Adaptive and Maladaptive Strategy Use in Computer-assisted Language Learning Activities for Listening Comprehension

KARA MCBRIDE
Saint Louis University

ABSTRACT

College students of English as a foreign language (EFL) in Chile participated in an online mini-course designed to improve their listening comprehension. There were four experimental conditions: A) one in which participants listened to fast dialogues; B) one in which participants listened to slow dialogues; C) one in which participants were given an option as to which speed to listen to; and D) one in which participants could pause playback. Participants took a pretest and a posttest in both listening comprehension and written sentence comprehension. The listening comprehension test measured participants’ comprehension on slow and fast dialogues. The participants trained on fast dialogues showed a drop in their listening comprehension scores. Participants given a choice of speed also showed a drop, but only with slow dialogues. Differences in participants’ pretest to posttest gain scores on both listening and written tasks are explained in terms of the participants’ use of learning strategies and working memory. The findings have implications for classroom instruction, CALL design, and listening comprehension assessment.

INTRODUCTION

Actions that second language (L2) learners can take to make their learning of the L2 more effective are called learning strategies (Oxford 1986). Instruction on the use of learning strategies can improve L2 learners’ listening comprehension (Thompson & Rubin 1996). This enables the learners to direct their own learning and therefore makes them more independent and autonomous learners. Autonomy on the part of the learner is particularly important in the case of learners using computer-assisted language learning (CALL) materials when working
on their own. Strategy training for online language learners has also been shown to lead to more successful L2 learning (Hauck 2005).

Not all strategy use is the result of instruction, however. Many language learners use strategic behavior in handling tasks of listening comprehension— as well as other L2 tasks— without previous instruction (Vogeley 1995). Naturally, strategic behavior is meant to enhance comprehension and learning. However, habits formed in one learning environment can be negatively transferred to a new situation. This study investigates the way in which English as a foreign language (EFL) learners reacted to a CALL listening comprehension environment by forming strategic habits, which proved helpful for some and maladaptive for others, depending on the rate of speech of their instruction and/or the amount of control they were allowed in their learning environment.

LITERATURE REVIEW

There are two major types of strategies that are described in the literature on second language acquisition (SLA). One type is called communication strategies, and the other type is called learning strategies. Communication strategies are strategic moves made by language learners to compensate for gaps in the learner’s knowledge of the L2, or for problems in communication caused by factors of performance (Bialystok 1990). Learning strategies, on the other hand, are actions taken to enhance the learning process in SLA, so that this may be more efficient, effective, and enjoyable. This separation of the two types of strategies is both important and fairly clear in many cases (Oxford 1990), but in the situation of L2 listening comprehension, particularly when the tasks engaged in by the learner involve one-way listening (as opposed to interactive listening within the context of a conversation), this division is blurred.

Communication strategies are associated with second language use, whereas learning strategies are associated with the acquisition of a second language, but this is, in many ways, a false dichotomy, since language is acquired through use. A learner can, for example, compensate for his or her failure to understand a part of a listening text by using contextual cues to guess at the meaning of what was said. Guessing, or inductively inferring meaning, however, has also been categorized as a learning strategy (e.g., Rubin 1981).

Other examples of learning strategies that can be easily applied to the context of listening comprehension include associating new
knowledge about the language of study with previously known information; monitoring one’s affective state and relaxing; and identifying the purpose of a task (Oxford 1990). Perhaps the single most important learning strategy for listening comprehension is consciously focusing attention on what one considers the most important part of a spoken message and not allocating mental resources to what are deemed relatively unimportant details of a message (Oxford 1990; Vandergrift 2003).

All of these activities just described are examples of a language learner taking control over his or her language learning and/or taking control over a situation of L2 use. In fact, this sort of mental move (taking control over one’s thoughts and actions related to a speech event) is the primary action that any listener – either in the L1 or the L2 – can do in order to maximize his or efforts to understand a spoken message. Although specific strategic behaviors can be identified in successful L2 learner’s use and comprehension of the L2, there is no clear-cut difference between strategy use and learning in general (Dörnyei 2005). Because of this, Dörnyei (2005) argues that the field of SLA should replace the term learning strategy with the term self-regulation, as has been done in the field of educational psychology.

This terminological reframing pushes one more in the direction of asking the extent to which or how well a student can self-regulate, as opposed to asking exactly which particular strategies a learner should use. Several studies investigated the question of which learning strategies were the best ones to use, but instead of finding particular ones used by “good” language learners and a different set used by “bad” language learners, it was often found that more successful language learners are better at choosing the learning strategy that is most appropriate for the occasion, depending on task characteristics and the learner’s own profile (Bacon 1992; Chamot & Küpper 1989). Elsewhere it was found that more proficient language learners made a greater use of metacognitive strategies and had a qualitatively different way of putting learning strategies to use (Vandergrift 1997).

