60.33	3.15	19.96	53.94	66.72

Before: Texts before audio materials, During: Texts during audio materials, Free: Texts-free audio materials

Table 2: One-sample Kolmogorov-Smimov Test

Conditions	N	Significance (2-tailed test)
Before	40	0.916
During	40	0.602
Free	40	0.468

Before: Texts before audio materials, During: Texts during audio materials, Free: Texts-free audio materials

Table 3: Mauchly's test of sphericity

Within subjects effect	Mauchly's W	Approximate χ^2	df	significance
Before, During and Free	0.876	5.012	2	0.082

Before: Texts before audio materials, During: Texts during audio materials, Free: Texts-free audio materials

Table 4: The order of administering listening activities to subjects

First order	Mean	SD	Second order	Mean	SD	Third order	Mean	SD	Total*	
									Mean	SD
Free	61.90	14.76	During	88.78	9.09	Before	70.48	10.79	73.72	16.03
Before	62.86	26.07	Free	82.65	19.28	During	70.48	21.73	72.00	22.95
During	54.29	22.25	Before	79.59	11.24	Free	70.48	18.80	68.12	20.19
Free	68.57	18.34	Before	69.39	17.84	During	81.90	12.00	73.29	16.69
During	62.86	15.80	Free	80.61	13.50	Before	80.95	11.82	74.81	15.70
Before	48.00	22.80	During	62.86	15.49	Free	65.33	21.81	58.73	20.39

Before: Texts before audio materials, During: Texts during audio materials, Free: Texts-free audio materials, *p-value = 0.08

Table 5: Test of within-subjects' effects, including mean listening scores and F-value in the three formats across all subjects

Formats	Mean	SE	MS	F-value	p-value
Before	78.04	2.53	3401.604	28.51	p<0.001
During	73.67	1.90			
Free	60.33	2.01			

Before: Texts before audio materials, During: Texts during audio materials, Free: Texts-free audio materials

Table 6: Pair-wise comparisons using Bonferroni adjustment

Formats	Mean difference	SE	Significance	CI (95%)	
				Lower boundary	Upper boundary
Before-free	17.7	2.78	p<0.001	10.74	24.65
During-free	13.33	2.02	p<0.001	8.26	18.4
Before-during	4.36	2.46	p=0.25	1.79	10.52

Before: Texts before audio materials, During: Texts during audio materials, Free: Texts-free audio materials

application of univariate test was appropriate because the sphericity test was not significant ($p = 0.082$, Table 3); this justified the application of a repeated measure ANOVA (test of within-subjects effects). Here, before testing within-subjects effects, the order effect was also tested to find out whether or not the administration of the tests had affected the results. The administration order (Table 4) showed no significant difference across the six test formats ($p = 0.08$), indicating that the six administration orders were well balanced and there were no improvements with the sequence of administering text-before, text-during and text-free conditions.

Then, in light of the sphericity assumed results (Table 3), the computations proceeded with test of within-subjects effects which showed a significant overall difference among the three formats ($p<0.001$, Table 5). As such, because the p value from Repeated Measure test was statistically highly significant ($p<0.001$), among the three groups of tests, the mean scores for at least two groups should have been meaningfully different; so to find out which specific pairs of means were significantly different, pair-wise comparisons were performed (Table 6). Among the pairs compared, the mean scores for text-before format were significantly higher than the mean scores for text-free format ($p<0.001$). Likewise, the mean scores for the text-during format were meaningfully higher

than the mean scores for text-free format ($p<0.001$). Nonetheless, the mean difference between text-before and text-during (the third pair) was not statistically significant ($p = 0.25$).

DISCUSSION

The inclusion of written texts before or during the audio materials helped EFL learners to process the incoming information with greater accuracy (Table 1, 5). This seems to be in line with previous evidence on the importance of interactive listening formats (Anderson and Lynch, 1988; Riley, 1981) according to which listeners could achieve active mental processing by being subjected to different interrelated components of listening process, including the listening text, the task demands, and the response required of the listener. To put it differently, the results seem to be supporting the complementary nature of the auditory and written channels in listening to and viewing the reading text. Subjects' access to the texts, serving as a non-verbal channel of communication (Brett, 1995; Felix, 1995; Staddon, 1990), enhanced their listening comprehension noticeably.

