

WCES-2010

Content related support and listening comprehension: Some limitations

Hedayat Sarandi^a *

^a*Bahcesehir University, Çiragan Caddesi 34353, Besita, İstanbul*

Received November 12, 2009; revised December 2, 2009; accepted January 22, 2010

Abstract

The present research study aspires to discover the extent to which the provision of content related information assists language learners with their performance on post-lecture detailed listening comprehension questions. Twenty male and female adult university students at the upper intermediate level were randomly assigned into a control and experimental group. The participants in the experimental group performed pre-listening tasks through which they received general prior information about the content of the lectures. They then listened and answered some multiple-choice comprehension questions that asked for the specific information in the lectures. The statistical analysis of the data revealed that the experimental group did not perform significantly better than the control group. The findings indicated some of the limitations of compensating models and cast doubt on the assumption that contextual likelihood necessarily assists the processing of lower linguistic levels. Implications for language classes are suggested. © 2010 Elsevier Ltd. All rights reserved.

© 2010 Elsevier Ltd. All rights reserved.

Keywords: Prior information; content related support; top down; bottom up.

1. Introduction

The complicated process through which meaning is derived from the stream of speech sound has been a challenging issue in language learning. There is an assumption that listening comprehension is the result of interaction between two types of processes; top-down or higher level processes and bottom-up or lower level processes. While in top down information is contextual and derived from background resources, in bottom up processes meaning is perceptual and derived from incoming input (Anderson & Lynch, 1988, Field, 2000). The two types of processing also assumed to take an opposite direction for the constructing of meaning. In bottom up input is perceived and processed at successive levels (e.g. sounds, words, clauses...etc) where small units are added up to build bigger chunks whereas in top down higher order information affects the perception of smaller units (Field, 2004).

The two processes, however, do not function separately. Information is processed in both ways simultaneously and the construction of meaning is usually the result of interaction between both higher and lower level processing. What is more, the two processes function in a compensatory manner (Stanovich, 1980). The effective applications of

*Hedayat Sarandi Tel.: +90 212 381 22; fax: +90 212 381 00 20

E-mail address: hidayet.sarandi@bahcesehir.edu.tr

top down processes usually decrease the degree of reliance on acoustic signals and vice versa. The listeners pre-existing knowledge and their information of specific listening situations along with what they glean of what is already said help them reduce the range of possible meanings and make plausible expectations about the received messages (Celce Murcia, 1995). What compensatory models also imply is that the deficiency in one type of processing usually results in over-reliance on the other type. Listeners with less developed bottom up processes, in this sense, are expected to rely more on the contextual information. On the other hand, speech produced in contextually rich settings may reduce the need for in-depth processing of the lower level linguistic units.

Two important points should be made with regard to the role prior of prior information. The first point is that the term prior information is used in a rather loose manner referring to a range of knowledge types including our world knowledge, topic familiarity and previous experience in an area (content schemata), our expectation of the rhetoric of a text (formal schemata) (Carell & Eisterhold, 1983), and the information received through earlier input, usually termed as co-textual information (Brown & Yule, 1983).

Another important point concerns the ways that prior knowledge exerts its facilitating role in listening comprehension. One view is that contextual information reduces listeners' dependence on the acoustic signal as most of the information needed for the comprehension of speech is already available in a non-linguistics form. Our prior information of the type of interaction that usually happens between a doctors and a nurse in the operation room, for example, allows us to interpret a certain discourse happening in that context as a request for a medical device even though we may not be able to perceive all or any of the language used. A second and somewhat different way through which prior information may help listeners with the comprehension of speech is through the actual processing of data where higher level units influence the processing of lower level units (Field 2004 p. 364). Here, the prior information does not reduce the needs of listeners for the processing of the acoustic input but it actually helps learners do the processing. For example, in a sentence like "Alex is in trouble and need your hel..." listeners might still be able to recognize the last phoneme as /p/ despite the lack of clarity at the end of the sentence. Here, the prior information manifested through co-textual information (i.e. what is said earlier; that there is Alex and he is in trouble) and listeners' world knowledge (that people who are in trouble need help) exerts its effects on the actual perception of sounds and allows listeners to assign the right value and recognize the last word as 'help' not 'hell, helmet or health...etc.