A learner’s clarity about his or her own learning style and about what he or she believes about the language learning process can help that learner choose the best specific strategies in any given situation of language use, which is the key component in successful self-regulation (Dörnyei’s 2005; Vandergrift 1997; Vogeley 1995). Work at the online institute the Open University in the UK (Hauck 2005) has successfully taught language learners to self-regulate when studying online. In order to prepare students for the demanding task of studying on one’s own
online, the department has developed activities to “foster learner reflection on the following: self-knowledge, beliefs about self, beliefs about learning in general, beliefs about language learning in particular” (pp. 79-80).

The very act of assessing a situation and choosing an appropriate strategy, however, makes demands on working memory (Oxford 1990). This strain would be less for learners who have had practice with such activities, but it could present a serious challenge to less experienced learners. In fact, this may be a partial explanation why there is a shift in what types of learning strategies are used as learners become more proficient. Being more automatic in their processing of L2, more proficient learners may have more attentional resources free to devote to choosing strategic behavior appropriate to learning tasks at hand. This is a good argument for training language learners on strategic self-regulation so that engaging in such behavior does not result in a competition for memory resources needed by the mechanisms of listening comprehension.

Other than lack of knowledge of the spoken language, overtaxed working memory is the primary cause of failure in listening comprehension (Carpenter, Miyake & Just 1994). Working memory has two functions: one is to temporarily store information. The other function is to perform various computations on it. Working memory has a limited capacity. When working memory is overloaded with too many things to remember and/or too many calculations to be performed, some things need to be dumped from the temporary storage and/or some of the calculations have to be aborted. With listening comprehension, what must be stored in working memory includes a representation of the utterance that was heard and information about the context in which it is being heard. The kinds of “calculations” that are involved in listening comprehension include identifying sounds, identifying words, parsing sentences, and fitting new sentences into the larger discourse through an engagement of pragmatic understanding and general world knowledge (Rost 2002).

L2 learners are slower in the linguistic calculations involved in listening comprehension. Practice is required for them to become faster (Andersen 1993). A language learner may know a word, but it often takes him or her a few moments longer to retrieve the word from his or her mental lexicon so that meaning can be attached to that part of the spoken message and so that that lexical item can be used to continue the parsing of the incoming sentence. Likewise, grammatical structures may be familiar to a language learner, but there is often a lag time while
the learner identifies a particular grammatical structure and determines its function within the message. Accordingly, some studies have found that a slower rate of speech significantly enhances foreign language learners’ comprehension (Chaudron 1988; Griffiths 1990; Zhao 1997).

Zhao’s (1997) study showed speed to be a significant factor in subjects’ comprehension when the subjects were able to choose the speed at which they heard spoken texts. There was also a significant difference in listening comprehension scores between that condition and the condition in which subjects could not only choose the speed but also pause the recording whenever they so desired. The subjects’ comprehension was even better under the pause condition.

The subjects in Zhao’s (1997) study were using strategic behavior, manipulating the input and consequently enhancing comprehension. The employment of learning strategies is generally understood to lead to more efficient language learning. On the other hand, one might object, as Vandergrift (2004) does, that while slower speech may help the L2 learner understand more of a listening passage, allowing learners to slow down the speech that they are listening to could, over time, have a deleterious effect on L2 acquisition. Vandergrift (2004) argues that learners should be made to deal with speech as it naturally occurs. One object of the present study, then, is to investigate what effects the three listening options reviewed – slower speech, the ability to choose the speed of speech, and the option to pause playback – have on the development of foreign language listening comprehension skills over time. While it seems reasonable to assume that training language learners on how best to use the options would be of greatest benefit, it is also important to know how such options would affect untrained users. Knowing what happens when there is no training can also help inform efforts to structure useful training sessions. Furthermore, CALL materials are frequently used by untrained users.

While the productive skills require an audience to provide feedback, listening comprehension, like reading, is a skill that lends itself well to self-study and therefore to CALL. Mere exposure to spoken texts is not always enough for learners. The present study was inspired in part by the researcher’s experience teaching EFL in Chile, where English is heard ubiquitously through the media (radio, television, cinema), and yet students frequently commented that they had poor listening comprehension skills and little idea about how to improve them.
THE STUDY

The study described here took the form of an online mini-course in listening comprehension lessons for low-intermediate EFL college students in Chile. Subjects were randomly assigned to one of four experimental groups. Each group was exposed to the same materials in terms of the pretests and posttests, the number of lessons during the training period, the scripts of the dialogues that they heard during training, and the comprehension questions that they were given during the training. The differences between the groups’ training had to do with the rate of speech of the dialogues in the lessons and the kind of control that the participants had over the speed of the input during those training sessions, as explained below in “Lessons.”