The fact that subjects' comprehension improved significantly in the text-included formats indicate that the

texts and audio materials possibly served as two different modes for presenting the same information to their subjects, resulting in significant improvement in their listening comprehension. In Kashani *et al.* (2011) also the coupling of pictures and audio materials yielded similar results. Such findings tend to approve Chun and Plass (1997) views on the significance of learning from different sources of information, using different types of representations of the subject matter to engage the learner in qualitatively different cognitive processes. Further evidence in favor of such speculations may lie in some researchers' assertions that semantic and syntactic systems, as well as top-down and bottom-up processing, operate simultaneously to process the incoming information (Anderson and Lynch, 1988; Bacon, 1992; Bond and Garnes, 1980; Conrad, 1985). Although, there are some disagreement about the type of processing which predominates at different levels of learners' L2 proficiency (Rubin, 1994), some scholars agree that components of the listening process, including the listening text, the complete context of this text, the task demands, and the responses required of the learner, are all interrelated (Hoven, 1999).

The idea of enhancing listening comprehension by exposing learners to the listening text along with proper tasks has already been indicated in a number of studies (Sajjadi *et al.*, 2012; Constantine, 2007; Hoven, 1999; Rost, 1990). Constantine, 2007 encourages learners to listen to online audio and read along its transcript. Rost, 1990 specifically refers to the significance of exposing learners to the same or similar listening texts. The text incorporated into the listening materials can increase learners' control over Computer Assisted Language Learning (Hoven, 1999), by functioning as an effective means whereby learners can take better control of their L2 practice. The text included in the listening comprehension can contribute to learner's autonomy by making it possible for them to navigate through the language learning resources, given that they are provided with the necessary information to make informed decisions about their learning path (Lian and Lian, 1997). To put it differently, learners' autonomy in making use of their learning choices can be improved by enabling them to make informed decisions about their own learning using the resources contained in the internet or software package. This is in line with Hoven (1999) and Morley (2001) stance on the significance of listening and viewing comprehension in multimedia environments.

As indicated before, compared to text-free format, subjects obtained better scores in both text-included formats. Nonetheless their performance in the text-before-listening format was better than their performance in the

text-during-listening format. The reason for the difference may be rooted in the split-attention effect (Tarmizi and Sweller, 1988), as in the former format subjects had better opportunity to concentrate because they first looked at the text and then, putting aside the text, they solely focused on the audio broadcasting. In the latter format, however, they had to focus on two different activities-reading and listening-simultaneously which apparently was less conducive to comprehension. This refers to the fact that our mind has the ability to focus attention on just one task as spreading our attention across different types of tasks can result in attention deficits (Bonnell and Hafter, 1998). According to the literature on attention resources (Bonnell and Hafter, 1998; Sajjadi, 1996; Bonnell and Miller, 1994), there is a cost of shared attention with respect to more demanding tasks. The simultaneous division of attention between tasks which are rather demanding will cause some attention deficit (Bonnell and Hafter, 1998) as the learners must split their attention between these tasks to understand and use them properly. Hence, as far as the audio and textual materials are concerned, the order of their presentation is essential if learners are to use their attention resources more effectively to process the incoming information.

Pedagogical implications: The results provide a better overall understanding of how listening tasks can be more effectively used pedagogically in the foreign language context. They give further credit to the significance of listening aids, particularly as pre-listening activities, in developing listening skills and, as such, they indicate the importance of such activities in foreign language programs.

Listening as a significant skill in foreign language pedagogy has numerous applications, including syllabuses, course books and teaching materials, general proficiency language exams. However, a closer analysis of the relevant literature reveals that there is no systematic approach to the teaching of listening with texts or pictures accompanying audio materials although, according to our results, such instruction can facilitate L2 comprehension and accordingly should be an integral part of language development instruction.

Further research is necessary in order to determine how such instruction should be incorporated into language development programs at different levels of L2 proficiency. Such studies should identify whether L2 learners at different proficiency levels can benefit from pre-listening activities in the same way. It is essential to find out what learners at different proficiency levels actually do with textually assisted audio listening under different listening formats.

CONCLUSION

EFL learners need to be exposed to different listening aids to overcome their comprehension difficulties. The additional information, presented this way, can help learners exert better control over their own learning. The coupling of texts and audio materials in a single learning environment can noticeably enhance students' listening comprehension. As such, L2 multimedia environments that integrate auditory and written activities may be most effective for L2 learning.

The need for such activities, with the spread of online facilities and learners' easy access to authentic audio materials, is more than ever before felt. The texts or pictures accompanying audio texts can facilitate the recognition of audio output, helping learners overcome their comprehension difficulties.

ACKNOWLEDGMENTS

The authors would like to thank the students who took part in the data collection procedure.

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