2. Prior studies

Studies that looked at the effect of prior information on listening comprehension yielded somewhat different results. Makham and Latham (1987) used passages describing the ritual of Islam and Christianity. The data revealed that religious background had an impact in listening comprehension. Subjects recalled more information and provided more elaboration for the passage related to their own religion. The findings corroborated evidence for the role of prior information in listening comprehension of religious texts. Similar results were reported in Chiang and Dunkel (1992) and Teng (1998) where it was found that Tai' students performed better on listening text related to their own culture (the dragon boat festival and Confucianism) than American culture (the Amish people and Thanksgiving).

Wolff (1987) used an opaque text with a low transparency level (Bransford and Johnson's Ballon Story, 1972) to detect the possible changes in the listening comprehension of language learners once a support picture provided. Greater recall was reported when the contextual picture was used. Wolff argued that the bottom up processes that nonnative listeners use is underdeveloped so they resort to the top down processes to achieve comprehension. Tyler (2001) used Bransford and Johnson's Washing Machine text (1972) to address the effect of topic availability on the consumption of resources in working memory. He found that nonnative speakers use more working memory than native ones when the topic is unavailable suggesting that nonnative speakers depends more than native on the topic information. When topic is available, the knowledge of the world can be used for the comprehension and thereby less information is need for the oral input.

Chang and Read (2006) examining the effect of different types of support on the listening comprehension of Tai students found that providing general information about the topic of lectures was more effective than other support types such as vocabulary instruction, repetition of input and reviewing the listening questions. They further found that lower level language learners benefited more from topic related information than higher level language learners. They concluded that lower level language learners use topic preparation to make up for their less developed listening skills as well as lowering their anxiety level.

While the findings of the studies mentioned above appear to underscore the role of top down processes and prior information in listening comprehension, there are other studies whose findings delimits the efficacy of such information (Tusi and Fullilove, 1998; Keshvarz and Babai, 2001; Chang and Read 2006). Tusi and Fullilove (1998) for example found that skilled listeners, unlike poor listeners, are able to change and adjust their initially created wrong schemata. They concluded that what differentiates performance of listeners is bottom up skills rather than top down ones. In a similar vein, Keshvarz and Babai (2001) found that the introduction of relevant information prior to listening to compatible tests had no significant effect on the listening comprehension of both proficient and less proficient listeners. The researchers argued that their findings pointed out the importance of linguistic knowledge and bottom up processing and questioned the studies that overestimated the role of prior knowledge.

Chang and Read (2007) examining the effect of different types of support on lower level language learners found a rather limited effect for these materials with regard to listening comprehension. They found that the provision of written general information related to content of listening texts in learners' native language increased %11 of the comprehension of the learners in the experimental group suggesting that support activities may increase the comprehension of language learners only to a certain degree.

As evident from the results of research mentioned above, an area where more divergent results are produced is related to the effect of provision of prior information. While some studies showed that the introduction of prior information could be a decisive factor and affect the listening performance of learners (Wolff, 1987; Tyler, 2001, Chang and Read 2006), there were others which showed that the effect size may not be significant (Keshvarz & Babai, 2001, Chang and Read 2007). Obviously, various factors are at work to make the role of higher level information effective in listening comprehension. The present study aspires to shed more light on this issue.

3. Present study

3.1 Research question

The following study aims to find out if the provision of general prior information about the content of listening materials allows language learners to direct more mental resources to lower level processing and thereby assist them with the perception and restoration of the parts which otherwise may not be fully understood. The following research question is then formulated:

What is the effect of the provision of content related information on the performance of language listeners on listening comprehension questions?