The participants

There were 141 subjects, 86 (61%) of whom were female, who completed the online component of the study. The subjects were undergraduate college students from five different universities in Chile. All participants were enrolled in at least one English class at their university at the time of the experiment. Sixteen of the participants were majoring in English; the other 125 were majoring in a wide variety of other subjects.

Participation in the study was completely voluntary, although roughly one-third of the subjects were offered by their teachers extra credit in their English classes for completing the project, independently of how well they performed. When the researcher visited the classes to recruit participants, she spoke to them in Spanish, the subjects’ native language, and told them that the project was meant to explore online CALL design. They were not told that the project was designed to investigate learner self-regulation nor the effect of rate of speech on listening comprehension development, because it was believed that participants’ knowledge of that might influence their reactions to the project.

Method

There were fifteen distinct steps required for the completion of the project. The participants were free to choose the timing of these steps. The participants could log on at any time and from any computer with an internet connection and sound. Participants first filled out an initial online background survey; they then took a (separable) two-part pretest; next they completed ten training sessions; and finally they took a two-part posttest. There was also an optional opinion survey after each lesson.
Tests

There were two types of tests. One was a listening comprehension test (LCT), and the other was a written sentence-comprehension activity. Every other participant who logged onto the project was given Version A of the LCT as a pretest, and the rest were given Version B as the pretest. Those who had Version A as the pretest were later given Version B as the posttest, and vice versa.

Both versions of the LCT had four dialogues, each divided into two sections of 52 to 85 seconds in length. Five comprehension questions followed each sound file. The first two dialogues in the tests were slow. In this experiment, “slow” was operationalized as 135 words per minute, and “fast” was defined as 180 wpm, based on previous research (Blau 1990; Griffiths 1990; Rader 1990). All written instructions and comprehension questions in this experiment were written in Spanish so that English reading comprehension would not affect subjects’ performance. All lesson and test materials were created with words that fell within the top 2,000 most frequent English words (as determined by Vocabulary Profiler at <http://ec.hku.hk/vocabulary/profile.htm>), or were cognates with Spanish words, proper nouns, or interjections—except for two words, that were depicted in the accompanying on-screen illustration.

The written part of the tests took the form of what is called a maze task. This is a task that comes out of the tradition of psycholinguistic testing and has been shown to be sensitive to the same processing difficulties found in production tasks and eye-tracking experiments (Nicol, Forster & Veres 1997). In the computerized maze task, subjects are shown two words per screen, except at the beginning of an item, when only one word is shown. One word from the pair of words, when combined with the words preceding it, grammatically continues the sentence being constructed, while the other does not. If the subject chooses (by pushing one of two buttons) the correct word, the next pair of words is presented, and so on, until the end of the sentence. When a wrong choice is made, the subject is informed, and the item is halted. The subject then goes on to the next item.

The maze task shares in common with normal listening comprehension activities the fact that exposure to sentences happens in a linear fashion, without giving the subject the opportunity to return to previous sections of the sentence. The maze task therefore has characteristics in common with listening comprehension, but involves written language. In order to successfully complete items in a maze task, both word identification and sentence parsing must take place.
All tests were piloted on six native English speakers and 13 Spanish-speaking EFL students, checking for validity and clarity in format. Actors in all dialogues were native English speakers from the U.S.

Lessons
There were ten lessons that comprised the training period of the experiment. For each lesson, the participant first heard the entire dialogue once, then was asked four multiple-choice questions, then heard the entire dialogue again, and was asked another four multiple-choice questions and two open-ended questions. The same scripts and questions were used for all four conditions. People in Group A heard the dialogue both times at 180 wpm (fast). People in Group B heard the dialogue both times at 135 wpm (slow). People in Group C heard the dialogue the first time at 180 wpm and then the second time had a choice between the faster or the slower speed. People in Group D heard the dialogues at 180 wpm both times, but the second time, there was a pause button that they could use to pause the playback. The pause button only worked as long as it was being clicked on. Participants were assigned to Groups A through D in a semi-random fashion, evenly distributing high, medium, and low scores on the pre-LCT. Because some participants dropped out midway through the project, there were 39 participants in Group A, 32 in B, 32 in C, and 38 in D.

The dialogues in the ten lessons told an ongoing story about a woman’s experiences traveling first to and then through Chile. The dialogues for the lessons were longer than the dialogues for the test. The lessons’ dialogues were made long so that the subjects would be encouraged to practice more global listening, as opposed to listening for details, and it also allowed for greater elaboration of the storyline. The first dialogue was 1:36 (96 seconds) in the fast version and 2:11 in the slow version. The dialogue for Lesson 10 was 3:48 in the fast version and 5:12 in the slow version. Unlike the LCT, the multiple choice questions from the lessons had only two choices, instead of four, and subjects were informed whether each answer was right or wrong, allowing participants to know the correct answer.