3.2 Participants

The population for the current study was selected from 30 volunteer language learners in two intact groups of junior and senior English language majors studying at Tabriz University in Iran. A TOEFL pre-test (consisted of listening, reading, grammar and vocabulary) was conducted and twenty learners (10 for each participant group) who answered more than half of the overall questions and more than half of the listening comprehension questions were selected as the population of the study. The reason for doing this was to choose the participants who both possessed

relatively the same level of language proficiency (upper-intermediate) and had almost the same level of listening skills in particular. A t-test run on the mean scores of the two groups showed that there was no significant difference between them before the onset of the study. Finally, by a toss of a coin, the senior group was selected as the experimental and junior group as the control group.

3.3 Testing materials

Two language tests were used in the present study to measure language learners' proficiency and listening comprehension. The first testing materials was a TOEFL test taken from Longman Preparatory Course paper based (1996). Since it was not possible to implement a full TOEFL test, 60 questions (15 from each part; listening, vocabulary grammar and reading) were selected and used as the pre-test in the study. The second material used in the study was three recorded lectures taken from Michigan University ECPE test (1997). Each lecture was followed by 5 listening comprehension questions. Three questions (one from each lecture) that asked about the general comprehension of the lectures were however eliminated since it was assumed that the information offered during pre-listening phase somehow gave their answers away. So, all in all, remained 12 questions; 4 for each lecture. These questions were also tape recorded.

3.4. Instructional intervention

Prior listening to the lecture, the participants in the experimental group received some oral information about the content of the lectures that they were going to listen to. In other words, language learners in the experimental group, before listening to the texts, were given some general information about the main point discussed in each lecture. For example, in the second listening the researcher informed the learners that they were going to listen to a text about human memory. That it was going to compare the old and new views on memory and the way psycholinguistics understanding about the nature and function of memory has changed through time. It was also mentioned that the lecture was going to inform how information is stored in memory and how the stored information may change through time.

Caution was exercised not to give away any information which the post-lecture questions were supposed to ask. Each lecture was followed by four three-item multiple choice questions. Like the listening parts of the TOEFL exam, language learners had no previous access to the questions. They heard the questions through the tape and chose their answers from their answer sheets. Learners were required to listen to these lectures only once. Since the lectures were relatively long, the learners were allowed to take notes of the key information. Participants in the control group, on the other hand, did not receive any prior information. They only listened to the lectures and answered the follow-up questions.

4. Data collection and data analysis

Below is the descriptive statistic of the two participating groups. As it is shown, there is not much difference between the mean scores of the two groups (6.7 for the experimental and 6.6 for the control group).

Table 1: Descriptive statistics

Groups	N	Mean	Std. Deviation	Std. Error Mean
Experimental	10	6.7	2.11	.667
Control	10	6.6	2.27	.718

A t-test also showed that the difference between the mean scores of the two groups was not statistically significant ($F = .005$ $p = 0.947$). In other words, the treatment appeared to have no significant effect on the performance of the experimental group on post-lecture listening comprehension questions.

5. Discussion

As the findings of the present study revealed, the provided prior knowledge had no statistically meaningful effect on the performance of language learners on listening comprehension questions that asked about detailed information in the lectures. To account for the findings, the type of listening texts, the proficiency level of participants, the kind of post-lecture questions and the content of the treatment applied in the study are examined.

To start with, the type of the listening texts used in our study was not similar to the texts used in the studies in which prior knowledge appeared to have significant effect on the participants' listening comprehension (Wolff, 1987; Tyler, 2001). The Balloon Story and Washing Machine, for example, used in Wolff (1987) and Tyler (2001), respectively, are not transparent texts, and as such, do not represent the listening materials that learners usually encounter in language classes or even in real life situations. The superior performance of the experimental group in these studies could not be solely contributed to the existence of supporting information. Rather, it could be the result of interaction of, at least, dual factors; the text type and the prior knowledge.

The texts used in the current study, on the other hand, had a considerable degree of transparency and as such the application of prior information in the form of the summary of the main points of the lectures did not make much difference. The key words of the texts employed in our study could have activated in the control group the same schemata that the treatment activated in the experimental groups. The transparency of the texts allowed the control group to catch up on the experimental group and the treatment remained ineffective.