Interviews
Six members each from Groups A, B, and D, plus seven members of Group C were interviewed. They were asked about their favorite parts of the project and their suggestions for improvement, how they rated themselves as language learners, and what they did to improve their listening comprehension besides participating in the project. They were also asked to describe their process of listening to English, and they were
given the strategy checklist that can be found in the appendix, and they were asked to indicate which of those strategies they had used during the project and at other times. Afterwards, they were also asked to add any strategies that they used that were not on the list. The checklist included learning strategies discussed in the literature which could fit the listening activities of the project (Bialystok 1990; Oxford 1990).

RESULTS

Group equivalence
Several preliminary statistical checks were made to verify that the different groups of participants started out at the same level. All differences on the listening comprehension pretests were insignificant, including – between the 141 participants who managed to complete all steps of the project and those who began but did not finish; this was tested with an independent samples t-test, p = .57. Similarly, there was no significant difference in pretest scores between Version A and Version B of the LCT, p = .66. A one-way ANOVA, with the pretest score on the LCT as the dependent variable and group membership as the independent variable, indicates that differences between the four experimental groups were also insignificant: F (3, 137) = 2.16, p = .10. Using the same procedure but this time with the maze task pretest scores also shows the initial group differences to be insignificant: F (3, 134) = 1.83, p = .14.

Listening comprehension tests (LCT)
To compare pretest with posttest scores, a general linear model repeated measures procedure was run, revealing one significant interaction, and that was between speed of the dialogues and group membership: F (3, 137) = 2.94, p < .05. Because of this significant interaction, repeated measures procedures were run for each of the four condition groups separately. Table 1 shows the results.

<table>
<thead>
<tr>
<th>Table 1. Significance Levels for Main Effects and Interaction</th>
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<tr>
<td>Speed of Dialogue</td>
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<tr>
<td>Pretest vs. Posttest</td>
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<td>Interaction between Speed and Test</td>
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*p<.05; **p<.01; ***p<.001.
The effect of speed was significant for all groups. The effect of test (pretest versus posttest) was significant for only two of the four groups: Groups A and C. Unexpectedly, both groups did significantly worse on the posttest than on the pretest. The only group for which a significant interaction between test and speed was found was Group C. A lack of interaction for the other groups implies that the speed or speed options of the training did not impact how well the participants understood slow versus fast dialogues and that any benefit or harm that the training type might have had affected the participants’ ability to comprehend slow and fast dialogues equally.

For Group C, though, it did make a difference. Scores from pretest to posttest remained essentially the same on the fast dialogues: the average score for members of Group C on the fast dialogues on the pretest was 11.16 (out of 20), and on the posttest it was 11.13. It was on the slow part of the LCT where there was a dramatic change between pretest and posttest scores. Their average score on the slow part of the pretest was 13.94. On the posttest their scores dropped down to 11.81. Table 2 shows the pretest and posttest scores for each group, broken down by dialogue type, along with change scores.

Table 2. Listening Comprehension Pretest and Posttest Averages for each group, broken down by Dialogue Type

<table>
<thead>
<tr>
<th>Group</th>
<th>Slow (out of 20)</th>
<th>Fast (out of 20)</th>
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<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>A</td>
<td>15.23</td>
<td>14.33</td>
</tr>
<tr>
<td>B</td>
<td>12.66</td>
<td>11.72</td>
</tr>
<tr>
<td>C</td>
<td>13.94</td>
<td>11.81</td>
</tr>
<tr>
<td>D</td>
<td>14.61</td>
<td>13.71</td>
</tr>
</tbody>
</table>

Participants’ use of control options

Because Group C’s results are distinct from those of the other groups, it is interesting to see to what extent the members of that group took the option of listening to the dialogues slowed down the second time they listened in a lesson. Figure 1 shows the percentage of Group C members who, after hearing the lesson dialogue fast the first time, chose to listen to it the second time at the slower speed, as opposed to listening to it again at the same speed. It can be seen that for the first few lessons, about half of the Group C members chose the slower speed. By Lesson 5, this lowered to around 25%.
The only sources of information about the extent to which members of Group D used the pause come from interviews and the voluntary post-lesson surveys. Answers to questions on the surveys about pause button usage were provided around 68% of the time. In the surveys participants indicated using the pause button only approximately 7% of the time, and six of the respondents who used the pause button indicated that they did not find it helpful because it tended to obscure some words. For example, one wrote,

Al ser un diálogo tan rápido, cuando se pulsa el botón de pausa para poder procesar mejor el diálogo, cuando se suelta se suelen perder palabras que pueden dificultar el entendimiento de lo que sigue.
Since it’s such a fast dialogue, when you press the pause button so you can better process the dialogue, when you let it go you tend to lose some words, which can make understanding the next part more difficult.

Lessons
The eight multiple-choice comprehension questions in each lesson were designed to be a teaching tool and not a testing instrument. The intention was to guide participants in their understanding of the ongoing storyline told by the lessons. Accordingly, the percentage of correct answers was high in all four experimental groups. The similarities in scores is striking, as shown in Figure 2.
Written (maze) task
The maze scores were used as the measure of accuracy in timed lexical and syntactic processing of written language. The maze scores reported here represent the total number of sentences that a subject managed to complete. There was a difference in change scores between the groups. A repeated measures analysis showed a main effect for test (pretest versus posttest), \(F(1, 131) = 26.72, p < .001\), and there was also an interaction between test and group, \(F(3, 131) = 2.72, p < .05\).

As a follow-up with regards to the interaction, the data were split by group and a repeated measures procedure was run for each group. The change from pretest to posttest was insignificant only for Group A, \(F(1, 36) = 2.27, p = .14\). For Group C, test was significant \(F(1, 29) = 5.59, p < .05\). For Group D, \(F(1, 35) = 5.16, p < .05\). For Group B, the effect was stronger: \(F(1, 31) = 13.20, p < .01\). Therefore, the members of Group A made no significant gains in completed sentences from the pretest to the posttest. The members of Groups C and D made significant gains, and the members of Group B made highly significant gains.

Interviews and strategy checklists
Members of Group A (fast dialogues only) expressed feeling overwhelmed by the dialogues more often than members of other groups, while those in Group B (slow dialogues) tended to find the dialogues much easier to understand. Most of the people interviewed from Group B specifically said that they felt that the actors spoke more
slowly than natural, but all of them added that they liked the speed because it made comprehension easier. Participants from Group C (choice of speeds) reported that they sometimes chose the slower speed when they found the dialogue difficult to understand but that they chose this option less as time went on. Half of the Group D participants said that they felt no need for the pause button. The others who did use it said that it was not always helpful because it had a tendency to obscure words surrounding the pause, or they said that it would have been much more useful if the pause could have been left on indefinitely instead of requiring that the user continue pressing on the button for the pause to work.

All interviewees completed the checklist found in the appendix. There was no difference found in strategy use related to group membership. After filling out the survey, the participants were asked if they could think of any strategies that they had used but that did not appear on the list. Only one person added another strategy to the list, but it was, in essence, a rewording of other strategies from the list. He wrote, “Captura la palabra que comprendo en el caso de que el diálogo sea poco claro para mí e intento darle alguna estructura más o menos lógica” (I gather the words that I understood, in the case that the dialogue was not very clear to me, and I try to give it a more or less logical structure).

In keeping with previous findings (Bacon 1992; Chamot & Küpper 1989), there was found to be no correlation between the number of strategies – either those used ever, or those used specifically during the experiment – and the participants’ scores – either LCT scores or LCT gain scores. There was only one strategy that was favored more by those who got high scores on the LCT than their low-scoring counterparts, number 7, “I notice when my mind is wandering and make myself pay attention again.” The only two people who did not check having employed this strategy had two of the lowest scores on the LCT. Both of these participants talked during the interviews about being very easily distracted. One of them, the higher scorer, was a student of medical technology and had excellent English reading skills but almost no practice in listening comprehension. The other one said that he would probably not study English if it were not a required class; had less innate talent in languages than the other people; and had only participated in the study as a favor to the researcher.

One very interesting difference between more and less proficient listeners came out when the subjects were asked to describe their listening comprehension process. There was a dramatic difference
between the gestures of the more advanced and the less advanced English learners. More advanced speakers tended to make gestures that outlined the shape of a sphere. As they made these gestures, they would describe the way in which their several sources of information, such as vocabulary, grammar, tone of voice, and general background knowledge, folded into each other to make a solid whole of a mental model in their minds for what they heard. In contrast, participants who had low scores on the LCT made gestures of grasping at distinct points in the air, or they poked at different spots on one of their hands with a finger from the other, to indicate separate points. These less advanced EFL learners spoke of capturing only isolated bits of information, usually specific words, and they explained that the connections made between the points were merely guesses on their parts. A typical comment from one of these students was, “Busco las palabras que entiendo y las inserto en el contexto,” or “I look for words that I understand, and I insert them into the context.”