The results of the present study collaborated evidence for some of the earlier studies. Jensen and Hasen (1995), for example, examined the effect of prior study of lecture topics on the performance of content based listening and found that the effect of background knowledge was more present in technical lectures than non-technical lectures. Keshavars and Babai (2001) also found that the performance of language learners, regardless of their proficiency level, on the listening tests for which related introductory information was provided was not significantly different from their performance on the listening test for which no schema was activated. Obviously, the learners in their studies were capable of creating appropriate mental models from the incoming data whether or not the supportive information was provided. Field (2004) showed that language learners use of top down and bottom up processes may vary depending, among others, on the type of the text and task employed. The relationship between text difficulty and the learners use of support materials is acknowledged by Wolff as he made the point that 'text difficulty can be correlated with the use of contextual cues: the more difficult a text is, the more the informant makes use of these cues' (1987: 316).

Another reason for the present results is concerned with the proficiency level of the participants. As mentioned earlier, the participants had a considerable record of language learning in an academic setting. They were junior and senior major students of English Language and Literature and managed to answer more than half of TOEFL paper based pre-test questions in general and listening section in particular. Their proficiency was estimated to be above intermediate level roughly speaking. As earlier studies revealed, the skilled listeners have less problem with novel and non-conventional situation. Keshavars and Babai (2001), for example, showed that proficient language learners were more capable of revising their schema once it did not match the incoming data. Similar findings were also reported in Tusi and Fullilove's study (1998) where it was showed that more skilled language listeners were more likely to fix their initial non-matching schema.

Another point with regards to the findings concerns the content of supporting information and the type of post lecture questions employed. As mentioned earlier, the type of the information provided through pre-listening activities was the outlines of the main points covered in each lecture. The post-lecture questions, on the other hand, asked for the specific information from the lectures. It was assumed that while the pre-listening provided learners with higher level top down information about the lectures, the majority of post-lecture questions required language learner to use their lower level processing. Questions like "what kind of dog does the speaker recommend people to get?" Or "how common are genetic problems in dogs?" or "what kind of dogs do today's breeding practice produce?" addressed detailed information in the text and as such may require more bottom up processing than top

down one. Our findings echoed Chiang and Dunkel (1992) in which it was found that the effect of prior knowledge was mostly reflected in passage independent post-lecture listening comprehension questions and the performance of language learners on passage dependent questions did not change much both for familiar and unfamiliar lectures.

6. Conclusion

The idea that availability of general prior knowledge about the content of the forthcoming lectures could free some mental resources and direct them towards less developed lower level listening processing was not warranted by the findings of the present study. In other words, it does not seem that the compensatory nature of comprehension models functions in a way that results in the enhancement of less developed bottom up listening skills. It turns out that the interaction between the higher and lower processes is more complicated than it may appear at first sight. Our findings are in line with Townsend and Bever (1991) study which also disproved the commonplace assumption that pragmatic likelihood necessarily assists the processing of lower level linguistic units.

The most important implication of the current study for the language classes is to do with the type and amount of materials used during the pre-listening activities. It points out that the decision over the introduction of prior information is related, among others, to the text type and the proficiency level of the learners. Everything equal, the so-called transparent listening materials obviously require less topic related prior knowledge introduction than the so-called opaque and culturally loaded materials. Proficiency of the language learners is also a key factor. Skilled language learners need less contextual support than learners who are at the initial stages of language learning. As it was shown, proficient listeners are relatively more capable of creating and/or revising their schema than less skilled ones. The findings also suggest that language teachers should not overestimate the role of prior information and instead pay due attention to the activities that address both types of processes. Listening activities that give more weight to the perceptual skills (such as dictogloss or Discovery Listening as suggested by Wilson, 2003) could also be fruitful.

Like all studies, the present study suffered from some shortcomings. First, the small number of participants might restrict the scope of generalization of the findings as they might be affected by individual differences. The second limitation is related to the memory effect. The listeners were advised to take notes since they listened to the lectures only once. It is not clear how far the collected data might have been affected by the note taking abilities of test takers. Third, only half the questions of TOFEL (60 questions) were used in pre-test stage to choose the participants. Obviously, more objective selections of participants could have been achieved had a full test been employed.