DISCUSSION

The fact that LCT scores dropped from pretest to posttest for two groups and showed no gains for any group demonstrates the multifaceted nature of listening comprehension. It shall be primarily argued that these results reflect the influence of two factors – fatigue and a loss in motivation – which mask gains in listening comprehension. However the possibility that in fact no measurable gain in listening comprehension shall be considered as well. In either case, the outcomes of the experiment point out important considerations in terms of learning strategies, which will be the focus of the discussion.

Since all subjects were, at the time of the experiment, enrolled in an English class and participating in the extra listening comprehension activities provided by the experimental materials, listening comprehension should have improved and LCT scores should have increased. The idea that the subjects somehow lost listening ability throughout the course of the project is rejected. The initial survey established that none of the participants had ever lived in an English-speaking environment. The drop in scores is instead likely due to fatigue and a loss of motivation. Timestamps on subjects’ project activity shows that many of the participants rushed to finish the project, often doing several lessons and the posttest all in one sitting. Given this, probably many of the subjects were fatigued at posttest time.
The other main explanation for no LCT gains, a loss of motivation, is thought to have come about as the combination of several factors: 1) subjects at first were eager to perform as well as possible on the pretest but gradually became less concerned about this, in part because 2) subjects realized that they were given feedback on the lesson scores but not on the test scores; 3) most subjects were rushing to finish the project at the end and were therefore more concentrated on finishing than on performing well; and 4) the test dialogues, unlike the lessons, were not about characters whose story the participants had come to know about and did not take place in Chile.

Assuming that fatigue and lowered motivation affected all experimental groups equally, then the differences in gain scores on the LCT can be taken to indicate the relative effectiveness of the training types. Because Groups B (slow) and D (pause) did not show drops in their LCT scores, they can be said to have done the best. Group C (speed choice) did worse on the post-LCT on the slow dialogues but not the fast dialogues. Group A (fast) was the one group that showed drops in scores across dialogue type. Therefore, the LCT indicates that Group A fared the worst.

The novelty of the maze task likely accounts for why maze gain scores did not suffer the same kind of fatigue effects and loss of motivation effects that the LCT scores demonstrated. Maze gain scores were due no doubt in part to practice effects, but the fact that the gains made were not the same across groups means that differences between groups are the result of the differences in training styles. Group B showed the greatest improvements. Group A showed no improvements.

Taken together, these results indicate that Group B (slow) had the most beneficial training, while Group A (fast) had the least beneficial training. This indicates that slower input can benefit low-intermediate language learners. While listening to lesson dialogues, members of Group B were able, it appears, not only to follow the semantic information in the dialogues but also notice more about the input. This resulted in greater incidental gains in vocabulary and grammar for Group B, as indicated by the written maze task. This is supported by SLA theories that claim that attention to input and noticing gaps between one’s current state of interlanguage and characteristics of the target language are necessary for SLA (e.g., Gass 1997; Lockhart & Craik 1990; Schmidt 2001). Because it is possible to comprehend the semantic content of messages without paying attention to form (VanPatten 1998), members of Group A were still able to follow the dialogues’ lessons and answer most comprehension questions, but they
did not have additional attentional resources to devote to noticing the form of the message.

Group D also fared well. It is conjectured that participants in this group, because they had an option to pause the playback if they so chose, felt more in control than their Group A counterparts, who were given the same input but with no option for control. This is supported by Choice Theory (Glasser 1988), which posits that students will be more involved and learn better when their learning environments provide them with a sense of having some control over their own circumstances.

Group C displayed the most curious results. They did as well at posttest time on the fast dialogues (which are more difficult to follow), but they did worse on the slow dialogues. The most likely explanation for this is that at posttest time, when they heard the slow dialogues, which were the first two of four on the LCT, they were surprised and confused to hear speech that had come, through the format of the lessons, to be defined as the remedial speed. Distracted by their thoughts of surprise, they failed to concentrate properly on the contents of the dialogues, and were therefore unable to answer the comprehension questions as well. Again, a problem occurred by working memory being taken up by thoughts that did not aid in listening comprehension, leaving insufficient attentional resources to be devoted listening comprehension.

Whether participants in the study indeed improved in listening comprehension but were simply too fatigued and unmotivated to display this on the listening comprehension posttest, or whether in fact no measurable improvement was made over the course of ten lessons, it is still clear that the training had differential effects on the experimental groups, and this, in either case, has much to do with participant expectations. Differences between the training lessons and the test format come into play here.

On the tests, dialogues were short, heard only once, and dealt with unknown characters who supposedly lived in a country (U.S.) where the target language is spoken. At pretest time, these characteristics were not terribly unusual, matching as they do with many EFL materials’ characteristics. At posttest time, however, the participants had grown used to much longer dialogues, in which there often were multiple cues for the same material; dialogues were heard only once each; and characters of the dialogues were no longer Chilean or talking about Chile, nor were they part of a continuing story. Because the storyline of the lessons continued from lesson to lesson, participants could make use of contextual knowledge – above and beyond the considerable
advantage that the Chilean context would have given them. In the posttest, they were robbed of these aids to listening comprehension. Furthermore, the questions on the lesson were somewhat easier to answer, and therefore the subjects had grown accustomed to listening in a much more global sense, even though the questions on the LCT were also considered global as opposed to detail-oriented.

What that means for strategy use is that many of the strategies that participants had developed were no longer employable when it came time to take the posttest. Members in Group A would have made the heaviest use of strategic listening, as their lesson dialogues (fast only) were the most difficult to comprehend. Members of Group D also had to contend with fast speeds in the lesson dialogues, but because they had felt, it is assumed, more in control of the input during lessons activities, they were less likely to be bombarded by distracting thoughts of frustration during lessons activities and are therefore thought to have been able to concentrate more fully on the listening task at hand. This then put them at an advantage when they took the posttest.

The participants in Group C may have used the slower speeds in their lessons only for listening to the dialogues (always the second time) very closely, concentrating more on form than on content. Perhaps when they heard the slower dialogues in the posttest, they switched into a different mode of listening that was less helpful for answering the general comprehension questions that were on the posttest.

What strategies an L2 listener uses has to do with what the listener expects to hear and what the listener expects to need to pay attention to. Even though in real life we often hear spoken language “out of the blue,” we still are always aware of what context we are in, and therefore we can listen to speech for what is important for us. L2 students taking a listening comprehension test, on the other hand, are not in a position to decide what to listen to; instead, the comprehension questions on the test will determine what is “important” and what is not. Thompson and Rubin (1996) also found that when they gave a posttest to their subjects that did not match their subjects’ training, the subjects showed no improvement. Participants trained in strategy use did better than a control group on video-based tasks, which matched both groups’ training, but the strategy-trained group showed no improvement with an audio-only task.

Choosing the proper learning strategy, like any mental task, makes demands on working memory. More proficient listeners experience less of a drain on their working memory during an L2 listening activity and are therefore in a better position to choose appropriate strategies and to
overcome any habitual listening patterns that would be maladaptive in a new listening situation.

LIMITATIONS AND FUTURE DIRECTIONS

The group for which the least is known is Group D. Technical issues in the usage of the pause button rendered this option less useful than was intended. Future research should revisit the potential usefulness of pause options in CALL, but with a more effective pausing mechanism. On the other hand, the relative uselessness of the option was the occasion for the interesting finding that Group D participants still fared better, and it is conjectured that this was due to their increased sense of control over their environment. This hypothesis needs to be checked with other studies, however.

As with other studies (e.g., Vandergrift 1997), the sheer number of strategies used, as indicated by the checklist, revealed little useful information about the real differences in strategic recourses of the participants. Different means of getting at participants’ use of strategies, such as the think-aloud protocol used in Vandergrift (1997) could be used in addition to surveys and interviews in order to investigate online strategy use. This would, of course, alter the nature of the activity somewhat and should therefore be used in combination and in contrast with other methods.

IMPLICATIONS

Learner expectations guide the learners’ use of learning strategies. Some of the most useful strategy training that learners might receive, therefore, is to expect the unexpected. This could be accomplished by giving L2 learners a wide variety of listening comprehension tasks. Although the results of this study clearly suggest that listening practice that is delivered at a speed that is comfortably slowed-down for the language learners’ level can aid in the learners’ acquisition of new vocabulary and grammatical structures, this does not negate the fact that learners need to be exposed to a variety of speech styles and accents so that they can learn to quickly adapt to whatever speakers they encounter. However, the results of this study imply that it would be best to separate instruction for the two distinct goals of 1) presenting new material (e.g., new vocabulary or new grammar) and 2) exposing learners to challenging speech styles (e.g., a new accent or a particularly fast rate of speech). Doing both at the same time would be akin to
delivering material at an $i+2$ as opposed to an $i+1$ level, in Krashen’s (1982) terms.

This study also points to the importance of matching testing to teaching methods (Shohamy 1998, 2001). If students are taught with one kind of activity and tested with another, they are bound to employ on the test the strategies that were helpful in class. However, if there is little match between the two kinds of activities, the previously successful strategies may backfire on the students when they take the test and result in lowered scores. When creating assessment materials, the many influences on performance need to be considered. In listening comprehension, this involves a great many factors – critical, intertextual, strategic, contextualized, affective, social, cross-cultural, and individualized – that affect the employment of both bottom-up and top-down processes (Flowerdew & Miller 2005). All of these factors contribute to communicative competence, and none of them can be separated cleanly away from the others, even in the somewhat unnatural context of a testing situation.