Language teachers and syllabus writers incorporate a range of pre-listening activities and advance organizers to change the weight of listening lessons from testing listening into teaching listening so that they could assist language learners achieve a reasonable level of listening comprehension. It is hoped that the findings of the present study will help language teachers make more informed decision about the content of the materials they choose to use during the pre-listening activities. It is also hoped that the findings could contribute to our understanding of the nature of top down and bottom up processes and the way these two processes interact in the comprehension of speech.

References

- Anderson, A. & Lynch, T. (1988). *Listening*. New York. Oxford University Press.
- Bransford, J. D. & Johnson, M. K. (1972). Contextual prerequisite for understanding: Some investigations of comprehension and recall. *Journal of Verbal Learning and Verbal Behavior*, 11(6), 717-726.
- Brown, G., & Yule, G. (1983). *Discourse Analysis*. Cambridge University Press, Cambridge.
- Carrell, P. & Eisterhold, J. (1983). Schema theory and ESL reading pedagogy. *TESOL Quarterly*, 17, 553-73.
- Celce Murcia, M. (1995). Discourse analysis and teaching of listening. In G. Cook and B. Seidlhofer (Eds.), *Principles and Practices in Applied Linguistics: Studies in the honor of H.G. Widdoson*. Oxford: Oxford University Press.
- Chang, C. S., and Read J. (2006). The Effects of Listening Support on the Listening Performance of EFL Learners, *TESOL Quarterly* 40, 375-97.
- Chang, C. S., and Read J. (2007). Support for foreign language listeners: Its effectiveness and limitations. *RELC*, 38(3), 375- 95.
- Chiang, C. C., & Dunkel, P. (1992) The Effect of Speech Modification, Prior Knowledge and Listening Proficiency on EFL Lecture Learning', *TESOL Quarterly* 26, 345-74.
- Ellis, R. (2003). *Task-based language learning and teaching*. Oxford: Oxford University Press.
- Field, J. (1999). Bottom up and Top down. *ELT Journal*. 53(4), 388-389.
- Field, J. (2004). An insight into listeners' problems: Too much bottom-up or too much top-down? *System* 32, 363–377.

- Jensen, C., & Hansen, C. (1995). The effect of prior knowledge on EAP listening-test performance. *Language Testing*, 12, 99-119.
- Keshvarz, M. & Babai, E. (2001). Incompatibility of schema with input in listening comprehension. *Indian Journal of Applied Linguistics*, 27(1), 57-83.
- Markham P., and Latham, M.(1987). The influence of religion-specific background knowledge on the listening comprehension of adult second-language students. *Language Learning*, 37, 157-70.
- Briggs, S., Dobson, B. & Rohlck, T. (1997). *The university of Michigan examination for the certificate of proficiency in English: Official past papers*. Oxford: Oxford University Press.
- Stanovich, K.E. (1980). Toward an interactive-compensatory model of individual differences in the development of reading fluency. *Reading Research Quarterly*, 16, 32–71.
- Teng, H. C. (1998). Effects of cultural schemata and visual cues on Chinese students' EFL listening comprehension. *Papers from eleventh conference on English Teaching and Learning in the republic of China*. (pp. 553-550). Taipei, Taiwan, Republic of China: Crane.
- Tsui, A., Fullilove, J. (1998). Bottom-up or top-down processing as a discriminator of L2 listening performance. *Applied Linguistics* 19, 432–451.
- Tyler, M. D. (2001). Resource Consumption as a function of topic knowledge in nonnative and native comprehension. *Language Learning*, 51(2), 257-280.
- Wilson, M. (2003). Discover listening: Improving perceptual processing. *ELT Journal*, 57 4). 335-343.
- Wolff, D. (1987). Some assumptions about second language text comprehension. *Studies in Second Language Acquisition*, 9, 307–326.