This has many implications for the design of CALL materials. As CALL materials are often created so that a learner can practice his or her L2 skills in the absence of an interlocutor who could be sensitive to the learner’s needs, special care needs to be taken in the development of CALL materials. This means, among other things, that even more careful piloting is required for CALL materials – especially computer-based tests – than with traditional materials. It also means that training students to strategically use the materials and situations made available to them is crucial in ensuring effective use of CALL materials.

**Notes**

1. A number of things were done in order to get the actors to speak at these two speeds during the recording phase of development, including explaining the purpose of the experiment to the actors. When the actors were supposed to record a slow dialogue, they were told to speak like they would to a foreigner who could not understand English terribly well. They were told that if speaking slower meant that they pronounced the words more clearly and/or put more pauses into their speech, then that was what they should do. When the actors were supposed to record a fast dialogue, they were told to speak naturally but at a good clip. Then, for either speed, the actors listened to a sample audio file in which people were speaking at the desired speed (135 or 180 wpm). Also before recording, the number of words per script was counted, and the time that the dialogue should last based on the word count was calculated. The actors were informed of this figure. Practice runs through the dialogue were timed so as to give an idea
of how close to the speed goal they were speaking. If there was a part of
the dialogue that the actors found awkward, the wording was altered, and
any change in word count was used to recalculate how long the dialogue
should last. After recording a good reading at very nearly the right speed,
then the sound file was manipulated to precisely the right speed using a
2xAV plug-in (http://www.enounce.com/).

2. Only about two-thirds (65.1%) of those who originally logged onto the
project and filled out the initial survey got as far as taking the LCT pretest,
and only about one-third (31.9%) of those who took that pretest managed
to finish every step of the project. These are high dropout rates in one
sense. However, given the circumstances of the project, it could be argued
that in fact the dropout rate was low. Dropout rates for online courses are
notoriously high (Yukselturk, 2006). That is true even in the case of for-
credit classes. The activities in this project were not required for any class;
nor did the participants receive any remuneration for their participation.
The project lasted a relatively long time and had several steps to it, and for
every step of the project, the participant had to be on a computer with a
good internet connection and with the ability to download and listen to
sound files.

3. The information in Figure 1 is based, however, on only 80% of Group C’s
participants, as the feature of the online lessons that recorded Group C
members’ choice of dialogue speeds was not working at the beginning of
the experiment.

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**APPENDIX**

**Strategies Used by Participants during the Experiment and at Other Times**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Used during experiment</th>
<th>Used ever</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. I try to make sure that I am relaxed</td>
<td>24</td>
<td>25</td>
</tr>
<tr>
<td>7. I notice when my mind is wandering and make myself pay attention again</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>4. I guess the meaning of unfamiliar words</td>
<td>22</td>
<td>23</td>
</tr>
<tr>
<td>17. I try to focus on key terms</td>
<td>21</td>
<td>23</td>
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<tr>
<td>14. I listen to the speakers’ tone of voice</td>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>6. I try not to translate word for word</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td>1. I form a visual depiction of what I am hearing</td>
<td>18</td>
<td>23</td>
</tr>
<tr>
<td>8. I focus on the grammar that I understood and guess other parts of grammar that I could not catch</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td>11. I try to keep my mind free of preconceptions and just let the information come in</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td>15. I catch up with what is being said during the pauses</td>
<td>18</td>
<td>21</td>
</tr>
<tr>
<td>13. I try to remember where I have heard a phrase before</td>
<td>16</td>
<td>20</td>
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<tr>
<td>19. Once I have seen the comprehension questions, I remember them and listen for their answers</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>9. I rely heavily on common sense and what I know about the real world</td>
<td>15</td>
<td>21</td>
</tr>
<tr>
<td>22. I remember the actual sounds I heard when answering questions about the listening</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>16. I repeat to myself what I have heard</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td>5. I guess what the other person will say next</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>12. I try to remember the situation and guess what will be said or happen next</td>
<td>12</td>
<td>14</td>
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<tr>
<td>18. I try to guess what questions I will be asked</td>
<td>11</td>
<td>15</td>
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<tr>
<td>23. I go with my first reaction to a question and don’t analyze my answer</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>3. I write out notes while listening</td>
<td>8</td>
<td>19</td>
</tr>
<tr>
<td>21. I start thinking in English before I start a listening activity</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>2. I look up new words that I have heard</td>
<td>5</td>
<td>22</td>
</tr>
<tr>
<td>20. I draw or map out what I am hearing</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

**KARA MCBRIDE**  
DEPARTMENT OF MODERN AND CLASSICAL LANGUAGES  
SAINT LOUIS UNIVERSITY  
EMAIL: <KMCBRID8@SLU.EDU>